

CONTRACT NAS1-99000

The following information has been determined to be exempt from disclosure and has been deleted from the contract:

- Hourly rates for various labor categories from CLINs 103, 203, 303, 403, and 503: pgs. 5–6, 8–9, 11–12, 14–15, and 17–18;
- Material Fully Burdened Rates and Equipment Fully Burdened Rates from CLINs 104, 105, 204, 205, 304, 305, 404, 405, 504, and 505: pgs. 6, 9, 12, 15 and 18;
- Dollar Target and Percent of Contract Value for SDB participation as subcontractors: p. 182;
- Exhibit C: Small Business Subcontracting Plan (8 pages);
- Dollar amounts in Exhibit I, Schedule of Deductions, pgs. 1–25.

The deleted material is exempt from disclosure under 14 C.F.R. 1206.300(b)(4) which covers trade secrets and commercial or financial information obtained from a person and privileged or confidential. It has been held that commercial or financial matter is “confidential” for purposes of this exemption if its disclosure would be likely to have either of the following effects: (1) impair the Government’s ability to obtain necessary information in the future; or (2) cause substantial harm to the competitive position of the person from whom the information was obtained, National Parks and Conservation v. Morton, 498 F2d 765 (D.C. Cir. 1974).

Disclosure of the financial information could cause substantial competitive harm to the contractor by providing its competitors insight into the company’s costing practices and management approaches. Furthermore, disclosure would discourage other companies from participating in future competitive procurements, thereby impairing the Government’s ability to obtain complete and accurate cost data, and in turn frustrating the mandate to obtain maximum competition in negotiated procurements.

Disclosure of the information in the Subcontracting Plan would discourage future submission of detailed data concerning the company’s implementation of their Subcontracting Plan and impair the Government’s ability to obtain necessary information in the future as well as cause substantial harm to the competitive position of the company.

AWARD/CONTRACT		1 THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	RATING DO-C9	PAGE OF PAGES 1
2 CONTRACT (Proc Inst Ident) NO NAS1-99000		3 EFFECTIVE DATE DEC 01 1999	4 REQUISITION/PURCHASE REQUEST/PROJECT NO GI.2166	
5 ISSUED BY National Aeronautics and Space Administration Langley Research Center Hampton, VA 23681-2199		6 ADMINISTERED BY (if other than item 6) Delegation Being Made Via NASA Form 1430 Criticality Designator C		

7 NAME AND ADDRESS OF CONTRACTOR (No street, county, state and ZIP Code) Johnson Controls World Services Inc. 7315 N. Atlantic Avenue Cape Canaveral, FL 32920		8 DELIVERY <input type="checkbox"/> FOB ORIGIN <input checked="" type="checkbox"/> OTHER (See below)
		9 DISCOUNT FOR PROMPT PAYMENT NONE
		10 SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN ITEM See Section G
CODE	FACILITY CODE	

11 SHIP TO/MARK FOR See Exhibit B	12 PAYMENT WILL BE MADE BY Financial Management Division, MS 175 NASA Langley Research Center Hampton, VA 23681-2199
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13 AUTHORITY FOR USING OTHER FULL AND OPEN COMPETITION <input type="checkbox"/> 10 U.S.C. 2304(c)() <input type="checkbox"/> 41 U.S.C. 253(c)()	14 ACCOUNTING AND APPROPRIATION DATA
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15A ITEM NO	15B SUPPLIES/SERVICES	15C QUANTITY	15D UNIT	15E UNIT PRICE	15F AMOUNT
	Facilities and Equipment Support Services (FESS)				See Section B

15G. TOTAL AMOUNT OF CONTRACT

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SEC	DESCRIPTION	PAGE(S)	SEC	DESCRIPTION	PAGE(S)
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x A	SOLICITATION/CONTRACT FORM		x I	CONTRACT CLAUSES	
x B	SUPPLIES OR SERVICES AND PRICE/COST		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH		
x C	DESCRIPTION/SPECS./WORK STATEMENT		x J	LIST OF ATTACHMENTS	
D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS		
x E	INSPECTION AND ACCEPTANCE		K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
x F	DELIVERIES OR PERFORMANCE		L	INSTRS., CONDS. AND NOTICES TO OFFERORS	
x G	CONTRACT ADMINISTRATION DATA		M	EVALUATION FACTORS FOR AWARD	
x H	SPECIAL CONTRACT REQUIREMENTS				

CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 3 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)	18. <input type="checkbox"/> AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.
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19A NAME AND TITLE OF SIGNER (Type or print) Harold E. Lockwood Vice President, Energy, Space & Technology	20A NAME OF CONTRACTING OFFICER Sandra S. Ray
19B NAME OF CONTRACTOR <i>Harold E. Lockwood</i> (Signature of person authorized to sign)	19C DATE SIGNED 8/25/99
20B UNITED STATES OF AMERICA BY <i>Sandra S. Ray</i> (Signature of Contracting Officer)	20C DATE SIGNED 9/30/99

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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 SUPPLIES AND/OR SERVICES TO BE FURNISHED

The Contractor shall, to the extent specified herein, furnish all personnel, facilities, services, supplies, equipment and materials necessary to provide complete performance of Facilities and Equipment Support Services (FESS) as described in Section C, Description/Specifications/Work Statement.

B.2 GENERAL

The terms and conditions of this contract obtain facilities and equipment support services for Langley Research Center by means of a combination of Firm Fixed Price and Indefinite Delivery/Indefinite Quantity work with an Award Fee provision as defined below:

a. Firm Fixed Price Work

Work that can be identified in advance, in both sufficient detail and quantities, and for which a fair and reasonable price can be obtained is to be priced as Firm Fixed Price (FFP). All FFP work is identified in Section C. The FFP work is subject to the Exhibit I, Schedule of Deductions, as determined by the Exhibit G, Performance Requirements Summary (PRS), in conjunction with the "Consequences of Contractor's Failure to Perform Required Services for Firm Fixed Price Work" Clause in Section E.2. The firm fixed price for the contract base and each option year is located in Section B.5.

b. Indefinite Delivery Indefinite Quantity (IDIQ) Work

Work that is of a nonrecurring nature and cannot be sufficiently identified, predetermined, or quantified in advance is identified as IDIQ work. IDIQ work is identified in Section C. IDIQ work will be issued as either Unit Priced Tasks or Unit Priced Labor through Work/Service Requests (WSRs). IDIQ work may also be issued by facsimile, or by electronic commerce methods. IDIQ work shall be ordered in accordance with clause "Indefinite Delivery Indefinite Quantity Work" of this section, Section I clauses entitled "Ordering," "Order Limitations," and "Indefinite Quantity Work," and Section C.13. The IDIQ work is subject to the "Consequences of Contractor's Failure to Perform Required Services for IDIQ Work" Clause in Section E.3. IDIQ price schedules for the contract base and each option year is located in Section B.5.

c. Award Fee

An award fee provision is included in this contract to incentivize the Contractor's technical and business management of the contract, safety performance and extent of SDB participation and subcontracting with small business concerns. The award fee criteria and method of determination are identified in Section I clause "Award Fee for Service Contracts" and in the Government Performance Evaluation Plan.

d. Deductions

This contract is performance based and utilizes various means to calculate deductions if the Contractor fails to perform required services. The Exhibit I, Schedule of Deductions, the Contractor's Self-Evaluation of Performance, and the PRS will be used to assess the Contractor's performance and to determine deductions pursuant to the "Consequences of Contractor's Failure to Perform Required Services" Clauses in Section E.

B.3 INDEFINITE DELIVERY INDEFINITE QUANTITY WORK

a. The guaranteed minimum quantity of work which will be ordered under the IDIQ portion of this contract shall be \$3,000,000 per contract year. The maximum amount of IDIQ work the Government may order is the IDIQ ceiling dollar value for the contract and shall not exceed \$20,000,000 per contract year.

b. The Government is not obligated to place any orders under this contract for IDIQ work except for the guaranteed minimum stated above. If the Government orders supplies or services in excess of the minimum but not up to the maximum, this circumstance shall not constitute the basis for an equitable price adjustment.

B.4 AWARD FEE

a. The maximum available award fee for this contract is \$400,000.

b. The award fee available for the base period is \$400,000. The award fee available for each evaluation period is as follows:

<u>Period</u>	<u>Available Award Fee</u>	<u>Earned Award Fee</u>	<u>Unearned Award Fee</u>
September 1, 1999 – February 28, 2000	\$ 75,000	TBD	TBD
March 1, 2000 – August 31, 2000	\$125,000	TBD	TBD
September 1, 2000 – February 28, 2001	\$ 75,000	TBD	TBD
March 1, 2001 – August 31, 2001	\$125,000	TBD	TBD

c. In the event the Government elects to exercise its option(s) pursuant to the terms of this contract, the award fee available for each option shall be \$200,000. The award fee for each evaluation period is as follows:

<u>Period</u>	<u>Available Award Fee</u>	<u>Earned Award Fee</u>	<u>Unearned Award Fee</u>
<u>Option One</u>			
September 1, 2001 – February 28, 2002	\$ 75,000	TBD	TBD
March 1, 2002 – August 31, 2002	\$125,000	TBD	TBD
<u>Option Two</u>			
September 1, 2002 – February 28, 2003	\$ 75,000	TBD	TBD
March 1, 2003 – August 31, 2003	\$125,000	TBD	TBD
<u>Option Three</u>			
September 1, 2003 – February 28, 2004	\$ 75,000	TBD	TBD
March 1, 2004 – August 31, 2004	\$125,000	TBD	TBD

B.5 PRICE SCHEDULE

a. The total dollar value for the FFP work for the contract is identified in the price schedule for each of the two base years and each of the three option years. The FFP total dollar value is for all work specified in the contract, except for work specifically identified as being included in the IDIQ portions of the contract. For the purposes of adjusting the fixed price in accordance with the Variation In Quantity, Section H clauses, the base period is reflected annually.

b. The Government intends to purchase its requirements for IDIQ work under this contract at the unit prices identified in the price schedules for the two base years and each of the three option years. The price schedules identify Straight Time (ST) and Overtime (OT) unit prices for IDIQ Unit Priced Labor.

PRICE SCHEDULE 1: BASE PERIOD - DECEMBER 1, 1999 Through NOVEMBER 30, 2000

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>
100	PHASE-IN PERIOD (PIP):		
	Total Price for Line Item 100	LOT \$	75,000
101	FIRM FIXED-PRICE (FFP) WORK:		
	Preventive Maintenance Work	Yr. \$	1,995,152
	Other Recurring Work	Yr. \$	2,060,852
	Trouble Call Work	Yr. \$	2,544,117
	Total Price for Line Item 101	\$	6,600,121
	Total Price for Line Items 100 and 101	\$	6,675,121
102	INDEFINITE QUANTITY WORK - UNIT PRICED TASKS:		
102-19	Calibration, Testing and Component Verification		
102-19.1	Fabrication of Hoses (See Section C.19.j.)		
A	1" Synflex	Ln. Ft. \$	15.65
B	1" Single Braided Stainless Steel	Ln. Ft. \$	52.41
C	1" Double Braided	Ln. Ft. \$	59.30
D	3/4" Synflex	Ln. Ft. \$	10.03
E	3/4" Single Braided	Ln. Ft. \$	31.34
F	3/4" Double Braided	Ln. Ft. \$	34.82
G	1/2" Synflex	Ln. Ft. \$	4.47
H	1/2" Single Braided	Ln. Ft. \$	20.53
I	1/2" Double Braided	Ln. Ft. \$	23.39
J	3/8" Synflex	Ln. Ft. \$	3.24
K	3/8" Single Braided	Ln. Ft. \$	14.51
L	3/8" Double Braided	Ln. Ft. \$	16.55
M	1/4" Synflex	Ln. Ft. \$	2.21
N	1/4" Single Braided	Ln. Ft. \$	12.01
O	1/4" Double Braided	Ln. Ft. \$	13.66
P	1/4" Air Hose	Ln. Ft. \$	0.79
Q	3/8" Air Hose	Ln. Ft. \$	1.14
R	1/2" Air Hose	Ln. Ft. \$	1.71
102-21	Buildings and Structures Maintenance and Repair		
102-21.1	Flooring Replacement (See Section C.21.h.(1)(a))		
A	Resilient Tiles, 12"X12", 1/8" Thick	Sq. Ft. \$	1.4666
B	Linoleum Sheet Flooring	Sq. Ft. \$	2.5013
C	Vinyl Sheet Flooring	Sq. Ft. \$	2.0953
D	Finished Wood Flooring	Sq. Ft. \$	1.9611
E	Metal Flooring	Sq. Ft. \$	4.1291
F	Elevated (Raised Computer) Flooring	Sq. Ft. \$	11.1489
G	Patching Concrete Floors	Sq. Ft. \$	1.5197
H	Replacing Vinyl Baseboards	Ln. Ft. \$	0.9154
I	Ceramic Tile	Sq. Ft. \$	5.2090
102-21.2	Ceiling Tile Replacement (See Section C.21.h.(1)(b))		
A	Acoustical Ceiling Tile, 2'X4' and 2'X2', 5/8" Thick	Sq. Ft. \$	1.0919
102-21.3	Roofing Replacement (See Section C.21.h.(2)(c))		
A	Asphalt Shingle Roofing	Sq. Ft. \$	0.8693
B	Modified Bituminous/Single Ply Membrane	Sq. Ft. \$	1.2702
C	Built-up Roofing, 4-Ply	Sq. Ft. \$	2.2442
D	Slate Roofing	Sq. Ft. \$	17.8510
E	Corrugated Fiberglass	Sq. Ft. \$	4.5817
F	Copper Flashing	Ln. Ft. \$	8.2040
102-21.4	Painting (See Section C.21.i.)		
A	Interior Painting, Gypsum Wallboard, One Coat	Sq. Ft. \$	0.2008
B	Interior Painting, Concrete/Concrete Block, One Coat	Sq. Ft. \$	0.2333
C	Interior Painting, Ferrous Surfaces, One Coat	Sq. Ft. \$	0.2556
D	Interior Painting, Wood Trim, One Coat	Sq. Ft. \$	0.2216
102-25	Fire Protection and Life Safety System Maintenance and Repair		
102-25.1	Replace Fire Hydrant (See Section C.25.g.(2))	Each \$	1,594.29

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>
102-27	Roads and Other Surfaced Areas Maintenance and Repair		
102-27.1	Concrete Curb and Gutter (See Section C.27.f(2)(b))	Ln. Ft. \$	17.28
102-27.2	Replacement of Wheel Stops in Parking Areas (See Section C.27.f(2)(c))	Each \$	29.37
102-27.3	Sealing Concrete Joints and Cracks (See Section C.27.f(2)(f))	Ln. Ft. \$	20.91
102-27.4	Pavement Striping and Stenciling (See Section C.27.h.(2))		
A	Roadway Striping - White or Yellow Reflective	Ln. Ft. \$	0.1091
B	Parking Lot Striping - White	Ln. Ft. \$	0.1218
C	Pavement Crosswalks - White Reflective	Ln. Ft. \$	0.5923
D	Pavement Stop Bars - White Reflective	Ln. Ft. \$	0.8758
E	Traffic Letters and Numbers - White	Each \$	0.88
F	Handicap Symbols - Blue Box, White Symbol & Border	Each \$	22.45
G	Parking Stall Letters and Numbers	Each \$	21.29
H	Curb Painting-Yellow, Red or Blue (Or as Directed by CO)	Ln. Ft. \$	12.36
I	Curb Stenciling - White or Black	Each \$	12.48
102-27.5	Snow Plowing/Removal (See Section C.27.i) Roads and Parking Lots		
A	Up to Four (4) inches	Sq. Yd. \$	0.0112
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.0139
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	0.0213
D	Greater than 14 inches	Sq. Yd. \$	0.1596
102-27.6	Ice Treatment (See Section C.27.i)		
A	Sand Applied	Ton \$	31.46
B	Salt Applied	Ton \$	211.21
C	Other Chemicals Applied	Ton \$	510.79
102-27.7	Snow Plowing/Removal - Sidewalks and Entrances		
A	Up to Four (4) inches	Sq. Yd. \$	0.2744
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.5487
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	1.0975
D	Greater than 14 inches	Sq. Yd. \$	2.0578

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>ST</u> <u>Unit Price</u>	<u>OT</u> <u>Unit Price</u>
103	INDEFINITE QUANTITY WORK - UNIT PRICED LABOR			
103-13.1	Davis-Bacon Act (DBA) Trades (These labor rates are subject to the DBA and General Decision (GD) VA980035 Building unless otherwise indicated.)			
	Bricklayer (Mason)	Hr. \$		
	Carpenter	Hr. \$		
	Cement Mason	Hr. \$		
	Electrician	Hr. \$		
	Front End Loader Operator	Hr. \$		
	HVAC/R Mechanic	Hr. \$		
	Insulator/Coveror	Hr. \$		
	Ironworker	Hr. \$		
	Laborer	Hr. \$		
	Millwright	Hr. \$		
	Painter	Hr. \$		
	Painter, GD VA980018 - Heavy	Hr. \$		
	Plumber/Pipefitter	Hr. \$		
	Power Equipment Operator, Crane	Hr. \$		
	Roofer	Hr. \$		
	Welder	Hr. \$		
103-13.2	Service Contract Act (SCA). Trades (These labor rates are subject to the SCA.)			
	Asbestos Worker	Hr. \$		
	Asphalt Worker	Hr. \$		
	Backhoe Operator	Hr. \$		
	Bricklayer (Mason)	Hr. \$		
	Carpenter	Hr. \$		



PRICE SCHEDULE 2: BASE PERIOD - DECEMBER 1, 2000 Through NOVEMBER 30, 2001

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>
201	FIRM FIXED-PRICE (FFP) WORK:		
	Preventive Maintenance Work	Yr. \$	-
	Other Recurring Work	Yr. \$	-
	Trouble Call Work (11,000 estimated per year)	Yr. \$	5
	Total Price for Line Item 201	\$	6,398,910
202	INDEFINITE QUANTITY WORK - UNIT PRICED TASKS:		
202-19	Calibration, Testing and Component Verification		
202-19.1	Fabrication of Hoses (See Section C.19.j.)		
A	1" Synflex	Ln. Ft. \$	15.94
B	1" Single Braided Stainless Steel	Ln. Ft. \$	53.39
C	1" Double Braided	Ln. Ft. \$	60.41
D	3/4" Synflex	Ln. Ft. \$	10.22
E	3/4" Single Braided	Ln. Ft. \$	31.92
F	3/4" Double Braided	Ln. Ft. \$	35.47
G	1/2" Synflex	Ln. Ft. \$	4.56
H	1/2" Single Braided	Ln. Ft. \$	20.91
I	1/2" Double Braided	Ln. Ft. \$	23.83
J	3/8" Synflex	Ln. Ft. \$	3.30
K	3/8" Single Braided	Ln. Ft. \$	14.78
L	3/8" Double Braided	Ln. Ft. \$	16.86
M	1/4" Synflex	Ln. Ft. \$	2.25
N	1/4" Single Braided	Ln. Ft. \$	12.23
O	1/4" Double Braided	Ln. Ft. \$	13.92
P	1/4" Air Hose	Ln. Ft. \$	0.81
Q	3/8" Air Hose	Ln. Ft. \$	1.16
R	1/2" Air Hose	Ln. Ft. \$	1.75
202-21	Buildings and Structures Maintenance and Repair		
202-21.1	Flooring Replacement (See Section C.21.h.(1)(a))		
A	Resilient Tiles, 12"X12", 1/8" Thick	Sq. Ft. \$	1.4788
B	Linoleum Sheet Flooring	Sq. Ft. \$	2.5193
C	Vinyl Sheet Flooring	Sq. Ft. \$	2.1131
D	Finished Wood Flooring	Sq. Ft. \$	1.9671
E	Metal Flooring	Sq. Ft. \$	4.1651
F	Elevated (Raised Computer) Flooring	Sq. Ft. \$	11.3398
G	Patching Concrete Floors	Sq. Ft. \$	1.5314
H	Replacing Vinyl Baseboards	Ln. Ft. \$	0.9241
J	Ceramic Tile	Sq. Ft. \$	5.2625
202-21.2	Ceiling Tile Replacement (See Section C.21.h.(1)(b))		
A	Acoustical Ceiling Tile, 2'X4' and 2'X2', 5/8" Thick	Sq. Ft. \$	1.1050
202-21.3	Roofing Replacement (See Section C.21.h.(2)(c))		
A	Asphalt Shingle Roofing	Sq. Ft. \$	0.8784
B	Modified Bituminous/Single Ply Membrane	Sq. Ft. \$	1.2904
C	Built-up Roofing, 4-Ply	Sq. Ft. \$	2.2634
D	Slate Roofing	Sq. Ft. \$	17.9550
E	Corrugated Fiberglass	Sq. Ft. \$	4.6447
F	Copper Flashing	Ln. Ft. \$	8.2912
202-21.4	Painting (See Section C.21.i.)		
A	Interior Painting, Gypsum Wallboard, One Coat	Sq. Ft. \$	0.2018
B	Interior Painting, Concrete/Concrete Block, One Coat	Sq. Ft. \$	0.2346
C	Interior Painting, Ferrous Surfaces, One Coat	Sq. Ft. \$	0.2569
D	Interior Painting, Wood Trim, One Coat	Sq. Ft. \$	0.2226
202-25	Fire Protection and Life Safety System Maintenance and Repair		
202-25.1	Replace Fire Hydrant (See Section C.25.g.(2))	Each \$	1,611.67
202-27	Roads and Other Surfaced Areas Maintenance and Repair		
202-27.1	Concrete Curb and Gutter (See Section C.27.f(2)(b))	Ln. Ft. \$	17.46
202-27.2	Replacement of Wheel Stops in Parking Areas (See Section C.27.f(2)(c))	Each \$	29.80

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>
202-27.3	Sealing Concrete Joints and Cracks (See Section C.27.f(2)(f))	Ln. Ft. \$	21.07
202-27.4	Pavement Striping and Stenciling (See Section C.27.h.(2))		
A	Roadway Striping - White or Yellow Reflective	Ln. Ft. \$	0.1106
B	Parking Lot Striping - White	Ln. Ft. \$	0.1234
C	Pavement Crosswalks - White Reflective	Ln. Ft. \$	0.5941
D	Pavement Stop Bars - White Reflective	Ln. Ft. \$	0.8784
E	Traffic Letters and Numbers - White	Each \$	0.89
F	Handicap Symbols - Blue Box, White Symbol & Border	Each \$	22.78
G	Parking Stall Letters and Numbers	Each \$	21.68
H	Curb Painting - Yellow, Red or Blue(Or as Directed by CO)	Ln. Ft. \$	12.36
I	Curb Stenciling - White or Black	Each \$	12.49
202-27.5	Snow Plowing/Removal (See Section C.27.i) - Roads and Parking Lots		
A	Up to Four (4) inches	Sq. Yd. \$	0.0112
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.0139
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	0.0213
D	Greater than 14 inches	Sq. Yd. \$	0.1598
202-27.6	Ice Treatment (See Section C.27.i)		
A	Sand Applied	Ton \$	31.75
B	Salt Applied	Ton \$	214.57
C	Other Chemicals Applied	Ton \$	519.27
202-27.7	Snow Plowing/Removal - Sidewalks and Entrances		
A	Up to Four (4) inches	Sq. Yd. \$	0.2747
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.5495
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	1.0989
D	Greater than 14 inches	Sq. Yd. \$	2.0604

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>ST</u> <u>Unit Price</u>	<u>OT</u> <u>Unit Price</u>
203	INDEFINITE QUANTITY WORK - UNIT PRICED LABOR			
203-13.1	Davis-Bacon Act (DBA) Trades (These labor rates are subject to the DBA and General Decision VA980035 Building unless otherwise indicated.)			
	Bricklayer (Mason)	Hr. \$	 \$	 \$
	Carpenter	Hr. \$	 \$	 \$
	Cement Mason	Hr. \$	 \$	 \$
	Electrician	Hr. \$	 \$	 \$
	Front End Loader Operator	Hr. \$	 \$	 \$
	HVAC/R Mechanic	Hr. \$	 \$	 \$
	Insulator/Coveror	Hr. \$	 \$	 \$
	Ironworker	Hr. \$	 \$	 \$
	Laborer	Hr. \$	 \$	 \$
	Millwright	Hr. \$	 \$	 \$
	Painter	Hr. \$	 \$	 \$
	Painter, GD VA980018 - Heavy	Hr. \$	 \$	 \$
	Plumber/Pipefitter	Hr. \$	 \$	 \$
	Power Equipment Operator, Crane	Hr. \$	 \$	 \$
	Roofer	Hr. \$	 \$	 \$
	Welder	Hr. \$	 \$	 \$
203-13.2	Service Contract Act (SCA). Trades (These labor rates are subject to the SCA.)			
	Asbestos Worker	Hr. \$	 \$	 \$
	Asphalt Worker	Hr. \$	 \$	 \$
	Backhoe Operator	Hr. \$	 \$	 \$
	Bricklayer (Mason)	Hr. \$	 \$	 \$
	Carpenter	Hr. \$	 \$	 \$
	Concrete Worker	Hr. \$	 \$	 \$
	Crane Mechanic	Hr. \$	 \$	 \$
	Drafter 1	Hr. \$	 \$	 \$
	Drywall Finisher/Taper	Hr. \$	 \$	 \$

PRICE SCHEDULE 3: OPTION PERIOD 1 - DECEMBER 1, 2001 Through NOVEMBER 30, 2002

Item No.	Description Of Services/Supplies	Unit	Unit Price
301	FIRM FIXED-PRICE (FFP) WORK:		
	Preventive Maintenance Work	Yr. \$	
	Other Recurring Work	Yr. \$	
	Trouble Call Work	Yr. \$	
	Total Price for Contract Line Item 301	\$	6,444,333
302	INDEFINITE QUANTITY WORK - UNIT PRICED TASKS:		
302-19	Calibration, Testing and Component Verification		
302-19.1	Fabrication of Hoses (See Section C.19.j.)		
A	1" Synflex	Ln. Ft. \$	16.24
B	1" Single Braided Stainless Steel	Ln. Ft. \$	54.39
C	1" Double Braided	Ln. Ft. \$	61.54
D	3/4" Synflex	Ln. Ft. \$	10.41
E	3/4" Single Braided	Ln. Ft. \$	32.52
F	3/4" Double Braided	Ln. Ft. \$	36.13
G	1/2" Synflex	Ln. Ft. \$	4.64
H	1/2" Single Braided	Ln. Ft. \$	21.30
I	1/2" Double Braided	Ln. Ft. \$	24.28
J	3/8" Synflex	Ln. Ft. \$	3.36
K	3/8" Single Braided	Ln. Ft. \$	15.06
L	3/8" Double Braided	Ln. Ft. \$	17.17
M	1/4" Synflex	Ln. Ft. \$	2.29
N	1/4" Single Braided	Ln. Ft. \$	12.46
O	1/4" Double Braided	Ln. Ft. \$	14.18
P	1/4" Air Hose	Ln. Ft. \$	0.82
Q	3/8" Air Hose	Ln. Ft. \$	1.18
R	1/2" Air Hose	Ln. Ft. \$	1.78
302-21	Buildings and Structures Maintenance and Repair		
302-21.1	Flooring Replacement (See Section C.21.h.(1)(a))		
A	Résilient Tiles, 12"X12", 1/8" Thick	Sq. Ft. \$	1.4913
B	Linoleum Sheet Flooring	Sq. Ft. \$	2.5376
C	Vinyl Sheet Flooring	Sq. Ft. \$	2.1313
D	Finished Wood Flooring	Sq. Ft. \$	1.9733
E	Metal Flooring	Sq. Ft. \$	4.2020
F	Elevated (Raised Computer) Flooring	Sq. Ft. \$	11.5344
G	Patching Concrete Floors	Sq. Ft. \$	1.5433
H	Replacing Vinyl Baseboards	Ln. Ft. \$	0.9331
I	Ceramic Tile	Sq. Ft. \$	5.3170
302-21.2	Ceiling Tile Replacement (See Section C.21.h.(1)(b))		
A	Acoustical Ceiling Tile, 2'X4' and 2'X2', 5/8" Thick	Sq. Ft. \$	1.1183
302-21.3	Roofing Replacement (See Section C.21.h.(2)(c))		
A	Asphalt Shingle Roofing	Sq. Ft. \$	0.8866
B	Modified Bituminous/Single Ply Membrane	Sq. Ft. \$	1.3110
C	Built-up Roofing, 4-Ply	Sq. Ft. \$	2.2829
D	Slate Roofing	Sq. Ft. \$	18.1760
E	Corrugated Fiberglass	Sq. Ft. \$	4.6970
F	Copper Flashing	Ln. Ft. \$	8.3803
302-21.4	Painting (See Section C.21.i.)		
A	Interior Painting, Gypsum Wallboard, One Coat	Sq. Ft. \$	0.2028
B	Interior Painting, Concrete/Concrete Block, One Coat	Sq. Ft. \$	0.2358
C	Interior Painting, Ferrous Surfaces, One Coat	Sq. Ft. \$	0.2582
D	Interior Painting, Wood Trim, One Coat	Sq. Ft. \$	0.2237
302-25	Fire Protection and Life Safety System Maintenance and Repair		
302-25.1	Replace Fire Hydrant (See Section C.25.g.(2))	Each \$	1,629.39
302-27	Roads and Other Surfaced Areas Maintenance and Repair		
302-27.1	Concrete Curb and Gutter (See Section C.27.f(2)(b))	Ln. Ft. \$	17.64
302-27.2	Replacement of Wheel Stops in Parking Areas (See Section C.27.f(2)(c))	Each \$	30.24

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>		
302-27.3	Sealing Concrete Joints and Cracks (See Section C.27.f(2)(f))	Ln. Ft. \$	21.23		
302-27.4	Pavement Striping and Stenciling (See Section C.27.h.(2))				
A	Roadway Striping - White or Yellow Reflective	Ln. Ft. \$	0.1122		
B	Parking Lot Striping - White	Ln. Ft. \$	0.1250		
C	Pavement Crosswalks - White Reflective	Ln. Ft. \$	0.5959		
D	Pavement Stop Bars - White Reflective	Ln. Ft. \$	0.8811		
E	Traffic Letters and Numbers - White	Each \$	0.90		
F	Handicap Symbols - Blue Box, White Symbol & Border	Each \$	23.11		
G	Parking Stall Letters and Numbers	Each \$	22.08		
H	Curb Painting-Yellow, Red or Blue (Or as Directed by CO)	Ln. Ft. \$	12.37		
I	Curb Stenciling - White or Black	Each \$	12.50		
302-27.5	Snow Plowing/Removal (See Section C.27.i) - Roads and Parking Lots				
A	Up to Four (4) inches	Sq. Yd. \$	0.0113		
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.0139		
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	0.0213		
D	Greater than 14 inches	Sq. Yd. \$	0.1600		
302-27.6	Ice Treatment (See Section C.27.i)				
A	Sand Applied	Ton \$	32.05		
B	Salt Applied	Ton \$	217.99		
C	Other Chemicals Applied	Ton \$	527.87		
302-27.7	Snow Plowing/Removal - Sidewalks and Entrances				
A	Up to Four (4) inches	Sq. Yd. \$	0.2751		
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.5502		
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	1.1003		
D	Greater than 14 inches	Sq. Yd. \$	2.0631		
<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>ST</u>	<u>OT</u>	
			<u>Unit Price</u>	<u>Unit Price</u>	
303	INDEFINITE QUANTITY WORK - UNIT PRICED LABOR				
303-13.1	Davis-Bacon Act (DBA) Trades (These labor rates are subject to the DBA and General Decision (GD) VA980035 Building unless otherwise indicated.)				
	Bricklayer (Mason)	Hr. \$			
	Carpenter	Hr. \$			
	Cement Mason	Hr. \$			
	Electrician	Hr. \$			
	Front End Loader Operator	Hr. \$			
	HVAC/R Mechanic	Hr. \$			
	Insulator/Coveror	Hr. \$			
	Ironworker	Hr. \$			
	Laborer	Hr. \$			
	Millwright	Hr. \$			
	Painter	Hr. \$			
	Painter, GD VA980018 - Heavy	Hr. \$			
	Plumber/Pipefitter	Hr. \$			
	Power Equipment Operator, Crane	Hr. \$			
	Roofer	Hr. \$			
	Welder	Hr. \$			
303-13.2	Service Contract Act (SCA). Trades (These labor rates are subject to the SCA.)				
	Asbestos Worker	Hr. \$			
	Asphalt Worker	Hr. \$			
	Backhoe Operator	Hr. \$			
	Bricklayer (Mason)	Hr. \$			
	Carpenter	Hr. \$			
	Concrete Worker	Hr. \$			
	Crane Mechanic	Hr. \$			

PRICE SCHEDULE 4: OPTION PERIOD 2 - DECEMBER 1, 2002 Through NOVEMBER 30, 2003

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>
401	FIRM FIXED-PRICE (FFP) WORK:		
	Preventive Maintenance Work	Yr. \$	
	Other Recurring Work	Yr. \$	
	Trouble Call Work	Yr. \$	
	Total Price for Line Item 401	\$	6,498,967
402	INDEFINITE QUANTITY WORK - UNIT PRICED TASKS:		
402-19	Calibration, Testing and Component Verification		
402-19.1	Fabrication of Hoses (See Section C.19.j.)		
A	1" Synflex	Ln. Ft. \$	16.54
B	1" Single Braided Stainless Steel	Ln. Ft. \$	55.41
C	1" Double Braided	Ln. Ft. \$	62.70
D	3/4" Synflex	Ln. Ft. \$	10.61
E	3/4" Single Braided	Ln. Ft. \$	33.13
F	3/4" Double Braided	Ln. Ft. \$	36.81
G	1/2" Synflex	Ln. Ft. \$	4.73
H	1/2" Single Braided	Ln. Ft. \$	21.71
I	1/2" Double Braided	Ln. Ft. \$	24.73
J	3/8" Synflex	Ln. Ft. \$	3.43
K	3/8" Single Braided	Ln. Ft. \$	15.34
L	3/8" Double Braided	Ln. Ft. \$	17.49
M	1/4" Synflex	Ln. Ft. \$	2.33
N	1/4" Single Braided	Ln. Ft. \$	12.70
O	1/4" Double Braided	Ln. Ft. \$	14.44
P	1/4" Air Hose	Ln. Ft. \$	0.84
Q	3/8" Air Hose	Ln. Ft. \$	1.20
R	1/2" Air Hose	Ln. Ft. \$	1.81
402-21	Buildings and Structures Maintenance and Repair		
402-21.1	Flooring Replacement (See Section C.21.h.(1)(a))		
A	Resilient Tiles, 12"X12", 1/8" Thick	Sq. Ft. \$	1.5041
B	Linoleum Sheet Flooring	Sq. Ft. \$	2.5564
C	Vinyl Sheet Flooring	Sq. Ft. \$	2.1499
D	Finished Wood Flooring	Sq. Ft. \$	1.9797
E	Metal Flooring	Sq. Ft. \$	4.2377
F	Elevated (Raised Computer) Flooring	Sq. Ft. \$	11.7333
G	Patching Concrete Floors	Sq. Ft. \$	1.5555
H	Replacing Vinyl Baseboards	Ln. Ft. \$	0.9422
I	Ceramic Tile	Sq. Ft. \$	5.3729
402-21.2	Ceiling Tile Replacement (See Section C.21.h.(1)(b))		
A	Acoustical Ceiling Tile, 2'X4' and 2'X2', 5/8" Thick	Sq. Ft. \$	1.1319
402-21.3	Roofing Replacement (See Section C.21.h.(2)(c))		
A	Asphalt Shingle Roofing	Sq. Ft. \$	0.8949
B	Modified Bituminous/Single Ply Membrane	Sq. Ft. \$	1.3321
C	Built-up Roofing, 4-Ply	Sq. Ft. \$	2.3018
D	Slate Roofing	Sq. Ft. \$	18.2850
E	Corrugated Fiberglass	Sq. Ft. \$	4.7506
F	Copper Flashing	Ln. Ft. \$	8.4685
402-21.4	Painting (See Section C.21.i.)		
A	Interior Painting, Gypsum Wallboard, One Coat	Sq. Ft. \$	0.2039
B	Interior Painting, Concrete/Concrete Block, One Coat	Sq. Ft. \$	0.2371
C	Interior Painting, Ferrous Surfaces, One Coat	Sq. Ft. \$	0.2595
D	Interior Painting, Wood Trim, One Coat	Sq. Ft. \$	0.2248

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>Unit Price</u>
402-25	Fire Protection and Life Safety System Maintenance and Repair	Each	\$ 1,647.54
402-25.1	Replace Fire Hydrant (See Section C.25.g.(2))		
402-27	Roads and Other Surfaced Areas Maintenance and Repair	Ln. Ft.	\$ 17.83
402-27.1	Concrete Curb and Gutter (See Section C.27.f(2)(b))	Each	\$ 30.69
402-27.2	Replacement of Wheel Stops in Parking Areas (See Section C.27.f(2)(c))	Ln. Ft.	\$ 21.39
402-27.3	Sealing Concrete Joints and Cracks (See Section C.27.f(2)(f))		
402-27.4	Pavement Strping and Stenciling (See Section C.27.h.(2))		
A	Roadway Strping - White or Yellow Reflective	Ln. Ft.	\$ 0.1139
B	Parking Lot Strping - White	Ln. Ft.	\$ 0.1266
C	Pavement Crosswalks - White Reflective	Ln. Ft.	\$ 0.5977
D	Pavement Stop Bars - White Reflective	Ln. Ft.	\$ 0.8838
E	Traffic Letters and Numbers - White	Each	\$ 0.91
F	Handicap Symbols - Blue Box, White Symbol & Border	Each	\$ 23.45
G	Parking Stall Letters and Numbers	Each	\$ 22.49
H	Curb Painting-Yellow, Red or Blue (Or as Directed by CO)	Ln. Ft.	\$ 12.38
I	Curb Stenciling - White or Black	Each	\$ 12.50
402-27.5	Snow Plowing/Removal (See Section C.27.i) - Roads and Parking Lots		
A	Up to Four (4) inches	Sq. Yd.	\$ 0.0113
B	Four (4) to & Including Eight (8) inches	Sq. Yd.	\$ 0.0139
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd.	\$ 0.0213
D	Greater than 14 inches	Sq. Yd.	\$ 0.1600
402-27.6	Ice Treatment (See Section C.27.i)		
A	Sand Applied	Ton	\$ 32.34
B	Salt Applied	Ton	\$ 221.47
C	Other Chemicals Applied	Ton	\$ 536.67
402-27.7	Snow Plowing/Removal - Sidewalks and Entrances		
A	Up to Four (4) inches	Sq. Yd.	\$ 0.2752
B	Four (4) to & Including Eight (8) inches	Sq. Yd.	\$ 0.5504
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd.	\$ 1.1008
D	Greater than 14 inches	Sq. Yd.	\$ 2.0640

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>ST Unit Price</u>	<u>OT Unit Price</u>
403	INDEFINITE QUANTITY WORK - UNIT PRICED LABOR			
403-13.1	Davis-Bacon Act (DBA) Trades (These labor rates are subject to the DBA and General Decision VA980035 Building unless otherwise indicated.)			
	Bricklayer (Mason)	Hr.	\$	\$
	Carpenter	Hr.	\$	\$
	Cement Mason	Hr.	\$	\$
	Electrician	Hr.	\$	\$
	Front End Loader Operator	Hr.	\$	\$
	HVAC/R Mechanic	Hr.	\$	\$
	Insulator/Coveror	Hr.	\$	\$
	Ironworker	Hr.	\$	\$
	Laborer	Hr.	\$	\$
	Millwright	Hr.	\$	\$
	Painter	Hr.	\$	\$
	Painter, GD VA980018 - Heavy	Hr.	\$	\$
	Plumber/Pipefitter	Hr.	\$	\$
	Power Equipment Operator, Crane	Hr.	\$	\$
	Roofer	Hr.	\$	\$
	Welder	Hr.	\$	\$
403-13.2	Service Contract Act (SCA). Trades (These labor rates are subject to the SCA.)			
	Asbestos Worker	Hr.	\$	\$
	Asphalt Worker	Hr.	\$	\$
	Backhoe Operator	Hr.	\$	\$

<u>Item No.</u>	<u>Description Of Services/Supplies</u>	<u>Unit</u>	<u>ST</u>		<u>OT</u>
			<u>Unit Price</u>		<u>Unit Price</u>
	Bricklayer (Mason)	Hr.	\$		\$
	Carpenter	Hr.	\$		\$
	Concrete Worker	Hr.	\$		\$
	Crane Mechanic	Hr.	\$		\$
	Drafter 1	Hr.	\$		\$
	Drywall Finisher/Taper	Hr.	\$		\$
	Drywall Installer/Lather	Hr.	\$		\$
	Electrician, Fire Alarm Systems	Hr.	\$		\$
	Electrician, High Voltage	Hr.	\$		\$
	Electrician	Hr.	\$		\$
	Electronics Technician	Hr.	\$		\$
	Elevator Mechanic	Hr.	\$		\$
	Engineer, Steam Stationary	Hr.	\$		\$
	Fire Sprinkler Technician	Hr.	\$		\$
	Front End Loader Operator	Hr.	\$		\$
	HVAC/R Mechanic	Hr.	\$		\$
	HVAC/R Technician	Hr.	\$		\$
	Insulator/Coveror	Hr.	\$		\$
	Laborer	Hr.	\$		\$
	Machinist, Precision	Hr.	\$		\$
	Machinist, Repairman	Hr.	\$		\$
	Mechanic, Calibration A	Hr.	\$		\$
	Mechanic, Calibration B	Hr.	\$		\$
	Mechanic, Equipment	Hr.	\$		\$
	Millwright, Maintenance	Hr.	\$		\$
	Operator, Boiler	Hr.	\$		\$
	Oxygen Cleaning Technician	Hr.	\$		\$
	Painter, Maintenance	Hr.	\$		\$
	Person, Utility	Hr.	\$		\$
	Pipefitter, Maintenance	Hr.	\$		\$
	Plant Technician	Hr.	\$		\$
	Power Equipment Operator, Crane	Hr.	\$		\$
	Rigger, Maintenance	Hr.	\$		\$
	Roofer	Hr.	\$		\$
	Sheet Metal Worker	Hr.	\$		\$
	Steamfitter	Hr.	\$		\$
	Water Treatment Analysis	Hr.	\$		\$
	Welder	Hr.	\$		\$
				<u>Unit Rate</u>	
404	MATERIAL TO SUPPORT UNIT PRICED LABOR:				
	Material Fully Burdened Rate		\$1.00		
405	EQUIPMENT TO SUPPORT UNIT PRICED LABOR:				
	Equipment Fully Burdened Rate		\$1.00		

PRICE SCHEDULE 5: OPTION PERIOD 3 - DECEMBER 1, 2003 Through NOVEMBER 30, 2004

Item No.	Description Of Services/Supplies	Unit	Unit Price
501	FIRM FIXED-PRICE (FFP) WORK:		
	Preventive Maintenance Work	Yr. \$	
	Other Recurring Work	Yr. \$	
	Trouble Call Work	Yr. \$	
	Total Price for Line Items 501	\$	6,551,491
502	INDEFINITE QUANTITY WORK - UNIT PRICED TASKS:		
502-19	Calibration, Testing and Component Verification		
502-19.1	Fabrication of Hoses (See Section C.19.)		
A	1" Synflex	Ln. Ft. \$	16.86 \$
B	1" Single Braided Stainless Steel	Ln. Ft. \$	56.46 \$
C	1" Double Braided	Ln. Ft. \$	63.88 \$
D	3/4" Synflex	Ln. Ft. \$	10.81 \$
E	3/4" Single Braided	Ln. Ft. \$	33.76 \$
F	3/4" Double Braided	Ln. Ft. \$	37.51 \$
G	1/2" Synflex	Ln. Ft. \$	4.82 \$
H	1/2" Single Braided	Ln. Ft. \$	22.12 \$
I	1/2" Double Braided	Ln. Ft. \$	25.20 \$
J	3/8" Synflex	Ln. Ft. \$	3.49 \$
K	3/8" Single Braided	Ln. Ft. \$	15.63 \$
L	3/8" Double Braided	Ln. Ft. \$	17.83 \$
M	1/4" Synflex	Ln. Ft. \$	2.38 \$
N	1/4" Single Braided	Ln. Ft. \$	12.94 \$
O	1/4" Double Braided	Ln. Ft. \$	14.72 \$
P	1/4" Air Hose	Ln. Ft. \$	0.86 \$
Q	3/8" Air Hose	Ln. Ft. \$	1.23 \$
R	1/2" Air Hose	Ln. Ft. \$	1.85 \$
502-21	Buildings and Structures Maintenance and Repair		
502-21.1	Flooring Replacement (See Section C.21.h.(1)(a))		
A	Resilient Tiles, 12"X12", 1/8" Thick	Sq. Ft. \$	1.5173 \$
B	Linoleum Sheet Flooring	Sq. Ft. \$	2.5759 \$
C	Vinyl Sheet Flooring	Sq. Ft. \$	2.1692 \$
D	Finished Wood Flooring	Sq. Ft. \$	1.9864 \$
E	Metal Flooring	Sq. Ft. \$	4.2704 \$
F	Elevated (Raised Computer) Flooring	Sq. Ft. \$	11.9377 \$
G	Patching Concrete Floors	Sq. Ft. \$	1.5681 \$
H	Replacing Vinyl Baseboards	Ln. Ft. \$	0.9517 \$
I	Ceramic Tile	Sq. Ft. \$	5.4305 \$
502-21.2	Ceiling Tile Replacement (See Section C.21.h.(1)(b))		
A	Acoustical Ceiling Tile, 2'X4' and 2'X2', 5/8" Thick	Sq. Ft. \$	1.1460 \$
502-21.3	Roofing Replacement (See Section C.21.h.(2)(c))		
A	Asphalt Shingle Roofing	Sq. Ft. \$	0.9024 \$
B	Modified Bituminous/Single Ply Membrane	Sq. Ft. \$	1.3538 \$
C	Built-up Roofing, 4-Ply	Sq. Ft. \$	2.3192 \$
D	Slate Roofing	Sq. Ft. \$	18.2830 \$
E	Corrugated Fiberglass	Sq. Ft. \$	4.7944 \$
F	Copper Flashing	Ln. Ft. \$	8.5539 \$
502-21.4	Painting (See Section C.21.i.)		
A	Interior Painting, Gypsum Wallboard, One Coat	Sq. Ft. \$	0.2050 \$
B	Interior Painting, Concrete/Concrete Block, One Coat	Sq. Ft. \$	0.2385 \$
C	Interior Painting, Ferrous Surfaces, One Coat	Sq. Ft. \$	0.2608 \$
D	Interior Painting, Wood Trim, One Coat	Sq. Ft. \$	0.2259 \$
502-25	Fire Protection and Life Safety System Maintenance and Repair		
502-25.1	Replace Fire Hydrant (See Section C.25.g.(2))	Each \$	1,666.25 \$
502-27	Roads and Other Surfaced Areas Maintenance and Repair		
502-27.1	Concrete Curb and Gutter (See Section C.27.f(2)(b))	Ln. Ft. \$	18.02 \$
502-27.2	Replacement of Wheel Stops in Parking Areas (See Section C.27.f(2)(c))	Each \$	31.15 \$

Item No.	Description Of Services/Supplies	Unit	Unit Price
502-27.3	Sealing Concrete Joints and Cracks (See Section C.27.f(2)(f))	Ln. Ft. \$	21.56 \$
502-27.4	Pavement Striping and Stenciling (See Section C.27.h.(2))		
A	Roadway Striping - White or Yellow Reflective	Ln. Ft. \$	0.1156 \$
B	Parking Lot Striping - White	Ln. Ft. \$	0.1283 \$
C	Pavement Crosswalks - White Reflective	Ln. Ft. \$	0.5996 \$
D	Pavement Stop Bars - White Reflective	Ln. Ft. \$	0.8867 \$
E	Traffic Letters and Numbers - White	Each \$	0.92 \$
F	Handicap Symbols - Blue Box, White Symbol & Border	Each \$	23.80 \$
G	Parking Stall Letters and Numbers	Each \$	22.90 \$
H	Curb Painting-Yellow, Red or Blue (Or as Directed by CO)	Ln. Ft. \$	12.39 \$
I	Curbs Stenciling - White or Black	Each \$	12.51 \$
502-27.5	Snow Plowing/Removal (See Section C.27.i) Roads and Parking Lots		
A	Up to Four (4) inches	Sq. Yd. \$	0.0562 \$
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.0694 \$
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	0.1065 \$
D	Greater than 14 inches	Sq. Yd. \$	0.7991 \$
502-27.6	Ice Treatment (See Section C.27.i)		
A	Sand Applied	Ton \$	32.62 \$
B	Salt Applied	Ton \$	225.02 \$
C	Other Chemicals Applied	Ton \$	545.68 \$
502-27.7	Snow Plowing/Removal - Sidewalks and Entrances		
A	Up to Four (4) inches	Sq. Yd. \$	0.2748 \$
B	Four (4) to & Including Eight (8) inches	Sq. Yd. \$	0.5496 \$
C	Eight (8) to & Including Fourteen (14) inches	Sq. Yd. \$	1.0993 \$
D	Greater than 14 inches	Sq. Yd. \$	2.0611 \$

Item No.	Description Of Services/Supplies	Unit	ST Unit Price	OT Unit Price
503	INDEFINITE QUANTITY WORK - UNIT PRICED LABOR			
503-13.1	Davis-Bacon Act (DBA) Trades (These labor rates are subject to the DBA and General Decision VA980035 Building unless otherwise indicated.)			
	Bricklayer (Mason)	Hr. \$	\$	\$
	Carpenter	Hr. \$	\$	\$
	Cement Mason	Hr. \$	\$	\$
	Electrician	Hr. \$	\$	\$
	Front End Loader Operator	Hr. \$	\$	\$
	HVAC/R Mechanic	Hr. \$	\$	\$
	Insulator/Coveror	Hr. \$	\$	\$
	Ironworker	Hr. \$	\$	\$
	Laborer	Hr. \$	\$	\$
	Millwright	Hr. \$	\$	\$
	Painter	Hr. \$	\$	\$
	Painter, GD VA980018 - Heavy	Hr. \$	\$	\$
	Plumber/Pipefitter	Hr. \$	\$	\$
	Power Equipment Operator, Crane	Hr. \$	\$	\$
	Roofer	Hr. \$	\$	\$
	Welder	Hr. \$	\$	\$
503-13.2	Service Contract Act (SCA). Trades (These labor rates are subject to the SCA.)			
	Asbestos Worker	Hr. \$	\$	\$
	Asphalt Worker	Hr. \$	\$	\$
	Backhoe Operator	Hr. \$	\$	\$
	Bricklayer (Mason)	Hr. \$	\$	\$
	Carpenter	Hr. \$	\$	\$
	Concrete Worker	Hr. \$	\$	\$
	Crane Mechanic	Hr. \$	\$	\$
	Drafter 1	Hr. \$	\$	\$
	Drywall Finisher/Taper	Hr. \$	\$	\$
	Drywall Installer/Lather	Hr. \$	\$	\$

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

STATEMENT OF WORK-- FACILITIES AND EQUIPMENT SUPPORT SERVICES (FESS)

The Description/Specification/Statement of Work, entitled "Facilities and Equipment Support Services (FESS), is contained herein.

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C.1 GENERAL INTENTION

The intention of this statement of work is to obtain operations, maintenance, and repair of facilities, facilities systems and equipment, and construction services at Langley Research Center (LaRC) by means of a combination firm fixed-price and indefinite quantity (IQ) contract.

END OF SUBSECTION C.1

C.2 SCOPE OF WORK

The Contractor shall furnish labor, supervision, tools, materials, equipment, engineering, transportation, and management necessary for the maintenance and repair of buildings and structures, research facilities such as wind tunnels, and related systems and equipment. The Contractor shall also furnish specified systems operations services, construction and subcontract administration services, and other miscellaneous services as indicated herein. Attachment J-C1 describes the facilities, systems, equipment, and personal property to be maintained in this contract. (When Attachments in Section J are referenced herein, that reference includes all attachments under that heading. For example; reference to attachment J-C9 includes J-C9-21, J-C9-22, J-C9-23, and so forth.) The Government makes no representation or guarantee as to the condition of facilities on the start date of the contract, and no adjustments will be made in contract price relative to facilities condition after contract award. The firm fixed-price work includes contract management, the performance of trouble call work, recurring work such as preventive maintenance, other scheduled maintenance and repair (M&R) work, and specified facilities operations. The indefinite quantity (IQ) work items include repairs exceeding trouble call limits, Replacement of Obsolete Items (ROI), service request, minor construction and work required on an unscheduled or irregular frequency. Work required by this contract is continuous and repetitive in nature, is accomplished within the framework of comprehensive and detailed short and long term schedules, and requires diligent and continuous program management by the Contractor. Attachment J-2 identifies commonly used Acronyms. Exhibit G, Performance Requirements Summary will be used for Contractor performance evaluation.

END OF SUBSECTION C.2

C.3 LIMITATIONS

The following buildings are on the LaRC Closure List. Only response to emergency Trouble Calls and Fire Systems Maintenance and Repair are required at these facilities:

583	584	585	640	641**
643*	720	720A	720B	1120
1157	1207	1229B	1247G	1249
1270	1270A	1270B	1270C	1272
1274	1278	1279		

- * There is a service air compressor in this facility that shall be maintained and repaired under this contract. The compressor and related equipment is listed in J-C1 and is included in the Preventive Maintenance program.

Buildings 1310 (Credit Union) and 1312 (Air Force Liaison Office) require response to emergency Trouble Calls, and also require Preventive Maintenance on emergency lighting and fire suppression equipment.

Building 647 is shared with the United States Air Force. The Contractor will be required to respond for services requested by NASA LaRC personnel occupying the first and third floor.

The following systems are maintained and serviced outside this contract:

1. The phone system switching equipment and the supporting uninterruptable power supplies in the following facilities 1201, 1211 and 641** switch room.
2. The emergency diesels located at Buildings 1268 and 1213.

END OF SUBSECTION C.3

**Although building closed, Contractor has responsibility for switch room.

C 4 DEFINITIONS - TECHNICAL

As used throughout this contract, the following terms shall have the meaning set forth below. See also the "DEFINITIONS" clause in Sec. I.

1. Where "as shown," "as indicated," "as detailed," or words of similar import are used, it shall be understood that reference is made to this specification and the drawings accompanying this specification unless stated otherwise.
2. Where "as directed," "as required," "as permitted," "approval," "acceptance," or words of similar import are used, it shall be understood that direction, requirement, permission, approval, or acceptance of the Contracting Officer is intended unless stated otherwise.
3. Adjust. To regulate, settle, or bring to a more satisfactory state of normal operating condition.
4. Alteration. Work that changes the configuration of a facility (not Maintenance or repairs) but that does not increase the value of the facility: for example, moving a door or electrical outlet.
5. Apprentice. An individual who is serving an apprenticeship or equivalent training period (usually four years or more) in a designated field, craft, or trade. A reputable organization or trade school program shall document apprentice training.
6. Backlogged Trouble Calls. A routine trouble call issued during the previous contract which was not completed for any reason, or maintenance and repair requirements which may be identified during lapses, if any, in services between this contract and the previous contract.
7. Blanket Work Order. The document (referred to in Section J-C8) directing a contractor to perform recurring work on a scheduled basis on the previous contract, NAS1-20243. It contains all of the information included on a normal work request.
8. Building. The classification "Building" includes the basic structure, capital improvements and fixed equipment that are normally required for the functional use of the building and becomes permanently attached to and made a part of the building and that cannot be removed without cutting into the walls, ceilings, or floors, such as plumbing, heating, and lighting equipment; elevators; central air-conditioning systems; and built-in safes and vaults. (Also includes unique equipment related to research test facilities such as large drive motors, large oil and hydraulic systems and high pressure/high volume gas systems such as methane, air, nitrogen, oxygen and hydrogen.)
9. Check. Check includes examination and the performance of parts replacement, lubrication, adjustment, calibration, cleaning, repair, etc.
10. Clean. "Clean" is defined as free of dirt, dust, spots, streaks, stains, smudges, litter, debris, and other residue.
11. Collateral Equipment. Encompasses building-type equipment, built-in equipment, and large, substantially affixed equipment/property and is normally acquired and installed as part of a facility project as described below:

Building-Type Equipment. A term used in connection with facility projects to describe equipment which is normally required to make a facility useful and operable. It is built in or affixed to the facility in such a manner that removal would impair the usefulness, safety, or environment of the facility. Such equipment includes elevators; heating, ventilating and air-conditioning systems; transformers; compressors; and other like items generally accepted as being an inherent part of a building or structure and essential to its utility. Such equipment also includes

general building systems and subsystems such as electrical, plumbing, pneumatic, fire protection and control and monitoring systems.

Built-in or Large, Substantially Affixed Equipment. A term used in connection with facility projects of any type other than building-type equipment that is to be built in, affixed to, or installed in real property in such manner that the installation cost, including special foundations or unique utilities service, or the facility restoration work required after its removal, is substantial.

12. Component Part. Any part of any item or system which is detachable or removable from the main body or main assembly of the item or system; a constituent part or an essential part necessary to the performance of the system.
13. Computerized Maintenance Management System (CMMS). A CMMS is a set of computer software modules and equipment databases containing facility data with the capability to process the data for facilities maintenance management functions. These maintenance-related functions typically include: facility/equipment inventory and history, work input control, job estimating, work scheduling and tracking, preventive and predictive maintenance, facility inspection and assessment, material management, and utilities' management.
14. Contracting Officer. The Contracting Officer is a NASA LaRC civil service employee with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Contracting Officer acting within the limits of their authority as delegated by the Contracting Officer as a Contracting Officer's Technical Representative (COTR).
15. Contractor. The term Contractor as used herein refers to both the prime Contractor and any subcontractors. The prime Contractor shall ensure that subcontractors comply with the provisions of this contract.
16. Contractor Quality Control (QC). A method used by the Contractor to control the quality of goods and services produced.
17. Control. A mechanism used to regulate or guide the operation of a machine, apparatus, or system.
18. Critical Reserve Items. Selected items that are essential or critical to the operation of a facility and/or are long lead-time parts and materials, which must be maintained in stock at a minimum level to support maintenance and operations of a specific facility.
19. Equipment Cost. Equipment costs for recurring work shall be included in the firm fixed-price proposal. For IQ work, equipment costs will be established pursuant to Subsection C. 13.
20. Facility. A term used to encompass land, buildings, structures and other real property improvements, including utility systems and collateral equipment. The term does not include operating materials, supplies, special tooling, special test equipment, nor capitalized equipment. (See *NASA Financial Management Manual (FMM)* 9250-32 for criteria for capitalized equipment.) The term facility is used in connection with land, buildings (facilities having the basic function to enclose usable space), structures (facilities having the basic function of a research or operational activity), and other real property improvements.
21. Facility Condition Assessment. Facility condition assessment is a standardized survey conducted of facilities by experienced facilities maintenance personnel to observe the material condition of each facility in order to determine the overall average condition of each Center. The surveys encompass the different components of the facilities, such as roofs, pumps, air conditioning condensers, interior and exterior finishes, electrical motors and system. Assessment also includes the Center's

- infrastructure, such as roads, storage tanks, grounds, sidewalks, drainage structures, and utility systems
22. Facility Coordinator. The individual who assists the Facility Safety Head in achieving safe operations and serves as the focal point at the designated facility, building, or apparatus. A summary of the responsibilities of the Facility Coordinator is provided in LMI 1700.2, Safety Assignments.
 19. Facility Safety Head. The individual who serves as the on-site manager of the safety program at the facility, building, or apparatus. The responsibilities of Facility Safety Heads are defined in LMI 1700.2, Safety Assignments.
 24. Fixed Burden Rate (FBR). The material and/or equipment handling rate (cost) plus any associated indirect costs and profit. This is expressed as a percent to be applied to the applicable base.
 25. Fluid. A liquid or gas including compressed air.
 26. Fluid system. A system that generates, compresses, pumps, distributes, delivers, and/or reclaims gases or liquids.
 27. Frequency of Service.
 - a. *Annual (A)* - Services performed once during each 12-month period of the contract.
 - b. *Semiannual (SA)* - Services performed twice during each 12-month period of the contract at intervals of 160 to 200 calendar days.
 - c. *Quarterly (Q)* - Services performed four times during each 12-month period of the contract at intervals of 80 to 100 calendar days.
 - d. *Monthly (M)* - Services performed 12 times during each 12-month period of the contract at intervals of 28 to 31 calendar days.
 - e. *Semimonthly (SM)* - Services performed 24 times during each 12-month period of the contract at intervals of 14 to 16 calendar days.
 - f. *Weekly (W)* - Services performed 52 times during each 12-month period of the contract at intervals of six to eight calendar days.
 - g. *Twice weekly (2W)*. Services performed twice a week, such as Monday and Thursday or Tuesday and Friday.
 - h. *Three times weekly (3W)*. Services performed three times a week, such as Monday, Wednesday and Friday.
 - i. *Daily (D5)* - Services performed once each day, Monday through Friday, including holidays unless otherwise noted.
 28. Government Quality Assurance (QA). Methods used by the Government to determine the quality and acceptability of purchased goods and services. In accordance with the FAR 52.246-4, "INSPECTION OF SERVICES - FIXED PRICE" clause, Section I, each phase of the services rendered under this contract is subject to Government inspection, during the Contractor's operations and after completion of the tasks.
 29. Hazardous Waste. Waste materials that are toxic or poisonous, oxidizers, corrosive, irritating or sensitizing, radioactive, biologically infectious, explosive, flammable, or that presents a significant hazard to human health and the environment as determined by Federal, State or Local regulatory authorities, or that are listed in Federal or State regulations. Special handling procedures and facilities are required in their disposal.
 30. Incidental Engineering. Incidental engineering is the performance of limited engineering analyses and activities on certain maintenance related tasks as indicated in this specification. Examples include the evaluation of the LaRC Facilities Preventive Maintenance and Repair program and development of the Annual Work Plan as required in Subsection C.8.a.(2)(d); evaluation and recommendations regarding the Energy Management and Control System equipment described in

Subsection C.15.f; performing evaluations and making recommendations during troubleshooting and repair of specialized mechanical or electrical equipment; evaluation of mechanical or electrical systems for code compliance during certain repair or new construction activities; development or approval of complex scaffolding systems; and development and testing of specialized lifting devices and testing apparatus. *Incidental engineering does not generally include professional design services such as those which would be performed by a professional Architectural and Engineering firm during the development of an engineered construction project.*

31. Indefinite Quantity. In Section C, indefinite quantity (IQ) is the same as indefinite delivery indefinite quantity (IDIQ) as used in the Federal Acquisition Regulation, and elsewhere in this contract.
32. Institutional Facility. A facility that provides office, medical, cafeteria, shop or warehouse type space for the scientific, engineering and technical workforce at NASA LaRC.
33. Journeyman. An experienced reliable person who has completed a required apprenticeship or equivalent experience (six years or more) that can be documented in a designated field, craft, or trade.
34. Labor Hour Performance Guide. A set of standards for assessing the average time necessary for a qualified craftsman working at a normal pace, following acceptable trade methods, receiving capable supervision, and experiencing normal delays to perform defined amounts of work of a specified quality. Labor hour estimates are included in the R. S. Means® Maintenance and Repair Cost Data.
35. Maintenance. The recurring day-to-day, periodic, or scheduled work required to preserve or restore a facility to such a condition that it may be effectively utilized for its designated purpose. The term includes work undertaken to prevent damage to a facility that otherwise would be more costly to restore.
36. Maintenance Zone. One of seven zones at LaRC. Each zone is a collection of buildings or apparatus grouped together as to their function. Major wind tunnels are grouped together in a zone, laboratories in another zone, administration buildings in another zone, etc. The zones are as follows:
 - 1, 2, and 3 – Research Facilities
 - 4 – Research Laboratories/Shops
 - 5 – Major Utilities
 - 6 – Institutional Building/Facilities
 - 0 – Other Center Wide Systems
37. Material Costs. Material costs for recurring work shall be included in the firm fixed-price proposal. For IQ work, material costs will be established pursuant to Subsection C. 13.
38. Minor Construction. A minor construction project is defined as a single undertaking at a NASA installation that includes all construction necessary to produce a complete and usable facility or a complete and usable improvement to an existing facility and has an approved cost not in excess of \$500,000.
39. Non-Recurring Work. Non-recurring work is included in the indefinite quantity (IQ) portion of the contract and will be performed as specified in Work/Service Requests.
40. Operator Maintenance. Operator Maintenance is the examination, trouble shooting, lubrication, minor repairs (no larger in scope than Trouble Calls), and adjustments of equipment and systems to be performed by the assigned operator. Repairs performed under this category do not qualify as trouble calls.
41. Personal Property. - Property of any kind, including equipment, materials, and supplies, but excluding real property.

42. Phase-in Period. The phase-in period of the contract is that period of time between the contract award and start date during which the Contractor performs all necessary activities to ensure the continuity of services to the Government during the transition between the existing and the new contract. During the phase-in period, the Government will provide orientation to the Contractor's key management and supervisory personnel performing under the contract.
43. Pre-expended bin materials and supplies. The minor materials and supplies that are incidental to a job, and for which the total direct cost of any one material line item shown on the material estimate is \$10.00 or less. Examples include solder, lead, flux, electrical tape, fuses, nails, screws, bolts, nuts, washers, spacers, masking tape, sand paper, solvent, cleaners, lubricants, grease, oil, rags, mops, glue, epoxy, spackling compound, joint tape, gases, refrigerants, refrigeration fittings, plumbers tape and compound, clips, welding rods, heat sinks, touch up paint, and plumbing fittings.
44. Predictive Testing & Inspection (PT&I). PT&I is the use of advanced technology to assess machinery condition, and is often substituted for time-based maintenance in order to perform more effective maintenance activities. This category of work is also referred to as condition monitoring or predictive maintenance. Results of PT&I information collection and analysis are used to schedule preventive maintenance, repair, replacement, validate other maintenance and repair efforts, verify new installations, and determine overall material condition of systems and equipment. Common PT&I technologies include vibration analysis, infrared thermography, and lubricating oil analysis.
45. Preventive Maintenance (PM). Preventive Maintenance is also known as periodic maintenance, time-based maintenance, or interval-based maintenance. PM is the planned, scheduled, periodic inspection, adjustment, cleaning, lubrication, parts replacement, and minor repair of systems and equipment (See Subsection C.12). See also Predictive Test & Inspection (PT&I).
46. Proactive Maintenance. Also referred to as "root-cause analysis," proactive maintenance is the further application of predictive maintenance technologies toward extending machinery life. It seeks to reduce the need for maintenance through better design, better installation, precision balance and alignment, and root-cause failure analysis.
47. Programmed Maintenance (PGM). NASA LaRC maintenance category for work items whose maintenance cycle is undefined and which are performed on an "as-needed" basis.
48. Quality Assurance Evaluator (QAE). A NASA LaRC employee responsible for the evaluation of Contractor performance.
49. Reactive Maintenance. Often called breakdown maintenance or "run to failure (RTF)." Reactive maintenance or equipment repairs are performed only when the deterioration in a machine's condition causes a functional failure.
50. Real Property. Any interest in land and anything permanently attached to it, including structures, fixtures, and their improvements.
51. Recurring Work. Recurring work is a part of the firm fixed-price portion of the Contract and is identified in various Subsections of this specification. Recurring work includes providing the management and administration of this contract, providing the LaRC Duty Officer (See Subsection C.8, *Management*), furnishing various plant/system operators (See Subsections C.15 *Energy Management* and C.24, *Steam Generation, Distribution System and Remote Heating Plant Operation, Maintenance and Repair*) and performing Trouble Call and Preventive Maintenance work.
52. Regular Working Hours. NASA LaRC regular (normal) working hours are from 7:00 AM to 4:30 PM Mondays through Fridays except (a) Federal Holidays and (b) other days specifically designated by the Contracting Officer. Some research facilities also have a second shift until normally 3:30 to 12:00 midnight, and/or a third shift normally 12:00 midnight to 8:00 AM.

53. Reliability Centered Maintenance (RCM). RCM is a maintenance strategy that logically incorporates the optimum mix of preventive, predictive, reactive, and proactive maintenance practices. These maintenance practices are integrated to take advantage of their respective strengths in order to maximize facility and equipment operability and efficiency while minimizing life cycle costs, and are not generally applied independently.
54. Repair. That facility work required to restore a facility or component thereof, to a condition substantially equivalent to its originally intended and designed capacity, efficiency or capability or as currently required. It includes the substantially equivalent replacements of building utility systems and equipment necessitated by incipient or actual breakdown.
55. Replacement of Obsolete Items (ROI). There are many components of a facility that should be programmed for replacement as a result of becoming obsolete, not meeting electrical or building codes, or being unsafe. For example:
- Electric switchgear, breakers, and motor starters.
 - Elevators.
 - Control systems.
 - Boiler and central HVAC systems and controls.
 - Fire detection systems.
 - Cranes and hoists.
 - A/C systems using CFC refrigerants
 - Roofs
- This is a NASA LaRC maintenance category, which is one element of long term planned maintenance. Replacement of Obsolete Items is not part of the firm fixed-price work.
56. Research Facility. LaRC Research Facility include subsonic, transonic, supersonic and hypersonic wind tunnels, structural and materials research laboratories and other unique, high energy and high technology facilities. A brief functional description of each major facility is included in Attachment J-CI-21B. Most of those have unique structural, mechanical and electrical features, such as wind tunnel main drive systems, research equipment vacuum and hydraulic systems, special test platforms and struts, and shop equipment which are to be maintained under this contract.
57. Response Time. Response time is defined as the time allowed the Contractor after initial notification of a work requirement to be physically on the premises at the work site with appropriate tools, equipment, and materials, ready to perform the work required. Response times are designated in the appropriate technical clauses in Section C.
58. Service Requests. Service requests are requests for facilities-related work that is new in nature as opposed to maintenance and repair work
59. Supplies. See pre-expended bin materials and supplies.
60. Travel Time. Time expended between shop and the job site; waiting for vehicle; getting in and out of vehicle; loading and carrying a tool box; vehicle travel; unloading, walking from vehicle to job site; opening and closing door; walking up and down stairs; using elevators; and access to secure or controlled areas.
61. Trouble Calls. Trouble calls are reactive maintenance work that is generally called in by occupants of a facility. See Subsection C.11 for further definition.
62. Unit Priced Labor. A Unit price labor is the price bid by the Contractor to provide one performance standard hour of effort. The unit price includes all direct and indirect costs and profit associated with performing a standard hour of work.

63. Unit Priced Task. A unit priced task is the price bid by the Contractor to perform the specified task. The unit price includes all direct and indirect costs and profit associated with performing the specific task.
64. Work Request. Work Request are request for facility related repair work exceeding trouble call limits.
65. Work/Service Request (WSR). A document that is further detailed as a Work Request or Service Request.
66. Zone Maintenance Manager (ZMM) or Assistant Zone Maintenance Manager (AZMM). The NASA LaRC individual who is the focal point for maintenance, repair, and construction activities within a specific maintenance zone.

END OF SUBSECTION C.4

C.5. GOVERNMENT FURNISHED PROPERTY AND SERVICES

In accordance with the "INSTALLATION ACCOUNTABLE GOVERNMENT PROPERTY " clause in Section I, the Government will provide the Contractor the use of certain Government owned facilities, equipment, and materials for use only in connection with this contract. The use of Government furnished property and services for other purposes is prohibited. All such facilities, equipment, and materials will be provided in "as is" condition.

- a. Government Furnished Facilities (GFF). The Government will furnish or make available to the Contractor the facilities described in Attachment J-C2. Services by others will also be performed in these facilities, including emergency response, janitorial, refuse, grounds maintenance, and pest control. The Contractor shall obtain written approval from the Contracting Officer prior to making any modifications or alterations to the facilities. All facilities shall be returned to the Government in the same condition as received at the completion of the contract, except for reasonable wear and tear and approved modifications and alterations. The Contractor will be held responsible for the cost of any repairs caused by negligence or abuse by the Contractor or its employees.
- b. Installation Accountable Government Property (IAGP). The Government will provide the Contractor the use of existing and available Government owned tools and equipment in the performance of the contract. Such Government furnished tools and equipment are listed in Attachment J-C3. Additional IAGP, is listed in Sections G.2 and G3 of the contract.
 - (1) The Contractor shall perform periodic servicing, maintenance, and repairs on IAGP chosen for use under this contract. Periodic servicing and maintenance shall be performed as part of the firm fixed price work with the exception of the Government furnished vehicles listed in Attachment J-C3 - 5D. The Government will provide periodic servicing and maintenance of the vehicles listed in Attachment J-C3 -5D. In the case of the UCS and EMCS equipment addressed in C.15 Energy Management and listed in Attachment J-C27, replacement of equipment (except as indicated under operator maintenance) will be the responsibility of the Government. Repairs shall be performed in accordance with the requirements in Subsection C.11 *Trouble Calls*. The Contractor will be held responsible for the cost of any repairs caused by negligence or abuse by the Contractor or its employees. If replacement of IAGP is required because of Contractor negligence, abuse, or loss, the Contractor shall reimburse the Government for the replacement equipment. The total or partial breakdown or failure of the IAGP does not relieve the Contractor of the responsibility to fully perform the work of this contract. Upon completion or termination of the contract, all Government furnished tools and equipment shall be returned to the Government in the same condition as received, except for normal wear and tear.

During the performance of this contract, IAGP that is damaged beyond repair or worn out, due to normal use, shall be returned to the Government. If such equipment is needed for the performance of this contract, their replacement shall be the responsibility of the Contractor and the equipment will remain Contractor property.

The Government will provide gasoline and diesel fuel (propane will not be furnished) required for operation of vehicles and equipment used in the performance of this contract. The Contractor shall keep a record of gasoline used by each vehicle and all major equipment for the Contracting Officer's periodic review.

- (2) The Contractor and the Contracting Officer shall conduct a joint inventory during the phase-in period of this contract to determine the exact number and serviceability of Government furnished tools and equipment chosen by the Contractor. The Contractor shall then certify the findings of this inventory, assume accounting responsibility, and subsequently report inventory discrepancies to the Contracting Officer. Government furnished items shall not be

removed from Langley Research Center unless approved in advance by the Contracting Officer in writing

- c. Government Furnished Material (GFM). The Government will not provide any Government furnished materials except for critical reserve items. Experience has shown that selected items that are essential or critical to the operation of a facility and/or are long lead time parts and materials must be stocked to insure repair of critical equipment in the event of failure. A list of these critical reserve items and minimum stocking levels is contained in Attachment J-C4. The Government will provide the Contractor an initial issue of items in at least the minimum quantities listed in Attachment J-C4. The Contractor shall conduct an inventory (utilizing the Government's inventory of the materials) during the phase-in period of this contract to confirm the exact number of critical reserve items. The Contractor shall then certify the findings of this inventory and assume accounting responsibility for all the critical reserve items. The Contractor shall maintain at least the minimum quantity of all the items specified. These items shall be used by the Contractor in the maintenance and repair of the facilities/systems only as follows:
- (1) Critical reserve items shall be used on the systems, facilities, or IAGP with which they are associated as shown in Attachment J-C4 unless directed otherwise by the Contracting Officer.
 - (2) A replacement critical reserve item shall be ordered within three working days after the use of any critical reserve item that causes the total quantity on hand to fall below the minimum specified level.
 - (3) On completion or termination of the contract, all critical reserve items shall be returned to the Government in at least the minimum specified quantities.
- d. Availability of Utilities. The Government will furnish the utility services at existing outlets for the Contractor's use in those facilities provided by the Government for the work performed under the contract, including electricity, data and voice communications, steam, natural gas, potable water, sewage service, and refuse collection (from existing collection points). The Contractor shall provide and maintain the necessary service lines from the existing Government outlets to the work site.
- (1) Utilities specified above will be furnished at no cost to the Contractor.
 - (2) Existing Telephones for Contractor use will be furnished by the Government. The Contractor shall use Government telephones for official contract business only.
 - (3) Existing Electronic data connections will be furnished by the Government. The Contractor shall use Government electronic data connections for official contract business only.
 - (4) The Government will provide internal (within the Center) mail service.

END OF SUBSECTION C.5

C.6. CONTRACTOR FURNISHED ITEMS

Except for items listed in Subsection C.5, *Government Furnished Property and Services*, the Contractor shall provide all facilities, equipment, materials, and services to perform the requirements of this contract.

- a. Parts, Components, and Materials/Supplies. The Contractor shall provide new or factory reconditioned parts and components when providing maintenance, repair, and minor construction services as described herein. All replacement units, parts, components and materials/supplies used in the performance of the contract shall be compatible with the existing equipment on which it is to be used; shall be of equal or better quality than original equipment specifications; and shall comply with the applicable contract specifications.

The Contractor shall ensure that any safety - and/or mission-critical materials and products provided by the Contractor comply with the standard or specifications to which it was purchased. The Contractor shall maintain documented evidence of their receipt-inspections which shall be subject to review, upon request, by the Government. Documented evidence shall include Contractor inspection and manufacture certification as appropriate. Safety critical materials and products include: high-strength (Grade 8) fasteners; high-pressure fittings; metal plates and shapes; and electrical/electronic parts. Mission-critical materials and products are all materials and products that, in the event of failure, could injure personnel or jeopardize the operational mission to which it is applied.

Parts and components, once installed in the Government facility, become Government property. Items not listed in the technical specifications shall be of acceptable industrial grade and quality. If the original manufacturer has updated the quality of parts for current production, parts supplied under this contract shall equal or exceed the updated quality. The Contractor shall retain the parts replaced for at least 10 working days after completion of the job and make these parts readily available for inspection by the Contracting Officer upon request. The Contractor shall obtain and maintain manufacturer's operating instructions and maintenance manuals on all new equipment installed by the Contractor. These documents shall become property of the Government and shall be turned into the Contracting Officer within five working days after completion or termination of the contract.

- b. Equipment. New, replacement and rebuilt equipment shall conform to the applicable contract specifications. When purchasing equipment, the Contractor's equipment procurement specification shall include the applicable clauses from Attachment J-C33.
- c. Phase-In Period Materials Option. At the start of this contract the Government may have some materials other than critical reserve items available from the previous contract. Within five (5) calendar days from start of the phase-in period, the Government will make available to the Contractor an inventory of these materials including the stock number, item description, quantity, and the Government's acquisition cost. The Contractor shall have the option of purchasing this material at the Government's acquisition cost shown on the inventory. No later than fifteen (15) calendar days prior to start of the contract the Contractor shall provide the Contracting Officer a list of the material items the Contractor will purchase. The items not purchased by the Contractor will be removed and disposed of by the Government prior to the start of the base period of the contract. The total purchase price of the materials to be purchased by the Contractor will be deducted from the first billing period.
- d. Contractor Mobile Communications. The Contractor shall provide communications equipment required to perform the requirements of this contract and shall obtain FCC licenses and frequencies for the equipment. Attachment J-C3-6B provides, for information purposes only, a listing of the types and quantities of communications equipment used on the previous contract.
- e. Contractor Furnished Vehicles. In accordance with contract NAS1-20243 (with the incumbent contractor), clause H.8, the successor Contractor may purchase from the incumbent contractor

any contractor-provided vehicles purchased for and used in performance of contract NAS1-20243. The contract clause further provides that the incumbent contractor agrees to sell the vehicles to a successor contractor at their depreciated value based on the Contractor's depreciation schedule. The available vehicles and their depreciated value are listed in Attachment J-C3-6A. The Government will not perform maintenance or repair on any Contractor furnished vehicles. The Contractor agrees to utilize any vehicles purchased under the above-cited option solely in performance of this contract. Further, all costs of purchasing and maintaining such vehicles shall be included in the firm fixed price.

END OF SUBSECTION C.6

C.7. GENERAL REQUIREMENTS AND PROCEDURES

- a. Licenses and Certification Licenses required of the Contractor to conduct business (i.e. local or state business licenses) shall be obtained prior to beginning work on this contract. Personnel licensing and certification shall be complete before that individual performs any work under this contract. The Contractor shall submit verification of all licensing and certifications to the Contracting Officer within 30 days after contract award and within one (1) day upon any personnel change thereafter. All licenses and certificates shall be current and shall be kept current throughout the contract period.
- b. Staffing The Contractor shall provide personnel that have the appropriate skill for that trade. The degree of skill of individuals shall be commensurate with that required for the work. All apprentices shall be supervised and have all work checked by the applicable lead journeyman in their particular field. This requirement applies to all crafts. It is the Contractor's responsibility to provide training for worker qualification or re-certification. Journeymen requirements are defined in Subsection C.4, Definitions.

(1) Heating, Ventilating, Air Conditioning, and Refrigeration (HVAC/R) All mechanical work shall be performed by mechanical tradesmen who have in their possession a current Apprentice, Journeyman, or Master's mechanical license card, as issued by the state of Virginia or who have six years documented experience in the trade. When mechanical tradesmen do not have such a Virginia card or license, the Contractor shall submit for approval, evidence that such tradesmen have the required six years experience. Mechanics or technicians performing work on refrigerated circuits and refrigerant containing devices shall be EPA certified per Section 608 of the Clean Air Act, and shall provide certification that all service practices maximize recycling of ozone-depleting compounds for recovery and containment of refrigerants and will be followed per set requirements.

(2) Plumbing Work All plumbing work shall be performed by plumbing tradesmen who have in their possession a current Apprentice, Journeyman, or Master's plumbing license card, as issued by the state of Virginia or who have six years documented experience in the trade. When plumbing tradesmen do not have such a Virginia card or license, the Contractor shall submit for approval, evidence that such tradesmen have the required six years experience.

(3) Electrical Work All electrical work shall be performed by electrical tradesmen who have in their possession a current Apprentice, Journeyman, or Master's Electrical License Card, as issued by the State of Virginia, except as indicated below under requirements for those working on the Centers high voltage electrical distribution system (2,200 volts and above). When electrical tradesmen do not have such a Virginia license, the Contractor shall submit for approval evidence that such tradesmen have equivalent permits issued by other Governmental jurisdictions. Such equivalency submittals shall include documentation defining the criteria required for licensing by the involved jurisdiction, so that the Contracting Officer can determine that valid equivalency exists. Electrical technicians working on the Centers high voltage electrical distribution system (2,200 volts and above) shall be journeymen technicians or mechanics. They shall have two (2) years experience with high voltage systems and equipment or an equivalent level of training in the high voltage area that is acceptable to the Government. Apprentices and helpers working on the high voltage electrical distribution system shall be under the supervision and work only in the direct presence of a journeyman technician or mechanic.

(4) Alarm Systems Personnel performing work on fire protection systems shall be journeyman level workers holding current Original Equipment Manufacturer (OEM) training certificate for all fire alarm and gas detection systems being inspected, tested, repaired, modified or maintained. All electricians and technicians shall be trained and certified in writing as qualified to work on systems or electrical devices. A technician certified on the

system being worked on shall be present and in charge during all inspections, testing, and any authorized maintenance and repairs.

(5) Utility Control System (UCS).

- (a) Operators. The Contractor shall provide individuals with a minimum of three (3) years working experience in the energy management field and at least one year experience with expertise using software provided and equipment used at LaRC (See Attachment J-C27-15B).
- (b) Technicians. Technicians shall be proficient in three areas – field, console, and repair. The “field” workers shall have extensive experience in all end item devices such as duct sensor, wall sensor, pressure sensors, and variable air volume systems. Technicians shall have demonstrated proficiency in programming UCS related computers, Field Interface Devices (FID), and other standard control devices. Technicians shall be competent to perform trouble shooting of end item hardware, including communication modem problems and configuration of the field end devices. The “field” workers shall also be competent to support installation and checkout of newly constructed systems. The “repair” workers must be able to repair control cards, field sensors, FID, and some breadboard of new techniques.

(6) Corrosion Control. The Contractor’s manager or field supervisor shall currently possess a National Association of Corrosion Engineers (NACE) certification which is considered a professional recognition through the NACE International Coating Inspector Training and Certification Program. This manager or field supervisor shall also have at least five years of past proven experience on containment assembly, scaffolding assembly, lead abatement, and leadership skills.

(7) Crane and Lifting Systems. The Contractor shall be licensed by the State of Virginia to provide the maintenance, inspecting, testing and repair services specified on crane systems. All work shall be performed by journeyman crane mechanics specifically qualified, trained, experienced, and certified as critical lifting operators and high workers as defined in LHB 1740.6, Personnel Safety Certification, to work on crane systems and related equipment.

(8) Elevator Maintenance and Repair. The Contractor shall be licensed by the State of Virginia to provide elevator maintenance and repair services. All work shall be performed by journeyman elevator mechanics specifically qualified and trained to work on elevator, dumbwaiter, and manlift systems and equipment.

(9) Rigging and Hauling Services. Personnel operating hauling/rigging vehicles or equipment such as flat bed trucks, cranes, cars, forklifts, closed vans, portable cranes, etc. must have a valid Virginia State driver’s license for the type of equipment being operated. Contractor personnel involved in lifting operations (both riggers and equipment operators) at LaRC shall have received training and certification that meets the minimal requirements defined in LAPG 1740.6, Personnel Safety Certification, included in the LaRC Safety Manual.

c. Safety Requirements and Reports.

- (1) Safety. The Contractor shall provide all safety equipment required to perform the work specified in this contract, except as specified herein. All work shall be conducted in a safe manner in accordance with the LaRC *Safety Manual* including LHB 1740.2, *Facility Safety Requirements* and LHB 1740.1, *Training and Certification of Operators and Riggers to Perform Lifting Operation at LaRC*, and shall comply with all OSHA, state, and local regulations. The Contractor shall demonstrate proactive and innovative safety practices on a continual basis throughout the contract period.

- (2) Safety Clearance Procedures (Red Tag) The Contractor shall provide certified Safety Operators to perform Safety Clearance Procedures in accordance with policies and procedures in LAPG (Langley Procedures and Guidelines) 1710.10, *Safety Clearance Procedures (Red Tag)*, as specified in Paragraphs (a) and (b) below:
- (a) The Contractor shall perform red tagging procedures to secure systems and equipment in the performance of this contract. Included are electrical systems up to 115,000 volts, high-pressure systems up to 12,000 PSI, and various mechanical systems and equipment including for example those involving hydraulics and high vacuum. This tagging is considered to be a part of the PM, Service Request, Work Request, or Trouble Call being performed by the Contractor.
- (b) The Contractor shall perform specific tagging, as requested by the Government, to secure the systems and equipment in (a) above for access by other contractors and Government personnel. This tagging service is IDIQ work and shall be handled in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- (3) Accidents. The Contractor shall report to the Contracting Officer, exposure from any hazardous substance, possible exposure from any hazardous substance, and all accidents resulting in death, trauma, occupational disease, serious bodily injury, or environmental damage. All accidents shall be reported to the Contracting Officer as soon as practicable, but no later than 4 hours of occurrence during regular working hours, or no later than 24 hours of occurrence after regular working hours. The Contractor must complete a NASA LaRC mishap report.
- (4) Damage. In the event of damage to Government property, equipment, or the on-site environment by Contractor employees, the Contractor shall submit to the Contracting Officer a full report of the damage. All damage reports shall be submitted to the Contracting Officer by the next business day following of the occurrence.
- (5) Contractor Safety Program. The contractor shall provide an ISO 9000 and 14001 compliant process-based Safety and Environmental Program. This Program shall include a standard Safety Manual with proven processes and checklists for the FESS contract.

The contractor shall establish a proactive **Safety Program**. This program shall include behavior modification tactics focused on the attitudes of management, supervisors, and the work force. The contractor shall apply safety goals as a key performance criterion for manager/supervisor evaluations.

The contractor shall develop a **Safety Training and Awareness Program**, including documented orientation, routine and special training, and documented periodic safety meetings. The contractor shall develop and maintain a computerized database to track training requirements. The contractor shall establish safety process action teams.

The contractor's Safety Program shall include the following:

An Automated Notification System to report worker's compensation claims incidents.

On-line access to Safety Performance Measurements, showing lessons learned from incident and accident trends which is accessible by any authorized person.

Independent oversight of compliance and incident rates and Registrar Accreditation Board (RAB) Certified Auditors to assist with ISO 9000 and 14001 certification.

Independent Audit, from a nationally recognized organization for safety and environmental functions.

- d. Emergency Procedures. The Contractor shall ensure that Contractor employees have established procedures to report any accident, fire, toxic chemical, electrical, security, flooding, or police emergency.
- e. References and Technical Documents. Publications and other pertinent documents referenced in this specification are indicated in Attachment J-H1.
- f. Standards. All work shall meet the standards specified herein and shall be accomplished in conformance with approved and accepted standards of the industry; equipment manufacturers; all applicable LaRC, local, state, and federal standards; and all applicable facilities and safety codes. For construction projects and some repair work, NASA LaRC may choose to use the SPECSINTACT system (Attachment J-C30), which is an automated specification processing, storage and retrieval system for preparing contract documents.
- (1) When the Contractor completes work on a facility, that facility shall be free of missing components or defects which would prevent it from functioning as originally intended and/or designed. Corrective or repair/replacement work shall be carried to completion including operational checks and cleanup of the job site. Except where otherwise noted, replacements shall match existing in dimensions, finish, color, and design.
- (2) During and at the completion of work, debris shall not be allowed to spread unnecessarily into adjacent areas or accumulate in the work area itself. All such debris, excess material, and parts shall be cleaned up and removed at the completion of the job and/or at the end of each day work is in progress.
- g. Not used.
- h. Removal of Obsolete Equipment. Appropriate property disposal procedures required by NHB 4200.1, Equipment Management Manual must be followed (See Subsection C.7.t., *Housekeeping*). Unless directed otherwise by the Contracting Officer, the Contractor shall, when removing old or obsolete equipment, remove the electrical wiring, conduit, and control boxes from the equipment to the power source. The power source shall be de-energized and disconnected prior to disconnecting the load or cutting the cables in accordance with LAPG 1710.10, *Safety Clearance Procedures (Red Tag)* and Subsection C.7.c. (same title).
- i. Equipment under Manufacturer's or Installer's Warranty. Equipment, components, and parts, other than those installed under this contract, shall not be removed or replaced or deficiencies corrected while still under warranty of the manufacturer or the installer without prior approval of the Contracting Officer. The Contractor shall be responsible for tracking equipment, component and part warranties on those items that are installed during the term of this contract and for which the Contractor shall become responsible after construction/installation is completed. All defects in material or workmanship, defective parts, or improper installation and adjustments found by the Contractor on equipment, components, and parts installed by others shall be reported to the Contracting Officer within three (3) working days from discovery so that necessary action may be taken.
- j. As Built Drawings.
- (1) Drawings of facility and associated equipment/systems are maintained in the LaRC Engineering Drawing Files, Building 1130T2. Copies of these drawings will be made available to the Contractor upon request.
- (2) All changes or additions to facilities made by the Contractor shall be recorded and provided to the Contracting Officer within 30 calendar days of the completed work. These data shall

include, but is not limited to, dimensioned drawings, red lined drawings, and/or sketches which shall depict the actual completed work.

- (3) LHB 1740.3, Section 6, *Configuration Management Program*, lists 47 high-risk facilities/systems under configuration control. When the Contractor makes a change to one of these 47 facility/systems a Change Notification Sheet (CNS) shall be prepared and submitted to the Contracting Officer prior to completion of the change. See Attachment J-C7-31 for a copy of the Change Notification Sheet.

k. Interface With Government Personnel and Other Contractors.

- (1) Facility Management. At Langley Research Center a seven (7) zone management structure has been established to assign facility maintenance management responsibility. The zones are as follows:

- 1, 2, and 3 – Research Facilities
- 4 –Research Laboratories/Shops
- 5 – Major Utilities
- 6 –Institutional Building/Facilities
- 0 – Other Center Wide Systems

- (a) Zone Management Organization. Zones 1,2,3,4, and 6 have Zone Maintenance Managers (ZMM) and Assistant Zone Maintenance Managers (AZMM); and Zones 0 and 5 have a ZMM only. The ZMM and AZMM are Government employees who manage and coordinate all maintenance, repair and construction activities within the respective zone. The Contractor shall coordinate all facility and equipment related activities with the ZMM or AZMM. The Contracting Officer will provide a list of ZMMs and AZMMs within ten calendar days following contract award.
- (b) Facility Coordinator. The current list of Facility Coordinators will be made available to the Contractor. The Contractor shall notify the Facility Coordinator of any work to be performed in a building under the Coordinator's control. The Contractor shall notify the Coordinator at least two working days in advance of such scheduled work. Notification shall include the location of the work, type of work to be done, and the estimated completion date. The Contractor shall reschedule any work that the Contracting Officer deems necessary to avoid unacceptable disruptions in the Government's business.
- (2) Cooperation with Other Contractors. Other contractors and/or Government personnel are engaged in similar and supporting work, requiring close cooperation. The Contractor for this contract shall cooperate with Government personnel and all other contractors and avoid conflicts with other's performance and work schedules. Under no circumstances shall additional work be performed at the request of unauthorized Government personnel or another contractor without proper approval of the Contracting Officer.

The Contractor shall be responsible to the Government for acts and omissions of its own employees and of subcontractors and their employees. The Contracting Officer will not undertake to settle any differences between the Contractor and his subcontractors, or between subcontractors. All business pertaining to the contract shall be conducted through the Contractor. If the Contractor specifically authorizes in writing a subcontractor to act as his agent, he shall state the specific authority conferred. The Contractor shall also be bound by any agreement made between the agent acting within the scope of his authority and the Government.

The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work. The Contractor shall conduct his work so as not to impede or interfere with the work of such other

Contractors or persons engaged in or about the site. Whenever any work performed by the Contractor adjoins or affects any work by any other Contractor, the Contracting Officer will decide any disputes between the Contractor and such other Contractor. The Contracting Officer's decision, in writing, shall be final and conclusive upon both parties.

If the Contractor causes damage to the work or property of the Government or any other Contractor at LaRC, the Contractor shall, upon due notice, repair such damage or pay for such repair as directed by the Contracting Officer. If such other Contractor sues the Government on account of any damage alleged to have been so sustained, the Government will notify this Contractor who shall defend such proceeding, and if any judgment or award against the Government arises therefrom, this Contractor shall pay or satisfy it and shall reimburse the Government for all attorneys' fees and court costs which the Government has incurred.

The Contractor shall not endanger any work of any other Contractors by cutting, excavating or otherwise altering any work of any other Contractor, except with the written consent of the Contracting Officer.

In the event of conflicts with other Government personnel or contractors that cannot be satisfactorily resolved, the matter shall be referred to the Contracting Officer for decision.

- i. Notice of Equipment Shutdowns. Prior approval shall be obtained from the Contracting Officer, except in emergencies, for work requiring shutdown of equipment. All such requests must be submitted at least 72 hours in advance. In cases where shutdown is urgent or an emergency, the Contractor shall coordinate the shutdown with the Facility Coordinator in the affected building.
- m. Electrical Power, Steam and Water (Utilities) Outages. The Contractor shall shutdown, restart, and perform operational checks on all equipment affected by both scheduled and unscheduled utilities outages as a Trouble Call (See Subsection C.11). The historical data in Attachment J-C8 includes such instances of repair. The Contractor shall inform the Contracting Officer as far in advance as time permits of dates, times, facility(s), and equipment/system(s) that will be affected by such utilities outages. The Contractor shall coordinate all scheduled utility outages with the Facility Coordinator of affected facilities.
- n. Damages Caused by Weather Conditions, Vandalism or Accidents. Work required to repair facilities or equipment damaged by weather conditions (See Disaster Preparedness, below), acts of vandalism and/or accidents shall be performed as a trouble call (See Subsection C.11). The historical data in Attachment J-C8 includes such instances of repair. Repairs exceeding TC limits shall be reported to the Contracting Officer for action.
- o. Reporting System and Equipment Deficiencies. Any system or equipment deficiency noted by the Contractor during performance of operational checks, preventive maintenance, Trouble Calls, or service work shall be reported in writing to the Contracting Officer and recorded in the CMMS as stated below:
 - (1) Deficiencies discovered that could potentially jeopardize the operation of items of equipment in research facilities shall be reported to the Contractor's work control center by phone within one hour after discovery. Following conformation of the deficiency, the Contractor shall immediately notify the Contracting Officer by phone. Deficiencies noted that could potentially jeopardize the operation of equipment in all other facilities shall be reported to the Contractor's work control center and entered in the CMMS by 9:00 AM the following work day.
 - (2) All non-operation-threatening deficiencies noted shall be reported to the Contracting Officer within one work day of discovery. If non-operation-threatening deficiencies are discovered during operational checks, deficiencies shall be reported to the Contractor's work control

center not later than 9:00 AM the following workday and recorded in the CMMS within five working days.

- p. Freeze Protection. The Contractor shall provide freeze protection to winterize certain facilities in the fall and to reverse the process in the spring in accordance with the NASA LaRC Freeze Protection Program. The Preventive Maintenance (PM) program (Attachment J-C9) includes the Freeze Protection Program requirements. The Contractor shall be liable for correction of any and all damages incurred as a result of failure to adequately protect equipment under these conditions. The Contractor shall notify the Contracting Officer of any equipment or systems not included in the PM program for winterizing which requires such action to prevent freeze damage.
- q. Disaster Preparedness. The Contractor shall provide support as required by LHB 1046.1, LaRC Emergency Plan, LHB 1047.1, Disaster Control Data, Hurricane and High Tides, and the General Requirements for Snow and Ice Removal, Subsection C.27.i. to maintain and protect LaRC facilities. Where facilities damage is sustained because of a disaster the contractor shall take appropriate immediate action to prevent/limit further damage in accordance with the LaRC Emergency Plan. All work associated with this disaster support, repairs and work associated with returning the center to normal operations is included in the indefinite quantity portion of the contract, Subsection C.13 unless within trouble call limits.
- r. Hazardous Materials. The Contractor shall be responsible for handling, removing, working with, and/or packaging for disposal, hazardous materials including asbestos, polychlorinated biphenyls (PCBs), coatings and corrosion control waste, and contaminated waste oil as encountered in the performance of the requirements in Subsections C.15 through C.31 or as directed by work request. This work shall be performed in accordance with applicable OSHA, EPA, and state regulations. The requirement for the purchase of hazardous materials and hazardous materials inventory are included in LAPG 1710.12, Potentially Hazardous Materials, and LHB 8800.1, Environmental Program Manual. The Contractor shall have access to the LaRC internet for hazardous materials inventory and tracking purposes. The Government will provide e-mail accounts for all inventory managers. The Contractor may use Government furnished computer equipment to use the Chemical Materials Tracking System (CMTS). The minimum requirements can be found at <http://osemant1.LaRC.nasa.gov/cmts/instruct/>.
- (1) Emergency Tasks. For emergencies and special circumstances the COTR may grant a waiver allowing the Contractor to purchase hazardous materials prior to obtaining approval through the Government process. The Contractor shall purchase only materials needed for the specific task and shall enter all approval forms required for the hazardous material purchase within three working days of the purchase.
- (2) Removal and Disposal. In this contract, unit priced tasks do not include hazardous material removal. Disposal of hazardous waste will be by others.
- s. Equipment Procurement and Servicing. Attachment J-C33 provides in-service and acceptance criteria for equipment being procured or serviced under the terms of this contract. The Contractor shall use these criteria (contract clauses) in procuring and accepting new, replacement, and/or reworked equipment and for PM and PT&I work where applicable in this contract.
- t. Housekeeping. The Contractor is responsible for the cleanliness of all work areas, including the sweeping and mopping of floors. Waste materials, trash and other debris shall be removed from the job site on a daily basis, and the Contractor shall deposit such material in appropriate containers for disposal. Hazardous materials shall be handled as specified herein. Materials determined by the Government as having salvage value shall be removed from the facility and delivered by the Contractor to a location designated by the Contracting Officer for disposal or storage. The Contractor shall place all scrap metal in designated containers for disposal by the Government.

- u. Handling/Protection Of Contractor Material And Equipment. All shipments shall be addressed to the Contractor and he shall be responsible for their receipt, unloading, handling, and storage at the site. The Government will not accept deliveries on behalf of the Contractor or his subcontractors, nor assume any responsibility for security of materials, equipment or supplies delivered to the site. The Contractor shall at all times protect and preserve all materials, supplies and equipment to be used in the performance of this contract. If, as determined by the Contracting Officer, material, equipment, supplies and work performed are not adequately protected by the Contractor, such property may be protected by the Government and the cost thereof will be charged to the Contractor.
- v. Enhanced Facility Maintenance And Repair (M&R) Program. The contractors Facility M&R Program shall be focused to ensure facility and systems availability and minimize downtime. This program shall include the following elements.

(1) Specialized Training and Certification Program. The contractor shall establish a training and certification program to ensure that workers are specifically trained and certified on critical tasks and critical system operations. This training must ensure that employees working on critical systems demonstrate knowledge of overall system concept and an understanding of the system components and their operating characteristics. For example, system characteristics include normal operating parameters, operating limits, and safety, alarm and trip set-points. This training may include classroom instruction (local or factory), hands-on training, and practical or written testing program. The contractor shall work with LaRC to identify critical facilities and systems that require a trained and certified dedicated crew.

(2) Optimum Reliability Centered Maintenance (RCM) Program. The contractor shall establish an RCM program that focuses on proactive maintenance using a combination of Predictive Testing and Inspection (PT&I) Technologies, Preventive Maintenance (PM) techniques, and reactive maintenance. The Contractor shall incorporate a phased approach based on existing Government's RCM program, available RCM test equipment, and personnel capabilities. The contractor shall use an optimum maintenance approach using a RCM Decision Process and based on criticality of system, load, size, application and environment. The contractor shall also implement contractor-furnished software application to assist employees in Failure Modes and Effects Analysis, Criticality Analysis, and RCM task development. The contractor shall provide specialized training and certification to use particular condition monitoring technologies. The contractor shall work with LaRC to establish the right mix of maintenance techniques to save money, prevent unscheduled failures and subsequently reduce facility downtime.

(3) Operations Procedures Plans (OPP). To ensure a consistent service and quality product, the contractor shall standardize, and establish formal control and periodic review of the OPP for the operations, maintenance and repair of LaRC systems. In addition to the requirements found in C.16-C.31, the contractor shall incorporate within the OPP those proven "best commercial practices" and technical processes and administrative procedures through the use of the contractor's Wide Area Networks.

(4) Configuration Control. The contractor shall establish a configuration control program for control and management of both hardware and software configuration, and technical documentation. The contractor shall designate a LaRC FESS Configuration Manager who shall be responsible to develop, maintain and implement the Configuration Control Plan. As a minimum, this plan shall detail the procedures for requesting, approving, and monitoring hardware, software and documentation changes to equipment, systems, and facilities. The contractor shall use MAXIMO asset modeling to track configuration change process. The contractors shall use quality inspectors to validate system configuration.

END OF SUBSECTION C.7

C.8. MANAGEMENT

The Contractor shall manage the total effort associated with the recurring and non-recurring work, including operations, maintenance, repair, and all other services required in this Statement of Work to assure fully adequate and timely completion of services in this contract. Included in the firm fixed price portion of the contract is the management as described herein for the firm-fixed-price work and the guaranteed portion of the IQ work. (See B.3) Included in the management function is a full range of duties not specifically included elsewhere in Section C. These include but are not limited to such areas as payroll, purchasing, personnel, planning, scheduling, incidental engineering, estimating, cost accounting, subcontract administration, safety, Facility Coordinator, financial reporting, establishing and maintaining management records, and quality control. The Contractor shall provide an adequate staff of personnel with the necessary management expertise to assure the performance of the work in accordance with sound and efficient management practices, this contract and NHB 8831.2A, Facilities Maintenance and Energy Management Handbook.

- a. **Work Control.** The Contractor shall implement all work control procedures necessary to ensure timely processing of work requirements, as well as to permit tracking of work in progress. Work Control shall include receipt and performance of trouble calls, recurring work identified in Section C (including PM), and non-recurring work from the Indefinite Delivery Indefinite Quantity portion of the Contract.
 - (1) **Processing.** The Contractor shall plan, estimate, and schedule all work to assure material, labor, and equipment are available to complete work requirements within the specified time limits and in conformance with the quality standards established herein. All Work/Service requests (WSR) and Trouble Calls shall be entered into the CMMS daily.
 - (2) **Scheduling.** The Contractor shall schedule and arrange work so as to cause the least interference with the normal occurrence of NASA LaRC operations. In those cases where some interference is unavoidable, the Contractor shall make every effort to minimize the impact of the interference and its effects on facility occupants or users. Except for the Annual Maintenance Shutdown (see below), the intent of the Government is to allow the Contractor to develop an optimal formal schedule rather than impose a fixed schedule which in some cases may not be appropriate or cost effective. However, one of the fundamental objectives of the Contractor's maintenance and repair program shall be to reduce facility downtime for the performance of both maintenance and repair related activities. In developing PM and other work schedules, the Contractor shall consider and rely on contract requirements, past Government records, the Contractor's own experience, and industry standards and guides. All work schedules required by this statement of work shall be entered in the CMMS and made available to the Contracting Officer. If the Contracting Officer determines that the Contractor's schedule conflicts with critical NASA LaRC operations, the Contractor shall modify the schedule as required.
 - (a) **Annual Maintenance Shutdown.** Annual facility shutdowns take facilities and associated systems and equipment out of service to perform preventive maintenance (PM) tasks, trouble calls (TC) which have been approved for delay, indefinite quantity repairs which have been identified and held for the shutdown, and modifications and new construction planned for the shutdown period. The Contractor, Government, and other contractor personnel will accomplish the shutdown work in a coordinated effort within the planned schedule. Occasionally two (2) and three- (3) shift work may be required to accomplish these shutdowns. The shutdown schedule is prepared by the Government and issued in September of each year for the following fiscal year. The shutdowns start in October and extend throughout the year and encompass almost all facilities at LaRC. See Attachment J-C 9-12A for the FY 1998 schedule.

NASA LaRC occasionally reschedules annual facility maintenance shutdowns due to unforeseen facility operational requirements. Accordingly, the Contractor is required to

revise its schedules to accommodate the changed schedule. The Contracting Officer may also request, in order to reduce a specific facility's downtime due to unforeseen facility operational requirements, that some or all of the Annual Maintenance Shutdown work be scheduled and performed at times when the facility is not operating, such as during scheduled repairs (by the Contractor or others), or during specified test article or test facility configuration changes. A list of typical facility shutdown period changes is included in attachment J-C9-12A. Notice of changes to the work planned for the Annual Maintenance Shutdown will be provided to the Contractor not less than 15 days before the scheduled event. These schedule changes, which may occur several times during the year, shall be performed at no additional cost to the Government.

- (b) Monthly Work Schedule. The Contractor shall develop and follow a Monthly Work Schedule (MWS) for all work specified in this contract excluding Trouble Calls. The first MWS shall be available in the CMMS and one (1) legible hard copy provided to the Contracting Officer fifteen (15) working days prior to the start of the contract. The MWS for the second and following months shall be made available to the Contracting Officer in the CMMS along with one furnished hard copy no later than the 10th of the month prior to the month when the work is scheduled to be performed. The schedule shall include the planned PM work for each specific piece of equipment to satisfy the requirements shown in the LaRC PM program (Attachment J-C9), and shall also include IDIQ work by work /service request (WSR) number, and title. For all work, the MWS shall indicate the facility number, work to be performed, planned schedule and frequency if appropriate (e.g., monthly, weekly, etc.). Changes or additions to any job that prevent the Contractor from completing the work on time, which change the scope of the work or change the schedule, shall be reported to the Contracting Officer in the weekly update (see paragraph (c) below).
- (c) Weekly Updates to the MWS. The Contractor shall develop weekly updates to its MWS for the purpose of addressing any changes, additions, or deletions to the planned work. Deviation from the MWS is permissible only when due to inclement weather, emergencies or issues beyond the Contractor's control, or by approval or direction of the Contracting Officer. The reason for any change to the MWS shall be included in the weekly updates. These updates shall be made to the MWS in the CMMS and discussed with the Contracting Officer weekly at a meeting to be held at a time mutually agreed upon by the Contractor and the Contracting Officer.
- (d) Annual Work Plan. The Annual Work Plan will be used by NASA LaRC to budget and plan for maintenance, and provide an opportunity for the Contractor to identify trends and propose changes to the maintenance approach at NASA LaRC. The Contractor shall prepare the Annual Work Plan in two phases.
- 1 Phase One. In Phase One the Contractor shall assemble historical information (usually from the CMMS) in order to provide an accounting of work performed. One of the primary purposes of this report is to identify emerging trends. Data shall be provided for the entire report period and shall address work in each facility, area, structure, system or other category. The report shall also identify additions and deletions to the inventory of facilities to be maintained. The Phase One report shall be prepared in the contractor's format and submitted to the Contracting Officer for approval within 30 days after the end of each contract year.
 - 2 Phase Two. The Phase Two report shall be a review of the maintenance approach and a proposal from the Contractor regarding implementation of possible changes to NASA LaRC maintenance program. When proposing changes to NASA LaRC maintenance approach, the Contractor shall use a Reliability Centered Maintenance (RCM) strategy. The RCM strategy provides an approach for determining the most effective maintenance mix and includes run-to-failure, condition-based maintenance,

and interval based (time, cycles, operating hours) maintenance. Developing an RCM program often includes performing statistical analyses of historical data related to failures and applying risk assessment techniques to identify those processes or systems that statistically exhibit the greatest chance of catastrophic failure and determine the optimal investment of maintenance resources. Some RCM program development and PT&I analysis has been performed by NASA LaRC and will be furnished to the Contractor for his evaluation within 180 days after the contract start date. The Contractor shall build upon and expand that work in the Phase Two report. The Government will consider all proposed maintenance program changes, even those changes that reduce the Contractor's recurring work load; provided the rationale for changes demonstrates that the resulting program will maintain or increase current facility reliability and availability. (Proposed changes that result in reducing the Contractor's recurring workload will be handled under the "Shared Savings Clause" in the contract.) The rationale to support changes to the maintenance program shall include such items as root cause failure analysis, material condition analysis, and other RCM analysis techniques. Proposed changes could include substitution of Predictive Testing and Inspection (PT&I) for time-based preventive maintenance. The report shall identify which facilities have been reviewed, inherent reliability problems, ineffective maintenance, and emerging maintenance issues. Proposed approaches shall include schedules that account for facility user requirements and the Annual Maintenance Shutdown schedule. The Phase Two report shall be prepared in the contractor's format and delivered to the Contracting Officer within 30 days after approval of the Phase One report.

3 Timeliness. Both phases of the plan shall be completed within the time frame stated above.

4 Quality. A complete plan encompasses all appropriate facilities and addresses all items identified in Phase One, and provides a technical rationale and identifies risk associated with all proposed changes (including probability of failure and effect on facility availability or safety).

b. Subcontract Administration (SA). SA services shall be furnished when facilities maintenance repair activities are subcontracted. See attachment J-C8 - 8 for historical information on tasks that have been subcontracted in the past. SA services include the preparation of bid packages, solicitation of bids, award and administration of subcontracts, oversight and management of construction activities, quality control and resolution of technical or warranty issues. Most projects requiring SA services deal with institutional facilities and equipment such as replacement of HVAC and cooling tower systems, resurfacing built-up roofs, repainting structures or facilities, and resurfacing asphalt roads. Occasionally, however, industrial type construction work may be required, such as work on structural, mechanical, or electrical equipment required in support of LaRC research facilities. SA projects are ordered in accordance with Subsection C.13, General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work.

(1) Subcontract Administration Plan. The Contractor shall develop a SA Plan for providing subcontracted services at LaRC. The objective is to perform subcontracted services in accordance with written and bound procedures to ensure compliance with this specification, applicable codes, standards, regulations and acceptable industry practices. The procedures shall cover the receipt of work/service requests (WSR) considered for subcontracting, resource identification and approval, bid package processing and award, and job status reporting. Procedures shall also address record keeping and documentation, job coordination, Government progress reviews and approval, approach for resolving technical and warranty issues, and any other appropriate procedures for standardizing the furnishing of SA services. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan,

unless otherwise noted. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- (2) SA Documentation. A complete record of each subcontract shall be furnished within 45 days of project completion and Government acceptance of the work. The record shall comprise a history of the contract, including a copy of the contract, all original approvals (shop drawings, material samples, and tests), construction logs and photographs, vouchers, invoices, quality control documentation including Contractor's inspection records, dig permits, change orders, claims, warranties, certification and acceptance documents.
- c. Data Management. The Contractor shall perform all data management required in this PWS. Many of the work elements of this solicitation can be effectively and efficiently performed through the CMMS. Data management includes maintenance work receipt and classifications, scheduling, material inventory control, labor scheduling, work completion records (to include labor and material reporting), work status, and report generation. Maintenance will be classified by the following NASA LaRC work elements: Preventive Maintenance, Predictive Testing & Inspection (PT&I), Programmed Maintenance, Repair, Trouble Calls (Routine and Emergency), Replacement of Obsolete Items, Work Request, and Service Request.
- (1) Computerized Maintenance Management System (CMMS). NASA LaRC is in the process of developing and implementing, in phases, a new Computerized Maintenance Management System (CMMS). The first phase of the CMMS, projected for implementation in the spring of 1999, will include the equipment inventory, preventive maintenance program, and the trouble call and Work/Service Request (WSR) tracking system. A major element of the Government owned CMMS will be Maximo 4.0, a Project Software & Development, Inc. (PSDI) system which is described in Attachment J-C12. This CMMS system will be made available to the Contractor for the duration of the contract. The Contractor may utilize other electronic systems for its internal use if desired, but the CMMS data base must be kept current in accordance with this contract at all times. In this contract where requirements to enter data in the CMMS is not within the capabilities of Maximo other appropriate electronic format may be used. The CMMS database shall be populated and updated by the Contractor to reflect all work performed on facilities, systems and equipment at NASA LaRC. This database is intended to provide the Government a record of the execution of required maintenance tasks, of work tracking, reporting, and planning, and for recording historical information. The Government will be responsible for the system administration of the CMMS. All facility, system, and equipment records and reports maintained in the CMMS are Government property and shall be turned over to the Contracting Officer at the end of the Contract.
 - (2) Facility History Files. The Contractor shall establish Facility History Files for each facility listed in Attachment J-C1 - 21A. The purpose of the file is to serve as a repository for documentation related to work performed by the Contractor. The file shall include all associated drawings, manufacturer's literature, brochures and pamphlets, maintenance and operator's manuals, parts lists, warranty information and other pertinent documentation not included in the CMMS. Initial file assembly shall be completed within 90 days of the contract start. Once established, all documents from on-going work shall be placed in the Facility History File within 10 working days of the completed work. The Facility History File shall be submitted to the Contracting Officer at the completion of the contract.
 - (3) Records and Reports. The Contractor shall maintain management, operation, and maintenance records and prepare management, operation, and maintenance reports and submit them as set forth in Attachment J-C6, "LIST OF REQUIRED RECORDS AND REPORTS." All records and copies of reports shall be submitted to the Contracting Officer at contract completion unless otherwise stated in these specifications. The information shall be

submitted by electronic means where possible, and need not duplicate information already in the CMMS

- (4) Communications For trouble calls, recurring and non-recurring work, the Contractor shall be responsible for sustaining feed back and direct contacts with all customers (See also Subsection C.7.k.). The Contractor shall ensure that in each case there is a complete mutual understanding of each WSR description of work, schedule, access requirements, and acceptance criteria. The Contractor shall keep the Contracting Officer advised of any interference problems or necessary changes in the work, preferably in advance, and shall notify the Facility Coordinator when the work in each facility is completed. If required by the Contracting Officer, a joint Contractor/Facility Coordinator final inspection of the work shall be performed.
 - (5) Replacement, Modernization, Renovation. The Contractor shall modify the CMMS database to add or remove equipment data as a result of equipment installation or removal activities. For equipment installed or removed by the Contractor, the data shall be entered into the CMMS within 30 days of completion of the work. For equipment installed or removed by others, it will be incumbent upon the Government through the COTR, to furnish the Contractor with a list of the equipment to be entered into the CMMS, including all attributes associated with the equipment. The Contractor shall enter the data into the CMMS within 30 days of receipt of the equipment information from the Government.
 - (6) Training. Personnel who will be updating and populating the Government's CMMS, must be trained before using the system. The Government will provide the initial training and any subsequent training, required when significant updates or changes are made to the CMMS.
- d. Duty Officers. The Contractor shall provide personnel to serve as NASA LaRC Duty Officers. A NASA LaRC Duty Officer shall be headquartered in the Steam Plant, 14 West Taylor Street (Facility 1215). The duty officer shall be a qualified safety operator for electrical systems up to 600 volts, pressure systems up to 125 psi, and mechanical systems. This officer is the official contact point for the Center after normal day shift duty hours, and on weekends, Government holidays, and any other time NASA LaRC regular work is suspended for any reason.
- (1) Timeliness. The Contractor shall furnish a Duty Officer 24 hours a day on weekends, holidays, and any time the Center's regular work is suspended for any reason. On normal work days the Contractor shall furnish a Duty Officer beginning at the Contractor's normal Close of Business (COB) time, but not later than 4:30 PM, and ending not earlier than 7:00 AM.
 - (2) Quality. The Duty Officer shall provide support services and shall resolve problems arising after LaRC normal duty hours in accordance with NASA Langley Duty Officer's Handbook, LHB 1040.2 and NASA Duty Officer LAPD, 1040.1, which contains detailed instructions for the Duty Officer.
- e. Facility Coordinator. The Contractor shall provide a Facility Coordinator (See Subsection C.4, Definitions) for the Government furnished facilities occupied by the Contractor, identified in Attachment J-C2. In the past, this duty has been a collateral assignment for Contractor designated building occupants.
- f. Facility Condition Assessment (FCA). The Contractor shall perform an annual Condition Assessment of the facilities as follows: Zone 1 facilities in contract year 1, Zone 2 facilities in contract year 2, Zone 3 facilities in contract option year 3, Zone 4 & 0 facilities in contract option year 4 and Zone 5 & 6 facilities in contract option year 5. It is not intended that performance of this activity be a discrete event; rather, the information can be gathered during the year, as maintenance and repair work is being performed. There are various sources of important facility condition information available to the Contractor, including historical records, feedback from

Facility Coordinators, Zone Maintenance Managers, Government and Contractor-generated PT&I data, trend and root cause failure analysis, and observations from the Contractor's day to day operations. The Contractor shall assess the condition of facility interiors, exteriors and major utility and mechanical systems using the format provided in Attachment J-C6-8A. The following examples are representative (but do not constitute a complete list) of the types of deficiencies that shall be identified by building so that remedial action can be planned:

Peeling and flaking paint	Leaking Pump seals
Abandoned-in-place conduit, pipes, and cables	Rust stains and corrosion
Inoperable doors and windows	Failed asphalt paving
Platform structural defects, weakness	Spalling or scaling concrete
Stained or broken ceiling tile	Leaking steam traps
Pattern surface wear through base material	Worn or broken floor tile
Overheated motors or other electrical devices	Carpet wear paths or ripples
Unsecured, damaged or deteriorated pipe insulation	Tripping hazards
Code compliance issues	Unusual mechanical noise
Obsolete and ineffective lighting	Broken welds

This Facility Condition Assessment shall include the Annual Roofing Inspection (See Subsection C.21.h.(2)(c), *Roofing*), Annual Corrosion Control Condition Assessment (See Subsection C.17.g.), and the annual roads and surface area inspections (See C.27.e.) but shall not duplicate them. The information obtained from the Condition Assessment shall be compiled into a prioritized list of needed repairs. The recommended priorities shall consider the type, age and condition of the building and the building use. The Contractor shall provide to the Contracting Officer the completed FCA annually (in the approved format) not later than March 1.

- g. Government Quality Assurance (QA). In accordance with the FAR 52.246-4, "INSPECTION OF SERVICES - FIXED PRICE" clause, Section I, all services rendered under this contract are subject to Government inspection to the extent practicable at all times and places during the term of this contract. The Government's Quality Assurance Surveillance Program is not a substitute for Quality Control by the Contractor. All findings of unsatisfactory or non-performed work will be administered in accordance with the "Consequences of Contractor's Failure to Perform Required Services" clauses of Section E. All costs associated with rework are the responsibility of the Contractor. The Government reserves the right to choose the inspection methods, define its own Predictive Testing and Inspection (PT&I) program to be used in the implementing of its QA Program, and vary the inspection methods utilized during the work, without notice to the Contractor.
- h. Site and Utility Distribution System Drawings. A list of site and utility distribution system drawings are provided in Attachment J-C13, for use in conjunction with historical workload data in planning travel time impact, accessibility, and relational distances on firm fixed price and indefinite quantity work described in Section C. Site, utility, and building information are available on the internet at <http://gis-www.LaRC.nasa.gov>.
- i. Historical Workload Data. Historical workload data related to the work of this contract is located in Attachment J-C8.

END OF SUBSECTION C.8

C.9. WORK OUTSIDE REGULAR WORKING HOURS

Work shall not be permitted to interrupt research facility operations, except in response to emergency trouble calls. Work that involves shutting off essential services in institutional facilities (including potable water and electrical power), except in response to emergency trouble calls, shall be performed after regular work hours, on weekends, or when the facilities are not in use.

Work performed on Saturday, Sunday, holidays or outside the Government's regular working hours (see subsection C.4, *Definitions*) requires the Contracting Officer's approval at least one business day prior to the scheduled work.

END OF SUBSECTION C.9

C.10. CONTINUITY OF SERVICES

To ensure continuity of essential services, the Contractor shall fully be prepared to commence work on the start date of this contract. However, during the phase-in period, the Government will provide orientation to the Contractor's key management and supervisory personnel performing under the contract.

- a. Backlogged Trouble Calls. The Contractor shall be prepared to accept approximately 100 backlogged trouble calls, as defined in the Subsection C.11, on the contract start date. Work must be completed on all of these trouble calls within 30 calendar days after the contract start date. This work is to be included in the firm fixed-price bid.
- b. Backlogged Non-Recurring Work. Non-recurring work will be performed in accordance with the provisions of Subsection C.13 *General requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.

END OF SUBSECTION C.10

C.11. GENERAL REQUIREMENTS AND PROCEDURES FOR TROUBLE CALL WORK

The Contractor shall receive and respond to all Trouble Calls (TC) for discrepancies with facilities, systems and equipment listed in Attachment J-C1. Historical data on TC received and their classification are set forth in Attachment J-C8. This data includes the small systems TC referred to in Subsection C.2. TC are generally reported by telephone by occupants of a facility, but may be reported by other civil servant personnel, such as Facility Coordinators, Zone Managers or their Assistants, or Facility Safety Heads. The Contractor shall not generate TC, except in those areas where the Contractor serves as the Facility Coordinator. There are two types of trouble calls: routine calls and emergency calls. Trouble calls, including emergency calls, are part of the firm fixed-price portion of the Contract, and are subject to the Section H clause entitled VARIATION IN QUANTITY - TROUBLE CALLS. The actual scope of TC work may vary from this historical data. The Contractor shall propose an annual fixed-price for the specified number of TC based on a review of the historical data and the LaRC facilities, and utilizing the Contractor's maintenance approach, experience, and expertise. The historical data, shown in Attachment J-C8, for the number and scope of TC is based on a comprehensive and consistently performed LaRC PM program, and timely identification and execution of necessary repair work. The Contractor shall ensure TC work is given the priority and staffing resources necessary in order to accomplish all TC's within the specified times.

- a. Emergency TC. Emergency TC are those calls which require immediate action to stabilize the situation (including Red-Tag), eliminate hazards to personnel or equipment, prevent loss of or damage to LaRC property, restore essential services that have been disrupted, and correct performance problems that affect the operation of essential utilities, research facilities, equipment or systems. Emergency TC are limited to 16-labor hours or a total of \$2,000 labor, material, and equipment cost. The Contractor shall respond to all emergency TC in accordance with the requirements stated herein, and undertake stabilization and corrective efforts immediately. (Stabilization is defined as work required to eliminate imminent personnel hazards and/or further damage to the facility and its contents.) The Contractor shall advise the Contracting Officer immediately if efforts to perform stabilization and required emergency repairs are determined to be beyond the limits for TC labor, material, and equipment costs. In such cases, upon concurrence by the COTR that the work in question is beyond the trouble call limits, an IQ work request will be issued by the Contracting Officer under the indefinite quantity portion of the contract (see Subsection C.13 General Requirements and Procedures for Non Recurring (Indefinite Delivery Indefinite Quantity Work).
- b. Routine TC. Routine TC are minor facility problems that are generally responded to by grouping according to craft and location and do not usually require individual job planning. A routine TC is limited to 16-labor hours or a total of \$2,000 labor, material, and equipment cost. Routine TC shall be received, recorded/documented, scheduled, and managed in accordance with Subsection C.8., Management, and requirements set forth herein. The responsibility to perform routine work under a single TC ends when the work is completed or the Contractor notifies the Contracting Officer that the work is estimated to exceed the cost limitations specified for a TC. Any effort expended and costs incurred by the Contractor prior to such notification is considered part of the original TC and will not be applied toward any indefinite quantity work which may result.
- c. Receipt of TC. The Contractor shall provide a single telephone number for receipt of all TC during normal work hours and a single telephone number for the Duty Officer for receipt of calls after normal work hours and on weekends and holidays. Trouble calls shall be considered received at the time the telephone call is received by the Contractor. An individual fully familiar with the Contractor's work control procedures and the scope of this contract shall answer all telephone calls within 30 seconds. If the Contractor determines that the TC work is unrelated to this contract (another Contractor is responsible for the equipment or project), the Contractor shall direct the call to the appropriate party or notify the COTR.

- (1) TC During Regular Working Hours. All TC received by the Contractor during regular working hours will be classified as either routine or emergency by the NASA LaRC originator. If the TC does not qualify as an emergency as stated in paragraph a. above, the caller should be immediately advised. In the case of a continuing disagreement over classification, the caller shall be directed to notify the COTR for resolution. A description of the problem or requested work, date and time received, location (Building number, room number, or location and equipment number, if applicable), Contractor assigned control number and other appropriate information shall be recorded and processed by the Contractor. The Contractor shall enter the initial TC data in the Computerized Maintenance Management System (CMMS) on the day the TC is received, and shall enter the final data within two workdays of when the work is completed.
 - (2) TC After Regular Working Hours. The Duty Officer shall receive all TC between the Contractor's Close of Business (COB) hours and 7:00 a.m. on normal work days and 24 hours per day on weekends, and holidays. Calls shall be received and classified by the Contractor as emergency, or routine in accordance with the procedures provided above and responded to accordingly. If the call is classified as emergency, the Contractor shall record appropriate information including a description of the problem, date and time received, facility identification and location, and caller's name and telephone number. The Contractor shall enter the TC data in the CMMS during the next regular working day.
- d. Response to TC. The Contractor shall have adequate procedures for responding to emergency and routine TC 24 hours per day, seven days a week, including weekends and holidays. The Contracting Officer may upgrade or downgrade the classification (emergency or routine) of any TC received by the Contractor, as appropriate.
- (1) Response to Emergency TC
 - (a) During Regular Working Hours. The Contractor shall respond immediately and must be on the job site and working to stabilize the situation and restore essential services within 15 minutes after receipt of an emergency TC during regular working hours. The Contractor shall notify the Contracting Officer by phone, within 15 minutes from reception of the emergency TC, that a call has been received and is being responded to.
 - (b) After Regular Working Hours. The Contractor must be on the job site and working to stabilize the situation and restore essential services within two (2) hours of receipt of all emergency TC received after regular working hours. TC after regular working hours are received by the Duty Officer, who shall call the Contractor designated person immediately and make other appropriate notifications in accordance with LHB 1040.2, *NASA Langley Duty Officer's Handbook*. The Contractor shall provide the Contracting Officer a current list of Contractor personnel which will be called by the Duty Officer for TC response after regular working hours.
 - (c) Timeliness. The Contractor shall commence work on emergency TC within the time frame stated above, and shall continue working without interruption to arrest the emergency condition before departing the job site (e.g., shut off water, close a gas valve, temporarily patch a roof leak, etc.). If further labor and material (follow up work) are required to complete the repair, the emergency repair shall be stabilized and accomplished in accordance with Paragraph C.11.a, *Emergency Trouble Calls*.
 - (d) Quality Work. All work shall be performed in accordance with the standards specified in Subsections C.16 through C.31.
 - (e) Procedures. The Contractor shall follow the recording and notification procedures in this specification.

(2) Response to Routine TC.

- (a) Timeliness. All routine TC except those related to quality of life issues (i.e. office HVAC problems) shall be completed within ten (10) working days of receipt unless otherwise approved by the Contracting Officer. Trouble calls affecting quality of life issues shall be completed within two working days of receipt of the call. Occasionally, the Contracting Officer will classify routine TC as urgent, particularly those related to research facility operations. An urgent TC will require an accelerated completion date, as negotiated between the Contractor and the COTR. Routine calls shall normally be accomplished during regular working hours, Monday through Friday.
- (b) Quality Work. All work shall be performed in accordance with the standards specified in Subsections C.16 through C.31.
- (c) Procedure. The Contractor shall follow the recording and processing procedures in this specification.

(3) Response to TC for Lighting. The Contractor shall respond to TC for replacing burned out lights or blinking interior light bulbs and tubes. Lighting calls will be considered routine unless circumstances require replacement earlier. Examples requiring earlier replacement would be safety situations, impairment of work, or if the Contracting Officer classifies the TC as an emergency. Historically, LaRC has experienced approximately 130 lighting calls per month. See Subsection C.21.g.(2), *Relamping*, for air traffic lighting requirements.

- e. Work Beyond the Scope of TC. When the Contractor receives/responds to a routine TC and believes that the work is beyond the scope of a TC (as defined in a & b above) the Contracting Officer shall be advised that a TC viewed as exceeding TC limits has been received. The Contractor shall then prepare a document showing a summary of the work needed and a detailed estimate of labor hour and material requirements and submit it to the Contracting Officer. Any work accomplished prior to notification of the Contracting Officer is part of the firm fixed-price TC portion of the contract and shall not be included in the detailed estimate to be provided to the Contracting Officer. The Contracting Officer may waive the requirement to submit estimates in cases where the scope of work is clearly beyond that of a TC.

If the Contracting Officer agrees that the work required is beyond the scope of a TC, the scope of the work will either be reduced and a revised TC authorization issued by the Government or the original TC will be canceled. If the original TC is canceled, the work may be accomplished under the indefinite quantity portion of the contract or by means other than this contract. In either case, whether the TC scope is reduced or cancelled, the Contractor will be credited with one TC.

If the Contracting Officer determines that the work falls within the scope of a TC, the original work authorization will be returned to the Contractor, who shall complete the work within five (5) working days from the date of the Contracting Officer determination.

- f. Documentation. The Contractor shall input the following information to the CMMS within two work days after performance of each TC:
 1. Building number, room number, or location and equipment number, if applicable.
 2. Date and time call received.
 3. Description of work actually completed.
 4. Control number.
 5. Failure Code (See Attachment J-C11-11A and B).

6. Brief description of material and parts used, including quantities and cost.
7. Date and time work began.
8. Date and time work was completed.
9. Hours of labor (by craft) expended.
- g. Materials and Equipment. The Contractor shall maintain sufficient materials and equipment on hand to support TC work requirements. Lack of availability of materials or equipment shall not relieve the Contractor from the requirement to complete TC work within the time limits specified above.
- h. Historical Data. Attachment J-C8 contains TC historical data.

END OF SUBSECTION C.11

C.12. GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING WORK

The Contractor shall perform recurring work in accordance with the provisions of this Subsection. Recurring work is a part of the firm fixed-price portion of the Contract and is identified in various Subsections of this specification. Recurring work includes the Preventive Maintenance Program, which is subject to the Section II Clause entitled "Variation In Quantity - Preventive Maintenance." Recurring work also includes providing the LaRC Duty Officer (See Subsection C.8, *Management*), various plant/system operators (See Subsections C.15, *Energy Management* and C.24, *Steam Generation, Distribution System and Remote Heating Plant Operation, Maintenance and Repair*) as well as performing Trouble Call work (see Section C.11, *General Requirements and Procedures for Trouble Call Work*). Lack of availability of craft personnel, tools, supplies, materials and parts shall not relieve the Contractor from the requirement to complete work within the time requirements and quality standards specified herein.

- a. Preventive Maintenance (PM) - Definition and Repair Limitation. The Contractor shall perform PM on the facilities, systems and equipment at NASA LaRC in accordance with the procedures specified in this subsection, applicable technical subsections, and the LaRC PM Program (Attachment J-C9). This PM work is a part of the firm fixed-price portion of the contract. PM is defined as routine, periodic maintenance and incidental repair requirements associated with facilities, facility systems, and dynamic equipment. PM is concerned primarily with facility systems and equipment that, if disabled, would interfere with an essential operation (including reliability and availability), endanger life and property, or involve high cost or long lead time for replacement. PM work includes, but is not limited to, visual and operational inspection, cleaning, corrosion removal and related painting, adjustment, alignments, lubrication, and replacement of switches, meters, contractors, fuses, filters, belts, fasteners, hoses, and other expendable items required to correct or minimize operational wear and deterioration of facility systems and equipment. PM work is continuous and repetitive in nature, and is accomplished within the framework of comprehensive and detailed short and long term PM schedules. The Contractor will be held liable for the full cost of repairs if the Government determines that the cause of system or equipment failure, malfunction, or damage was due to the Contractor's failure to perform required PM work.
 - (1) PM Incidental Repairs. The Contractor shall accomplish incidental repair of defective equipment or system components detected at the time of PM performance. The Contractor's repair work liability in this case is limited to 2 hours labor or \$300 total cost for labor, materials, and equipment, but the work shall not be classified as a TC occurrence. Repair work exceeding this limit shall be accomplished in accordance with the TC requirements stated in Subsection C.11, *General Requirements and Procedures for Trouble Call Work*. Failure on the part of the Contractor to respond appropriately to PM incidental repair requirements will be considered failure to perform required PM work, and will be addressed as indicated in paragraph a above. The only exception will be for equipment items that are classified as run to failure (reactive maintenance).
 - (2) PM Scheduling. The Contractor shall strictly adhere to the PM program frequencies shown in Attachment J-C9 and schedule all PM work in the MWS (See Subsection C.8). Preventive maintenance tasks to be performed in a building where the building is not available during normal work hours shall be accomplished during the second or third shifts or on a weekend. If the Contractor finds it necessary to modify a PM task frequency, a written request shall be made to the Contracting Officer detailing the reasons for the proposed change at least five (5) working days prior to the originally scheduled PM date. The Contractor shall request Contracting Officer approval by telephone or in person and follow up the request in writing where circumstances do not permit prior written approval. No scheduled PM task frequencies shall be changed without prior approval of the Contracting Officer.
 - (3) Timeliness. PM work shall be performed in accordance with the Annual Maintenance Shutdown Schedule, and the frequencies identified in the LaRC PM program (Attachment J-C9).

- (4) Quality. Quality PM shall be assured through the Contractor's Quality Control program. Workmanship and system performance shall be in accordance with the requirements specified in this subsection, applicable technical subsections (C.16 through C.31), and LaRC PM Program (Attachment J-C9). A part of quality PMs includes site clean up, removal of debris and documentation.
- b. Documentation. Required records shall be maintained in a readable, complete, orderly, and accurate manner at all times. The Contractor shall include, for each piece of equipment, the following data in the appropriate PM record upon completion of the associated work items:
- (1) The date(s) when the service(s) was performed.
 - (2) The nature and extent of all service and repair work performed by facility, including completed PM record cards, hours worked, condition code and deficiencies found, response to discovered deficiencies, tests and inspection results and response, trouble call work performed, materials used and cost.
 - (3) All required records shall be kept current in the CMMS (i.e., data is entered within two weeks of PM completion) and made available to the Government for examination and reproduction at any time.
 - (4) Documents shall be submitted to the Contracting Officer within five calendar days of expiration or termination of the contract.
- c. Predictive Testing & Inspection (PT&I). The Government has an active PT&I program utilizing Government employees to perform the testing and inspection. The only Contractor recurring PT&I work is the collection of oil samples at the locations and frequencies specified in Attachment J-C10-12B following the procedures in Attachment J-C10-12A. Where Contractor support of other PT&I activity is required, an IQ WSR will be issued in accordance with Subsection C.13, *General Requirements and Procedures for Non-Recurring (Indefinite Delivery Indefinite Quantity) Work*.
- d. Other Recurring Work. Other recurring work is a broad category for fixed scheduled work not in the PM category. This work is included in the technical Subsection C.8 and Subsections C.16 through C.31 for the various facility elements covered by the contract.

END OF SUBSECTION C.12

C.13 GENERAL REQUIREMENTS AND PROCEDURES FOR NON-RECURRING (INDEFINITE QUANTITY) WORK

Non-recurring work shall be performed as part of the indefinite quantity (IQ) portion of the contract, and includes unplanned maintenance activities, repairs exceeding trouble call limits, replacement of obsolete items, minor construction, and facility rehabilitation and modification. The work also includes non-recurring support services, such as oxygen and ultrasonic cleaning, industrial instrumentation support services, calibration, testing and component verification, rigging and hauling, and corrosion control. The Contractor will be issued a Work/Service Request (WSR) for all non-recurring work as specified in the following procedures.

- a. Categories of Pre-Priced IQ Work. There are two categories of pre-priced IQ work included in the contract, unit priced tasks and unit priced labor.
- (1) Unit Priced Tasks. Unit priced work items are included in the Schedule of Indefinite Quantity Work - Unit Priced Tasks, Section B, *Price Schedule*. The unit prices include all costs and profit necessary to perform the specified task. Unit priced tasks may be ordered to be accomplished as stand-alone services or in combination with unit priced labor and/or material and equipment requirements.
- (2) Unit Priced Labor. Unit priced labor rates are set forth in the Schedule of Indefinite Quantity Work - Unit Priced Labor, Section B, *Price Schedule*. Material and equipment requirements associated with unit priced labor shall be proposed in accordance with the procedures specified in this subsection.
- b. General Procedures.
- (1) WSR Reporting. The Government will issue a WSR for all non-recurring IQ work. For each IQ WSR the Government will furnish the initial data as shown below and provide the WSR to the Contractor. (In the past there have been approximately 2,500 WSR issued per year.) The Contractor shall enter all appropriate information in the CMMS as shown in the list below to keep the WSR data up-to-date as work on the task progresses. An IQ WSR is not considered complete until all information is inputted.
- 1 Task Order Number (Government Provided)
 - 2 Job Order Number (Government Provided)
 - 3 Description of Task (Government Provided)
 - 4 Facility, Location, & Equipment Number, If Applicable (Government Provided)
 - 5 Additional Documentation Involved: (Government Provided)
 - 6 Requester (Government Provided)
 - 7 Required Completion Date (Government Provided)
 - 8 Zone (Government Provided)
 - 9 Not to Exceed Price (FP T&M WSR only)
 - 10 Completed Work Acceptance by Government (Government Provided)
 - 11 Crafts (ID Number of Crafts Working on Task)
 - 12 Date WSR Entered in CMMS
 - 13 Revised Completion Date
 - 14 Actual Completion Date
 - 15 Date Task Closed (All Actions Completed)
 - 16 Negotiated Estimated Labor Hours
 - 17 Negotiated Estimated Material Costs
 - 18 Approved Task Order Price
 - 19 Failure Code, if Applicable
 - 20 Brief Description of Material and Parts Used
 - 21 Actual Expended Hours by Craft (FPT&M WSR only)
 - 22 Actual Material/Equipment Expenses, Including FBR (FPT&M WSR only)

- 23 Equipment Condition, if Applicable
- 24 Equipment Down Time, if Applicable

- (2) WSR Types. The Government will provide the Contractor one of the following types of WSR when non-recurring IQ work is required:
- (a) Fixed Price WSR. The Government will furnish a statement of work, including schedule requirements, for each fixed price WSR. The Contractor shall review the Government's technical requirements and either accept them or propose changes before proceeding with development of the proposed cost and performance schedule. Where changes to the technical requirements or performance schedule are requested, the Contractor shall indicate specific areas of disagreement and its recommended change. Upon agreement with the Government regarding the technical and schedule requirements, the Contractor shall develop and forward to the Contracting Officer a proposal to perform the work, including the proposed cost and performance schedule, WSR number, and signature of the responsible Contractor employee. The proposed cost shall be developed as specified below (*Preparation of Contractor's Proposal for Non-recurring Work*). The Contracting Officer will either accept the proposal or negotiate any areas of disagreement with the Contractor. The Contractor shall not perform any work on a WSR until authorized by the Contracting Officer. The Contracting Officer reserves the option to accomplish the work other than with this contract.
 - (b) Fixed Price Time-and-Materials (FPT&M) WSR. The Contracting Officer will issue a WSR including a statement of work for services with the total "not to exceed" labor and material cost indicated. Work to be included in this type of WSR are those items which occur infrequently and have response time requirements which will not allow development of a detailed statement of work or a detailed cost and schedule proposal, or for which the scope of the requirements cannot be adequately defined in advance. The Unit Priced labor rates set forth in the Schedule of Indefinite Quantity Work - Unit Priced Labor in Section B will be utilized under this type of WSR. The Contractor will be reimbursed for all direct labor expended at the unit price for that type of labor, plus actual expenses for materials and equipment with fixed burden rates (within the "not to exceed" amount indicated on the WSR).
 - c. Documentation. In addition to documentation requirements stated in this Subsection, the Contractor shall furnish supporting technical documents such as shop drawings, vendors' literature, and specifications in accordance with the WSR. This documentation shall be added to the Facility History Files as appropriate.
 - d. Preparation of Contractor's Proposal for Non-recurring Work. The Government's statement of work will be provided on a WSR, NASA LaRC Form 69 (See Attachment J-C7-13 for a copy), and will include the work description, funding source or code, schedule, and signature of approving official. The Contractor shall develop and submit proposals for non-recurring work to the Contracting Officer within five (5) days of the original receipt of the request, unless otherwise directed or approved by the Contracting Officer. The complexity of the WSR will determine the level of detail required in the Contractor's proposal. Any portion of the work requirement proposed as a unit priced task or unit priced labor shall be priced using the unit prices set forth in the price schedule. Cost of work, other than unit priced tasks, shall be developed utilizing the labor, material and equipment requirements and cost described in Paragraphs 1 through 3 below.
- (1) Labor Requirements.
- (a) Establishing Labor Hour Quantity. The Contractor shall furnish a proposal that includes a detailed breakdown of labor hours for each craft performing work on each WSR. Proposed labor hour quantities shall be based on R. S. Means® Facilities Maintenance & Repair Cost Data. If the R. S. Means® Facilities Maintenance & Repair Cost Data does

not apply (as mutually agreed upon between the Contracting Officer and the Contractor), the proposed labor hour quantity shall be developed from historical data, or another appropriate industry standard labor hour performance guide. Note: All hours associated with overhead, supervision, clerical support and any other administrative activities shall have been included in determining the unit price labor, Schedule B, Price Schedule.

- (b) Establishing Total Labor Costs. Proposed labor costs shall be determined by totaling the number of labor hours for each craft, and then multiplying by the appropriate unit price labor category from Section B, *Price schedule*. The unit price for categories of labor not addressed in Schedule B shall be as mutually agreed upon between the Contracting Officer and the Contractor.

(2) Material Requirements.

- (a) Establishing Material Quantity. The Contractor shall furnish a proposal that includes a detailed breakdown of material required to perform work on each WSR. Proposed material requirements shall include a list of materials establishing the size, quality, and number of units. Pre-expended bin supplies and materials shall not be included in the list of materials since the cost for these items should have been included in the labor unit prices.
- (b) Establishing Total Material Costs. Proposed material costs shall be based on the appropriate R. S. Means® Estimating Guide, adjusted to LaRC area. If the R. S. Means® Estimating Guide does not apply (as mutually agreed between the Contracting Officer and the Contractor), material costs shall be developed from vendor quotes, historical data, or another appropriate industry standard. Proposed material costs shall include applicable transportation charges and discounts, as well as the applicable fixed burden rate (FBR) from Section B, Price Schedule.

(3) Equipment Requirements.

- (a) Establishing Equipment Quantity. The Contractor shall furnish a proposal that includes a detailed breakdown of equipment required to perform work on each WSR. Requirements for equipment shall include the identification of the type, size, capacities, number of units, and hours of use for each unit.
- (b) Establishing Total Equipment Costs. Equipment costs for IQ work shall include only that equipment necessary for WSR performance that is not available from either the IAGP or from the vehicles purchased as specified in Subsection C.6.e *Contractor Furnished Vehicles* (hereinafter referred to in this paragraph as such equipment). It is incumbent upon the Contractor to demonstrate the unavailability of such equipment. If such equipment is not available, the total equipment cost shall be established based on the following paragraphs:
- 1 Proposed equipment costs shall be based on the appropriate R. S. Means® Estimating Guide, adjusted to LaRC area. If the R. S. Means® Estimating Guide does not apply (as mutually agreed between the Contracting Officer and the Contractor), equipment costs shall be developed from vendor quotes, historical data, or another appropriate industry standard. The total equipment cost for each job shall include the applicable FBR from Section B, Price Schedule.
 - 2 Cost for equipment operators, when separate operators are required, shall be based on the R. S. Means® standard labor hour basis, historical data, or another appropriate standard as guide lines unless operator cost is included in the equipment rental price or the operator has been provided by the Government. Any overhead

expense associated with equipment usage shall be included in the Contractor's bid for the applicable labor unit price.

- e. Timeliness. All Non-recurring work shall be completed in accordance with the performance requirements established in each WSR.
- f. Quality. All work, as appropriate, shall conform to the standards identified in Subsections C.15 through C.31.

END OF SUBSECTION C.13

C 14. NOT USED

C.15. ENERGY MANAGEMENT

- a. General Requirements. The Contractor shall operate, maintain, repair and monitor the NASA LaRC Energy Management and Control System (EMCS) which includes the Utilities Control System (UCS) and the Energy Management System (EMS) as described in Attachments J-C27-15A and J-C27-15B. The primary EMCS function is to efficiently control HVAC, lighting, and other energy consuming equipment. The Contractor utilizing the EMCS is responsible for monitoring and reporting the energy consumption of LaRC and the Langley Air Force Base. The EMCS consists of host console computers that have the ability to provide a manned interface for monitoring and controlling remote systems through an integrated network control system. The EMCS controls the HVAC loads in 103 buildings and 104 trailers by direct digital control, radio switches, and infoscan, it monitors 235 electrical meters for energy consumption, controls the operation of 150 hot water heaters, and controls interior lights in two (2) buildings.
- b. Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes EMCS operations and incidental engineering, development of an Operation Procedures Plan, energy and utility reporting and documentation, and operator and preventive maintenance and shall be accomplished in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*.
- c. Non-recurring Work. Any repairs or new work on the monitoring equipment under this subsection greater than trouble call or operator maintenance scope are, unless specifically identified otherwise, non-recurring (Indefinite Quantity) work. This work shall be ordered from the unit price labor rates, and accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- d. EMCS Operations. The Contractor shall provide the following services as required:
 - (1) The Contractor shall develop an Operations Procedures Plan for EMCS operations at LaRC. The objective is to perform EMCS operations and related services in accordance with written and bound procedures to ensure safe, timely and reliable work. The Plan shall be developed using the following guidelines: (1) existing LaRC EMCS operations procedures, (2) guidelines in the *Facilities Maintenance and Energy Management Handbook*, NHB 8831.2A, Section 8.9.4.2, and (3) equipment & system manufacturer's instructions. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.
 - (2) Use the EMCS to provide energy conservation and management consistent with guidelines in the *Facilities Maintenance and Energy Management Handbook*, NHB 8831.2A, Section 8.9.4.2.
 - (3) Provide surveillance and control of the EMCS to regulate and detect abnormal conditions (i.e. outside the operating parameters) in equipment operations on a 24 hours per day, 7 days per week, basis. Historically, the Duty Officer has monitored these systems during non-regular work hours. The Facility Coordinator of the facility being monitored shall be notified when anomalies or discrepancies with equipment being monitored are detected.

- (4) Maintain system integrity, including database diagnostics, provide technical support for the EMCS (UCS & EMS) and make control program modifications due to changes in building occupancy and use with Contracting Officer approval.
 - (5) Perform operator maintenance on EMCS equipment within facilities where operation services are provided. Operator maintenance includes inspection, tests and minor repairs up to 16 hours or \$2,000 total labor, materials and equipment costs (the same as TC scope) performed by the equipment operator or watchstander and is firm fixed price recurring work. Repairs performed during the course of operator maintenance will not be considered or qualify for operator maintenance. Repairs or maintenance that exceed those limitations, and which are not covered by the Preventive Maintenance program furnished in Attachment J-C9, will be considered IQ work. The Contractor shall follow approved maintenance procedures and associated checklists in the performance of maintenance work. In addition to performing operator maintenance on on-line equipment, the Contractor shall periodically operate, inspect and service idle EMCS equipment.
 - (6) Maintain the EMCS database to provide for reports and when required, information such as building energy utilization, energy cost data, consumption, historical data, trends, operating demands, potential energy deficiencies, and building utilization efficiencies, and data on alarms and utility outages, and information on installation, modification, and adjustments of EMCS hardware. This information shall not be released to anyone except the Contracting Officer.
 - (7) Perform UNIX related systems administrator tasks for new hardware and general system maintenance such as weekly file system backups and recovery, maintain user accounts, upgrade/install software, administer software licenses, and implement security patches.
 - (8) Make revisions to software; modify as required host computer and panels, and field equipment and interface devices to facilitate system changes; reprogram and make upgrades as necessary; and make temporary adjustments and program changes to the UCS & EMS systems for maintenance, construction, and repairs.
 - (9) Maintain overview and interface with the Direct Digital Control (DDC) Systems throughout LaRC.
 - (10) Provide energy usage data in particular facilities and research areas upon request by the Contracting Officer
 - (11) Document requests by the Contracting Officer for changes in the UCS schedules including change description, the date, time, and the reason for the change.
 - (12) Provide calibration of UCS & EMS components as required.
 - (13) Provide orientation and overview of the UCS and EMCS to visitors and management as requested by the Contracting Officer.
 - (14) The Contractor shall provide EMCS meter readings on utilities and assist in providing information to the NASA LaRC Energy Manager as required regarding LaRC energy usage.
 - (15) Radio switches, ref J-C27-15A, shall be inspected and recalibrated, annually in October
- e. Maintenance. The Contractor shall:
- (1) Trouble shoot and correct problems and provide maintenance of the UCS and EMS systems including panels, sensors, actuators, software, networks, networks drivers, networks terminations, and other associated hardware located in the EMCS office and at the various

field locations (See Attachment J-C27-15B). Maintenance exceeding routine TC limits (See Subsection C.11.e., *Work Beyond Scope of Trouble Call*) will be performed in accordance with Subsection C.13, *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.

- (2) Maintain the Hewlett Packard data acquisition and data reduction computer systems.
- (3) Provide daily maintenance of printing and plotting equipment as listed in Attachment J-C27-15B.

f. EMCS Engineering. The Contractor shall:

- (1) Evaluate new UCS, EMS and DDC products/technology and make recommendations for improvements in operations and hardware. All engineering evaluation of EMCS systems shall be performed using Life Cycle cost analysis techniques and fully comply with Executive Order 12902 and EPACT 1992.
- (2) Make recommendations for future software and hardware procurements to the Contracting Officer.
- (3) Provide input for future expansion and utilization of the UCS and EMS.
- (4) Study, review and provide recommendations and comments to the Government on criteria, drawings, and specifications related to EMCS changes.
- (5) Provide consultation on all UCS and EMS interfaces as requested by the Contracting Officer.
- (6) Maintain up to date system layout schematics and drawings on the UCS and EMS to reflect the current system configuration.

g. Documents. The Contractor shall provide reports and other documentation as specified below in electronic format and in Attachment J-C6-15. Graphics and tables shall be provided in Excel.

- (1) The Contractor shall submit to the Contracting Officer calculations on energy savings as a result of UCS and EMS operations in accordance with Attachment J-C6-15. The calculations shall be provided to show energy savings realized through the operation of the EMCS. The report shall be submitted by the end of October for the previous fiscal year (October 1 through September 30). An example of the report is shown in Attachment J-C6-15.
- (2) Prepare and submit a quarterly report to the Contracting Officer on LaRC energy consumed. The report shall be submitted within 30 days of the close of each fiscal quarter. The report shall be prepared utilizing NASA LaRC Form 1520. An example report is shown in Attachment J-C6-15.
- (3) The Contractor shall submit to the Contracting Officer the Monthly Utility Report. The report shall be prepared and submitted in accordance with Attachment J-C6-15.
- (4) The Contractor shall provide to the Contracting Officer graphs of electrical usage costs with supporting documentation for all metered facilities as listed in Attachment J-C25. Examples of graphs and supporting documentation are also shown in Attachment J-C6-15.
- (5) The reports above are representative of the types of reports that have been provided in the past and represent LaRC current requirements. The contractor shall modify these reports or provide other reports of system operations and controls and special reports to support

energy initiatives as required. The additional reports (similar to those shown in Attachment J-C6-15), which could number up to 30 per month based on past history, shall be provided under the firm-fixed price portion of the contract.

END OF SUBSECTION C.15

C 16. OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT

- a. General Requirements. The Contractor shall perform precision cleaning, refurbishment and verification of parts, components, assemblies, subsystems, systems, or related equipment at NASA LaRC in accordance with LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service* and other Government-approved cleaning and functional testing procedures. These services include inspections, checks, disassembly, cleaning, refurbishment, reassembly, testing, verification and packaging of components of equipment identified in Attachment J-C1-22A-G, maintenance of records and preparation of reports on the services provided on them, and contamination control. These tasks shall be performed at the site of the instruments or at the Component Cleaning and Verification Facilities, Buildings 1188 and 1284B, as appropriate. Additionally, the services provided under this subsection shall include maintenance and operation of the freon distiller in Building 1188, and chemical sampling and analysis.
- b. Scope of Work. The work in this subsection includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed, and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance and development of an Operation Procedures Plan and shall be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*.
 - (3) Non-recurring Work. Examples of non-recurring work in this subsection are the one-time cleaning, testing, calibration, verification and adjustment of a newly modified complex component; performance of a special, one-time study; and acting as consultants for component cleaning to other groups at LaRC on an as-needed basis. This work shall be ordered from the unit price labor and/or tasks listed in Section B, and accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. Additionally, Attachment J-C6-16 and J-C7 - 16A - G lists the records and reports required of the Contractor as part of this work. System and equipment deficiency information obtained from failed and marginally passed tests and certifications, or noticed during trouble calls, operator maintenance or preventive maintenance work shall be reported in accordance with Subsection C.7.o, *Reporting System and Equipment Deficiencies*.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for the cleaning, refurbishment, calibration and functional testing of various systems at LaRC. The objective is to perform precision cleaning and refurbishment work in accordance with written and bound procedures to (ensure that LaRC is provided components and systems that are safe, reliable and are cleaned, adjusted, calibrated, verified and tested with the high level of accuracy required. The plan shall be developed using the following guidelines: (1) manufacturer's instructions, (2) industry standards and (3) procedures outlined in LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*. The Plan shall address:
- (1) The cleaning process instructions including a detailed description, in correct sequence, of the steps to be taken, step duration, observations and adjustments to be made, verification and calibration procedures to be followed, and the qualifications of the technician who will be performing the task.

- (2) Processing materials to be used, including, as applicable, trade names, specifications, and concentrations.
- (3) Specific clean room requirements and/or contamination prevention measures to be taken specific to the unit being serviced. Provide air flow rate and/or particulate contaminant count for areas such as clean rooms and flow benches.
- (4) Preservation and protection methods and materials to be used.
- (5) Operating procedures for the freon distiller in Building 1188.
- (6) Safety and accident procedures.
- (7) Hazardous waste packaging and disposal procedures.

A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Requirements for Component Cleaning Operations. Component cleaning and refurbishment functions involve parts, components, and systems which are typified by hoses, tubing, piping, fittings, filters, soft goods, pressure vessels, regulators, pneumatic and hydraulic actuators, quick disconnects, fluid panels, gages, pumps, compressors, handvalves, pneumatic operated valves, flow control valves, relief valves, checkvalves, pressure switch and solenoid valves, transducers, sampling apparatus, and relief devices from various research facilities systems that are gas (nitrogen, helium, oxygen, freon, propane, silane, methane, hydrogen and air), hydraulic, coolant, water, cryogenic (liquid oxygen, helium, nitrogen, hydrogen, air), and/or refrigerant dependent. Subsystems and systems may require disassembly to permit cleaning. The Contractor shall perform cleaning operations at NASA LaRC, both at the Component Cleaning and Verification Facility (Building 1188) and field cleaning. Field cleaning is often complex because the size and configuration of large items make it difficult to circulate or spray solutions and to remove them completely. Whenever possible, precleaning operations, such as pickling and passivating are to be accomplished prior to installation. All systems shall be disassembled into subsystems or subassemblies whenever possible for cleaning. This work involves all of the following activities related to component cleaning, but not limited to: parts check-in and itemization; parts compatibility; chemical/ cleaner compatibility; disassembly; pre-cleaning; precision/final cleaning; verification; reassembly; check out, testing, and calibration; quality control; packaging; documentation; clean room procedures and protocol; and environmental compliance. Refer to LHB1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*. The turnaround time on functional components submitted for component cleaning and refurbishment processing is to be 21 calendar days or less for routine indefinite quantity modification and rehabilitation work and in accordance with Subsection C.11., *General Requirements and Procedures for Trouble Call Work* for trouble calls, unless otherwise approved by the Contracting Officer.
 - (1) In-lab Operations. The in-laboratory function includes component cleaning and refurbishment operations performed at the Component Cleaning and Verification Facility (Building 1188). The required operations shall include inspection, disassembly, cleaning (to include pre-cleaning and major surface treating, as required), refurbishment (to include reassembly, testing and validation, as required), marking and packaging as described below. Also

included are minor fabrication and machining operations as required to support the component cleaning and refurbishment operations. The Contractor shall recycle all freon used

- (a) Disassembly. The Contractor shall follow disassembly procedures provided by component instruction manuals and manufacturers' instructions to the letter. Component disassembly must not damage the parts.
 - (b) Cleaning. Cleaning includes mechanical, ultrasonic, and chemical pre-cleaning processes to remove gross contamination, with final cleaning of components being accomplished in an environmentally controlled area using solvents.
 - (c) Refurbishment. Refurbishment involves the replacement of component soft goods and defective piece parts, and minor rework such as lapping valve seats, chasing threads, etc. System refurbishment consists of removal and refurbishment of system components and installation of new gaskets and other seals.
 - (d) Assembly. The Contractor shall follow precisely assembly procedures, component instruction manuals, manufacturers' instructions and work instructions. Proper assembly of components must be done with knowledge, skill and control to prevent damage to parts.
 - (e) Testing. Testing includes testing to validate cleanliness levels; functional and leak testing using hydraulics, pneumatics, and cryogenics; electrical resistance and continuity testing; valve timing; filter element bubble-point testing; and hydrostatic proof testing. Functional testing is the final step in reworking a component. The Contractor shall certify conformance with applicable specifications for all items refurbished. Any deviations or changes to testing procedures must be approved by the Contracting Officer.
 - (f) Validation. Validation involves inspection, sampling, analyzing, and testing operations required to ensure that structural integrity, cleanliness level, reassembly, functional operation, and packaging of components and systems meet the required specifications.
 - (g) Packaging. Packaging involves the enclosure of cleaned components or systems to prevent recontamination during handling and storage and includes packaging to meet applicable requirements, either in heat-sealed polyethylene or aclar bag or sealing by taping these materials over large openings; placing certification and identification slips and/or required markings or tags (e.g., hydrostat tags) with the cleaned parts; and application of special packaging upon receipt of written requests from customers. Refer to LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*, section 3.10 for acceptable procedures.
- (2) In-field Operations. The in-field function includes performing component cleaning and refurbishment operations as described in Subsection C.16.e.(1) above on items that cannot feasibly be removed from their in-place locations and transported to the laboratory.
- f. Chemical Sampling and Analysis. As part of each PM procedure, the Contractor shall sample and analyze materials and products specifications and perform other laboratory operations as indicated in the PM task listing. The Contractor shall provide the highest accuracy consistent with the state-of-the-art for chemical analyses, and shall provide this precision and accurate analysis data to the Contracting Officer upon request. Development of new or modified analytical methods and maintenance of procedure manuals are required to provide services and are an inherent part of this function. Government-provided sampling equipment available for the Contractor's use is listed in Attachment J-C3. Chemical sampling and analysis shall be regarded as recurring work if it is associated with a preventive maintenance task and will be included in the preventive maintenance firm fixed price. Non-recurring chemical sampling and analysis or that which is for a

special, one time or sporadic occurrence will be considered a unit fixed price labor or task, indefinite quantity work (Subsection C.13).

(1) Sampling. The Contractor shall:

- (a) Take and transport fluid samples of commodities such as nitrogen, oxygen, helium, hydrogen and air in both gaseous and liquid (cryogenic) forms. The samples taken usually require purity analysis and/or particulate contaminant counting.
- (b) Purge sampling containers in which the sample has failed analysis.

(2) Chemical Analysis. The Contractor shall:

- (a) Analyze the purity and/or particulate contamination of fluid samples relative to their specification conformance.
- (b) Perform recertification analysis on containers in which the sample failed analysis.
- (c) Clean Government furnished sample containers after use (refer to LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*).

- g. Freon Recycling. Due to environmental concerns and statute there is a requirement to conserve and to recycle the current inventory of freon at LaRC. There is a freon distiller in Building 1188 for which the Contractor has operational and maintenance responsibility. Freon is also used in the cleaning operations at Building 1265, however this freon is transported in 55-gallon drums between buildings 1188 and 1265 by the Contractor.
- h. Parts and Materials. Materials, including test solvents, packaging films, lubricants, gaskets, and thread sealant shall comply with the requirements of LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*, manufacturer's guidance, and other Government-approved instructions specific to the item being serviced.
- i. Clean Room and Work Station Requirements. Clean room facilities and workstations used for cleaning, validation and packaging of cleaned items shall meet the requirements of FED-STD-209 and LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*. The clean room level shall be consistent with the cleanliness level requirements of the cleaned item. All packaging operations involving cleaned surfaces shall be accomplished within the same controlled environment as that in which the item to be packaged was cleaned. (Outer protective wrap, such as dimple wrap, may be applied outside the controlled area.). All tools shall be visibly clean before being used and shall be cleaned at weekly intervals during prolonged usage. Paperwork shall be inserted into plastic containers before being taken into the clean room and shall not be removed unless it is required to obtain processing and technical information. Ballpoint pens shall be used exclusively for all writing within the clean room.
- j. Personnel Qualifications. The Contractor shall ensure that employees are trained and capable of performing all work required under this subsection and have a clear understanding of component verification and contamination control procedures, as stated in LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*. See also Subsection C.7.b *Staffing*.
- k. Safety. Refer to Subsection C.7.c., *Safety Requirements and Reports*. All duties are to be performed in accordance with the safety and policy manuals and procedural guidance and standards listed in LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*. The Contractor is cautioned that the high-pressure systems and gases encountered in this work are particularly hazardous. Any deviation from standard operating procedures shall be done only with the concurrence of the Contracting Officer.

- l. Quality Control. The Contractor is responsible for the performance of all inspection, testing, validation, and analysis required under this subsection in accordance with the approved Operation Procedures Plan and LHB 1740.5, *Procedures for Cleaning of Systems and Equipment for Oxygen Service*. The Contractor is cautioned that particular attention to detail in performing these functions is critical to personnel safety, protection of property, and costly and time-critical Government research. The Government reserves the right to perform any or all of the inspections and tests listed in LHB 1740.5 to assure that the end item conforms to all specified requirements.
- m. Hazardous Materials. See Subsection C.7.r., *Hazardous Materials*.

END OF SUBSECTION C.16.

C.17. CORROSION CONTROL AND COATING SERVICES

- a. General Requirements. The Contractor shall perform corrosion control and coating services on and within approximately 210 buildings and structures and approximately 80 trailers on-site at NASA LaRC. Surfaces to be coated and protected include those of wind tunnels, laboratories, test and research structures, storage spheres, pressure vessels, metal roofs and siding, piping, large motors, generators, pumps, compressors, and similar items. Methods of application include brush, roller, spray, and power roller. The services include surface preparation, coating application, protection of facilities, equipment, and other property from damage, cleanup and disposal of hazardous and non hazardous materials, quality control, performing an Annual Corrosion Control Condition Assessment, and corrosion prevention maintenance planning and management. Within this contract, the terms "coating" and "painting" are used synonymously. Attachment J-C8 -17 provides historical information for corrosion control services.
- b. Scope of Work
- (1) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this Subsection consists of the preparation and maintenance of the Operation Procedures Plan and the Annual Corrosion Control Condition Assessment which shall be performed in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*, and Subsections C.17.d., *Operation Procedures Plan* and C.17.f., *Annual Corrosion Control Condition Assessment*, below.
- (2) Non-recurring Work. With the exception of the preparation and maintenance of the Operation Procedures Plan and Annual Corrosion Control Condition Assessment all corrosion control and coating services required by this Subsection are Indefinite Quantity (IQ) Work and shall be provided in accordance with Subsection C.13., *General Requirements and Procedures for Non-Recurring (Indefinite Quantity) Work*.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsections C.12 for Recurring Work and C.13 for Indefinite Quantity Work. System and equipment deficiency information noticed or obtained during the course of the corrosion control work shall be reported in accordance with Paragraph C.7.o., *Reporting System and Equipment Deficiencies*. Attachment J-C6 - 17 Lists the records and reports required of the Contractor as part of this work.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for corrosion control and coating services at LaRC. The objective is to perform corrosion control and coating related work in accordance with written and bound procedures to ensure safety, efficiency and reliable workmanship. The Plan shall be developed using the following guidelines: (1) existing LaRC corrosion control and coating procedures, (2) equipment & system manufacturer's instructions, and (3) procedures outlined in the *LaRC Safety Manual*. The Plan shall include:
- (1) Any special instructions including a detailed description, in correct sequence of steps to be taken for various conditions and applications, as appropriate.
- (2) Materials to be used, including product trade names, for various conditions and applications, as appropriate.
- (3) Safety and accident procedures.
- (4) Hazardous waste protection, packaging and disposal procedures.

A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The

initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Procedures. All work shall be coordinated with the Contracting Officer. The Contractor shall perform all work in accordance with the approved Operation Procedures Plan, and in compliance with all applicable state and Federal regulations and the *Langley Safety Manual* procedures applicable to corrosion control activities. A list of applicable regulations is provided in Attachment J-H1. Work will be performed in accordance with the WSR, the NASA LaRC Painting Schedule (see Attachment J-C19-17), and other applicable guides and handbooks.
- f. Annual Corrosion Control Condition Assessment. Annually, in conjunction with the Facility Condition Assessment discussed in Subsection C.8.f, *Facility Condition Assessment*, the Contractor shall inspect and perform a condition assessment of the corrosion control coatings applied to the facilities listed in Attachment J-C15-17. The information obtained shall be compiled into a prioritized list (in a format previously approved by the Contracting Officer) of needed corrosion control maintenance requirements and recommendations, provided electronically and not later than March 1 annually. This assessment shall be complementary to and referenced in, but not duplicate, the findings of the Facility Condition Assessment.
- g. IAGP. Facility No.1289 is available for the Contractor's use for office and storage space. Government Furnished Equipment available for the Contractor's use, including scaffolding, containment shields, blasting equipment, etc., is identified in Attachment J-C3.
- h. General Specifications/Standards.
 - (1) Surface Preparation. Surfaces to be coated shall be prepared by the Contractor in accordance with the requirements set forth in the approved work/service request (WSR). All visible oil, grease, dirt, dust, mill scale, rust, lead paint, oxide, corrosion products and foreign matter shall be removed from surfaces prior to surface coating. Cleaning and painting shall be so programmed that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces. Typical surface preparation includes, but is not limited to, washing, scraping, solvent cleaning, hand and power tool cleaning, water blasting, and abrasive blasting, in accordance with Steel Structures Painting Council (SSPC), National Association of Corrosion Engineers (NACE), the American Society of Testing and materials (ASTM) standards that define degrees and method.
 - (2) Coating Application. The Contractor shall paint the exteriors of large steel structures, buildings, electrical equipment and substations, mechanical equipment, and other items. Application of coatings shall be in accordance with the coating manufacturer's recommendations and/or the applicable specifications.
 - (3) Surface Types. The types of surfaces to be painted include but are not limited to: steel, wood, plaster, galvanized steel and other nonferrous metals, stainless steel, concrete, masonry, and cement asbestos board.
 - (4) Personnel, Environment and Equipment Protection and Control. The contractor shall provide maximum protection of personnel, facilities, equipment, and other property from damage during all coating operations such as surface preparation, abrasive blasting, water blasting, coating application, etc.

- (5) Control of Particulate Emissions. The contractor shall control the emission of particulate resulting from all operations. The Contractor shall clearly identify work areas using barriers and/or signs to indicate active operations.
- (6) Cleanup and Disposal of Waste Materials. The Contractor shall provide cleanup during and after each operation. Cleanup is defined as the restoration of the area in which the work was performed to its original condition. Paint splatter, over spray, and other spillage must be cleaned using acceptable industry methods. The Contractor shall collect, handle and properly dispose of expendables, such as blasting materials, sandpaper, polyethylene, paints and thinners, and those substances removed during coating operations such as scale, rust, hazardous and non-hazardous paint products.
- (7) Hazardous Waste Disposal. Refer to Subsection C.7.r., *Hazardous Materials*. The Contractor shall conform to all regulations governed by the Resource Conservation and Recovery Act (RCRA). The Contractor shall handle, package and label, setup a Satellite Accumulation Area, and schedule pickup of all waste to be disposed. The properly packaged waste shall be picked up, transported and ultimately disposed of by others at no cost to the Contractor. The Contractor shall provide to the Contracting Officer a copy of all product sample testing analysis results of all coating/paints to be removed and copies of the Hazardous Waste Disposal Manifest. The Contractor shall use the Langley Research Center's EPA Hazardous Waste Generator Identifications Number for manifest completion.
- (8) Quality Control. The Contractor shall perform quality control services for all operations to insure compliance with the recommendations of the coating manufacturer and/or applicable Government specifications. The Contractor shall maintain a system of quality control records and data necessary to demonstrate that all painting operations are performed in compliance with the above referenced recommendations and/or specifications.
- (9) Staging and Scaffolding. All scaffolding shall comply with OSHA requirements.
- i. Inspection and Acceptance. Unless otherwise specified, inspection and acceptance of all work performed under this contract, including in-process work and finished work, shall be performed at the place of performance by the Contracting Officer.
- j. Equipment, Materials and Vehicles. All equipment, materials and vehicles required and used in the work performed under this Subsection shall be stored, maintained and parked, as applicable, only in Government-designated areas specific to the current job or as otherwise authorized by the Contracting Officer.

END OF SUBSECTION C.17

C 18 RIGGING AND HAULING SERVICES

- a. General Requirements. The Contractor shall perform rigging and hauling services as required at NASA LaRC. These services involve operations in and around all facilities of NASA LaRC, including laboratories and wind tunnels, and include installation of equipment and furnishing assistance in setting up experiments and models. The work will involve the rigging and hauling of equipment, structures, models, and other items to various areas at LaRC and to off site locations. Hazardous materials may be transported at LaRC in accordance with NHB 1700.1, Section 609.
- b. Scope of Work.
- (1) Trouble Call Work. Trouble calls occasionally involve rigging and hauling work, and shall be received, managed and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and is included in the firm fixed price portion of the contract.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) includes hauling and rigging support directly associated with recurring tasks and services and the preparation and maintenance of the Operation Procedures Plan. Recurring work shall be performed in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13, *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.13 for Indefinite Quantity work. System and equipment deficiency information obtained during rigging and hauling services shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*. Attachment J-C6 -18 lists the records and reports required of the Contractor.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for rigging and hauling services at LaRC. The objective is to perform rigging and hauling related services in accordance with written and bound procedures to ensure safe, timely and reliable work. The Plan shall be developed using the following guidelines: (1) existing LaRC rigging and hauling procedures, (2) equipment & system manufacturer's instructions, (3) OSHA and EPA requirements, and (4) procedures outlined in the *LaRC Safety Manual*. The Plan shall include procedures to be taken in moving equipment and materials, including hazardous materials; equipment, tools and materials to be used; safety and accident procedures; a pre-qualified list of subcontractors to provide rigging and hauling services on short notice; and the qualifications of personnel performing the work.
- A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.
- e. Safety. The Contractor shall comply with Federal, State, NASA and LaRC safety regulations when performing rigging work. The Contractor shall maintain all lifting devices in safe and operable condition as defined in LAPG 1740.2, *Facility Safety Requirements*. See also

Subsection C.28., Built-in Cranes, Hoists, Monorails, and Lifting Devices Operations, Maintenance and Repair.

- f. Hauling The Contractor shall be required to haul various size and weight loads on LaRC and to locations outside of the Center. When hauling oversized loads the Contractor shall arrange for Virginia State, Air Force, or city police to provide escort service when such is required. The Contractor shall be familiar with hauling permit requirements and obtain permits as required. When moving items between LaRC east to west sides the Contractor shall coordinate the move with NASA LaRC and Air Force security to assure the aircraft runway between these sides will be clear for the move.
- g. Hazardous Materials. When moving hazardous materials the Contractor is required to comply with OSHA, EPA & State Regulations.
- h. Working Conditions and Requirements. The Contractor shall at times be required to work in adverse weather conditions, and at heights up to 250 feet. Work will be performed out doors and in many cases be in areas where piping and tanks containing chemicals and gases are present. The Contractor shall be called upon to work in confined spaces in laboratories and wind tunnels handling heavy and costly equipment; costly research test articles such as scale models of space shuttle, experimental airplanes, etc., space flight hardware; and experiments. Lifting devices to be used in lifting space flight hardware must be load tested prior to use as specified in LHB 1740.9. Contractor personnel should understand that many of the items being handled are space flight hardware, models, research equipment, or experiments which are one of a kind items and very costly; therefore special care must be exercised to assure the items are not damaged in any way. The Contractor personnel may be required to suit-up (work in special clothing) while working in clean rooms and be required to utilize specially cleaned equipment in the clean areas. Occasionally, the Contractor will be required to handle classified components for installation in a facility, laboratory or wind tunnel. The following are some examples of tasks that may be required.
- (1) Building 1247-D, Quiet Tunnel. The Contractor is required to utilize an overhead crane and chain falls in the tunnel to disassemble tunnel sections and remove the test section so the upstream portion of the tunnel can be re-configured and then reassembled. The Contractor may be required to change the nozzle which is a highly polished (mirror finished) critical piece of costly research equipment that must not be touched, scratched or damaged in any way.
 - (2) Building 582A, Low Turbulence Pressure Tunnel. This tunnel is only three- (3) feet wide. Installation and removal of models in this small tunnel requires the Contractor to work in close quarters and to use a shop lift or, in the majority of times, to simply use manpower to accomplish the tasks.
 - (3) Building 1247-E, High Pressure Air & Vacuum Distribution. Rigging support in this facility requires the use of overhead cranes and general rigging equipment to support disassembly and re-assembly of large compressors, electric motors, shafts, bearings, pumps, and etc.
 - (4) Facility 1297, Impact Dynamics Research Facility. Work at this facility requires the Contractor to work on top of the lunar landing structure, which is 250 feet high. The Contractor personnel must have a high worker physical and be qualified as high workers as defined in LAPG 1740.6, *Personnel Safety Certification*. This work is required to support maintenance and air craft crash research. Crash research support may require the use of a 25-ton crane and possibly the use of 2 cranes, depending on crash test. It requires the use of rigging practices and rigging tools to assist in off loading aircraft, setting aircraft in position for test, removing aircraft after the test and the moving of aircraft from the test site to an area where test results can be recorded.

END OF SUBSECTION C.18

C.19 CALIBRATION, TESTING AND COMPONENT VERIFICATION

- a. General Requirements. The Contractor shall calibrate, test, verify, and certify pressure gauges, relief valves, pressure sensors, piping and hoses, and similar components at NASA LaRC. Services also include leak testing of components that have been disturbed by repair, maintenance or modification; pressure testing for verification of unique components; hydrostatic testing to 17,000 psig; and the fabrication of hose assemblies with compressed fittings. All work is to be performed in accordance with LHB 1710.40, *Safety Regulations Covering Pressurized Systems*, and all applicable ASME, ANSI and other appropriate codes and standards.
- b. Scope of Work. The components requiring calibration, testing and/or verification services under this subsection are included with the equipment listed in Attachment J-C1-22A-G, their required service frequencies are identified in the PM schedule provided in Attachment J-C9, and component calibration, testing, and verification statistics are listed in Attachment J-C8-19. The work in this subsection includes:
- (1) Trouble Call Work. Trouble calls shall be received, managed and worked in accordance with Subsection C.11., *General Requirements and Procedures for Trouble Call Work*, and are included in the firm fixed price portion of the contract.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes the preparation and maintenance of the Operation Procedures Plan and the scheduled, periodic calibration, testing and verification of components in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13, *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Facilities and Equipment. Building 1284B (currently the Component Verification Facility) will be made available for the Contractor's use, as well as the Government Furnished Equipment identified in Attachment J-C-3.
- d. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. Additionally:
- (1) The Contractor shall maintain throughout the term of the contract, in a format approved by the Government, component and system calibration, verification and testing plans (Subsection C.19.e.), test and verification results, and certification records. The Contractor shall also record all hose assemblies fabricated and leak and other testing performed.
 - (2) Upon completion of calibration, verification and certification of piping and components, the Contractor shall permanently mark or attach an adhesive tag, as appropriate, to the underside, rear or other acceptable location on the component. Recorded information shall include the date of the service, the service that was provided, and identification of the technician who provided the service.
 - (3) Attachments J-C6-19 and J-C7-19A-G list the records and reports and working forms, respectively, required of the Contractor as part of this work.
 - (4) System and equipment discrepancy information obtained from failed and marginally passed tests and certifications, or noticed during trouble calls, operator maintenance or preventive maintenance work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*.

- e. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for component and system calibration, verification, functional testing and certification operations at LaRC. The objective is to perform calibration related work in accordance with written and bound procedures to ensure safe and reliable work. The Plan shall be developed using the following guidelines: (1) existing LaRC calibration procedures, (2) equipment & system manufacturer's instructions, (3) OSHA requirements, and (4) procedures outlined in the *LaRC Safety Manual*. The Plan shall include any special instructions and the procedures to be used during component and system calibration work; criteria used in the certification of individual components and systems; types of testing to be performed and certification frequencies; the qualifications of the technicians performing the work; and safety and accident reporting procedures.

A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- f. Personnel Qualifications. The Contractor shall ensure that the technicians performing the calibration work are at least journeymen in a related trade and are trained in calibration, verification and testing techniques
- g. Compression, Pumping, Dispensing, Evacuation and Reclamation Facilities. Refer also to Subsection C.31., *Research Facility Mechanical, Electrical and Fluid Systems Maintenance and Repair*. The work includes component calibration and verification, nondestructive testing and hydrostatic testing, usually as part of another maintenance or repair task, of the following types of piping systems:
- (1) Air systems up to 6,000 psig with piping of all materials and sizes up to 24 inches.
 - (2) High and low pressure gaseous and liquid nitrogen systems with piping of all materials for pressures up to 12,000 psig.
 - (3) Methane gas systems up to 6,000 psig.
 - (4) Liquid and gaseous oxygen systems with pressures up to 6,000 psig
 - (5) Helium systems up to 6,000 psig
 - (6) Argon systems – low pressure purge.
 - (7) CF₄ gas system up to 2,500 psig
 - (8) Vacuum systems up to 72 inches in size.
 - (9) Silane systems.
 - (10) Hydraulic/oil systems to 6,000 psig.
 - (11) Hydrogen gas systems up to 2,500 psi.
 - (12) Refrigerant R-134A liquid/gas systems up to 600 psi.

h. Requirements for Testing

- (1) Leak Testing. When repairs and alterations are made involving the integrity of the air, liquid or gas distribution system, the Contractor shall, after all the repairs are complete, pressurize the system and check for leaks in accordance with LHB 1710.40, *Safety Regulations Covering Pressurized Systems*. If the repair is made to a buried section of the system, the pressure test shall be accomplished prior to covering the repair area. Allowable leakage: NONE.
- (2) Other Non-destructive Testing. The Contractor shall perform nondestructive testing of *components and systems as required by the PM task or Work/Service Request (WSR)*. Nondestructive testing includes radiograph inspection, magnetic particle inspection, and die penetrant testing.

i. Requirements for Component Certification. The Contractor shall certify the proper operation of pressure gauges, relief valves, high and low pressure hoses, and pressure reducing valves on equipment and systems to factory specifications. The Contractor shall follow the Government-approved Operation Procedures Plan. This work may be recurring, usually associated with preventive maintenance, or unscheduled work that cannot be pre-scheduled and by definition falls into the trouble call and non-recurring, indefinite quantity work categories. Attachment J-C8-19 provides data on the number of components that were certified during the past two years.

j. Requirements for Hose Fabrication. The Contractor shall furnish, fabricate, hydro-test, and certify flexible hoses, both high (up to 10,000 psi) and low pressure, to factory specifications. Included are SYNFLEX, RESISTAFLEX, standard shop air hose, and other hoses. This work may be recurring, usually associated with preventive maintenance, or unscheduled work that cannot be pre-scheduled and by definition falls into the trouble call and non-recurring, indefinite quantity work categories. Attachment J-C8-19 provides data on the number of hoses that were fabricated during the past two years.

k. Equipment Calibration. The Contractor shall be responsible for the quality control of the Contractor furnished calibration equipment used in the calibration of NASA LaRC equipment, components, and systems. As a minimum, the Contractor shall ensure that the calibration equipment is itself re-calibrated annually, is maintained properly calibrated at all times, and conforms to the appropriate ASTM and ANSI codes and standards. NASA LaRC, as part of the NASA LaRC Metrology Program, will calibrate IAGP as required.

END OF SUBSECTION C.19.

C.20 INDUSTRIAL INSTRUMENTATION

- a. General Requirements. The Contractor shall perform maintenance, assembly, installation, troubleshooting, repair, modification, setup, operation, testing and calibration of industrial instrumentation equipment at NASA LaRC. The types of equipment to be operated and maintained and under this contract include industrial controls, recorders, digital indicators, measuring systems, and industrial pressure, temperature, and level transmitters.
- b. Scope of Work.
- (1) Trouble Call Work. Trouble calls shall be received, managed and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and is included in the firm fixed price portion of the contract.
 - (2) Recurring Work: Recurring work (included in the firm fixed price portion of the contract) includes preventive maintenance and the preparation and maintenance of the Operation Procedures Plan, and shall be performed in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for recurring work and C.13 for IQ Work. System and equipment deficiency information obtained during the instrumentation support services shall be reported in accordance with Subsection C.7.o, *Reporting System and Equipment Deficiencies*. Attachment J-C6 - 20 lists the records and reports required of the Contractor.
- d. Facilities and Equipment. Building 1188 (LaRC on-site instrumentation shop) will be made available for the Contractor's use, as well as the Government Furnished Equipment identified in Attachment J-C-3.
- e. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for Industrial Instrumentation Support Service operations at LaRC. The objective is to perform work in accordance with written and bound procedures to ensure safe and reliable work. The Plan shall be developed using the following guidelines: (1) existing LaRC procedures, (2) equipment & system manufacturer's instructions, (3) OSHA requirements, and (4) procedures outlined in the *LaRC Safety Manual*. The Plan shall include any special instructions and the procedures to be used during instrumentation support services work, including work performance and acceptance criteria, qualifications of the technicians performing the work, and safety and accident reporting procedures.
- A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.
- f. Types of Equipment to be Serviced. The following is representative of the types of industrial equipment to be serviced under this Subsection:

- (1) Process Monitoring and Control Devices, such as temperature controllers, pressure controllers and chart recorders, and process transmitters.
 - (2) Boiler Controls, such as master, fuel, air, pressure, feedwater, damper position and flow controls.
 - (3) Environmental and Personnel Safety Gas Sampling Systems in 22 facilities utilizing the following gasses for calibration: freon, oxygen, methane, propane, hydrogen, and nitrogen.
 - (4) Meteorological Instrumentation, such as ambient temperature monitors, dew point monitors, relative humidity sensors, and weather stations.
 - (5) Temperature and Pressure Readouts, such as digital meters, analog meters and dial gages.
 - (6) Temperature Interlock Devices, such as Fenwall temperature switches, freeze alarms and temperature alarms for computer rooms.
 - (7) Industrial Ovens.
- g. Historical Information on Industrial Instrumentation Support Services. Trouble Calls are included in Attachment J-C8-11A. The average labor hours expended to provide these services each month is approximately 280 hours for an average of approximately 26 TC per month. It is anticipated that the scope of these support services will be the same as in prior years. In the past, approximately 80% of this work was performed on the job site and approximately 20% in Building 1188 (LaRC on-site instrumentation shop).

END OF SUBSECTION C.20.

C.21. BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform maintenance, repair, alterations, and inspections on buildings, structures, historical landmarks, monuments, and equipment at NASA LaRC (see J-C1). Also included is the fabrication of scaffolding and staging, shipping containers and storage boxes in support of both the facility and equipment maintenance and operational research efforts.
- b. Scope of Work:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and this subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance, preparation of the Annual Facility Condition Assessment, and weekly re-lamping checks (see C.21.g.(2)). This recurring work shall be accomplished in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*, and this subsection.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for recurring Work, and C.13 for Indefinite Quantity Work. Additionally, Attachment J-C6-21 lists the records and reports required of the Contractor as part of this work. System and equipment deficiency information obtained from failed and marginally passed tests and certifications, or noticed during trouble calls, facility inspections or preventive maintenance work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*.
- d. Americans With Disabilities Act (ADA). All work shall be in compliance with ADA requirements. The Contractor shall notify the Contracting Officer for authorization before performing any work that is contrary to or non-exempt from the ADA requirements.
- e. Research Facilities. Included in this contract is the maintenance of LaRC Research Facilities which include subsonic, transonic, supersonic and hypersonic wind tunnels, structural and materials research laboratories, and other unique, high energy and high technology facilities. A brief functional description of each major facility is included in Attachment J-C1-21B. Most of these have unique structural, mechanical and electrical features, such as wind tunnel main drive systems, research equipment vacuum and hydraulic systems, special test platforms and struts, and shop equipment which are to be maintained under this contract. See Subsection C.31., *Research Facilities Mechanical, Electrical and Fluids Systems Maintenance and Repair*.
- f. Historic National Preservation Facilities. Several LaRC facilities included in this contract are Official National Historic Landmarks. Accordingly, certain restrictions, limitations and requirements apply to the maintenance and repair work performed in, on and around these historic structures. This work shall be coordinated with the Contracting Officer.
- g. Requirements For Electrical. See Section C.31., *Research Facilities Mechanical, Electrical and Fluid Systems Maintenance and Repair*, for work requirements on Wind Tunnel and Research Laboratory support equipment and their related systems. Electrical work shall include the maintenance and repair of institutional electrical systems up to 13.8 kV and interior and exterior lighting fixtures for each building beginning at and including the weatherhead, or in the case of underground power, at and including the main distribution panel. All electrical equipment, service

connections, distribution panels, connections, conduits, conductors, grounds, outlets, switches, receptacles, wiring, circuit breakers, branch circuits, ground fault circuits, lighting fixtures, bulbs, photo cells, dimmers, contractors, motors, built-in collateral and personal property equipment, emergency lighting and lighted exit sign systems, exterior and obstruction lighting, and door bells and buzzers shall be repaired or replaced as required. Cracked, broken, or missing receptacle and switch face plates shall be replaced with new plates of the same/original color and size. Light fixture lenses and globes that are damaged or missing shall be replaced. Maintenance of lamps, appliances, and cords owned by individuals is not the responsibility of the Contractor.

- (1) Standards. The Contractor shall perform all work in accordance with LHB 1710.6, *Electrical Safety*. All workmanship and materials shall conform to applicable codes, regulations and standards including the National Fire Protection Association (NFPA) 70 National Electrical Code.
 - (2) Re-lamping. Replacement lamps and components shall be the same type, wattage, and voltage as those removed, unless otherwise directed by the Contracting Officer. Fixtures may be in high-bay or otherwise difficult to access areas. This work includes air traffic lighting, such as that on the impact dynamics gantry, water tower, Building 720 tow tank, and hangar, which shall be checked on a weekly basis. If outages on air traffic lighting are noted, the Contractor shall take remedial action within one hour of discovery by the Contractor or upon notification. Other re-lamping may be grouped in accordance with Subsection C.11.d.(3), *Trouble Calls for Lighting*.
 - (3) Emergency Light Requirements. Existing emergency lighting throughout LaRC shall be maintained under this contract. The National Electric Code (Life Safety Code NFPA 101) defines installation and maintenance requirements. Maintenance of these devices is included in the PM program. Installation, removal or relocation of emergency lights must be approved by the Contracting Officer.
- h. Requirements for Carpentry and Masonry. Carpentry and masonry maintenance, repair, and minor construction services shall be provided in accordance with the definitions, procedures, and standards specified in this subsection and in NHB 7320.1 Facilities Engineering Handbook, as applicable.
- (1) General Interior Work.
 - (a) Floors and Floor Coverings. Damaged or deteriorated flooring, sub-flooring, and structural members shall be repaired or replaced to provide a structurally sound, uniform, and aesthetic surface that is free of cracks, breaks, chips, tears, gouges, stains, and buckling. Where the contents of the floor covering is not known the Contractor shall test the covering for asbestos content and shall notify the Contracting Officer if any asbestos is in fact present. The bid prices for indefinite quantity unit priced tasks for flooring replacement shall include all costs for removal and disposal; subfloor surface preparation; and installation and finishing of flooring and baseboard and/or shoe molding.
 - 1 Resilient Tiles. Damaged or deteriorated tiles shall be replaced with matching tiles of the same thickness as the original. Damaged tiles or tiles to be replaced shall be removed without affecting adjacent tiles. Installation shall be in accordance with the tile manufacturer's instructions.
 - 2 Linoleum and Vinyl Sheet Flooring. Areas of flooring having gashes or other defects shall be replaced with matching sheet flooring of the same thickness as the original. Damaged flooring to be replaced shall be removed without affecting adjacent areas. The patch shall be installed using adhesive as recommended by the flooring manufacturer. If flooring is replaced adjacent to a wall, vinyl baseboard shall be replaced at no additional cost.

- 3 Finished Wood Flooring. Loose or slightly warped flooring shall be renailed or reglued to sub-flooring and/or concrete slabs with appropriate adhesive. Nails shall be set and filled with a wood putty. Scarred flooring that has holes and gashes less than 1/2 inch wide shall be filled and sealed. All other damaged flooring shall be removed and replaced without damage to adjacent walls or flooring. Defects in concrete slabs, such as rough or scaling areas or high/low spots shall be corrected. Replacement flooring or damaged flooring that requires touch-up refinishing shall be finished as part of the job, at no additional cost to the Government. Prior to refinishing the wood flooring, all flooring repairs or replacements shall be completed as specified above and all shoe molding shall be removed prior to sanding. All damaged or deteriorated shoe molding shall be replaced at no additional cost. Wood flooring shall be finished in accordance with Paragraph C.21.i., *Requirements for Painting.*
- 4 Terrazzo. Areas of terrazzo flooring having gashes or other defects shall be repaired to match the adjacent terrazzo. Treatment shall be appropriate for its respective type of binder – Portland cement, polyacrylic modified Portland cement, or epoxy or polyester. New terrazzo and grout shall be cured and polished to match the existing terrazzo. Portland cement systems shall be sealed with a penetrating-type sealer immediately following final polishing to regulate moisture evaporation and to inhibit the penetration of spilled materials upon initial contact with the terrazzo floor. Surface sealer shall be used on epoxy and polyester-type terrazzo floor systems.
- 5 Metal. Floor deck units shall be cut and fitted as required for the passage of other work projecting through, or adjacent to, the floor decking. Metal reinforcement and closure pieces shall provide the required strength, continuity of the floor decking, and required support of other work. Supporting members shall be completely in place before the placing of any cellular metal floor deck units is started. Units shall be placed on the supporting steel framework and adjusted to their final position with the ends bearing on the supporting members and aligned, end to end, before being permanently fastened. Floor deck units shall be fastened to the steel supporting members at the ends and at all intermediate supports, both parallel and perpendicular to the deck span, by welds in accordance with applicable specifications. Scarred areas on the metal floor decking and on the surface of supporting steel members shall be wire-brushed, cleaned, and touch-up painted. Scarred areas shall include welds, weld scars, bruises and rust spots. Galvanized surfaces shall be touched up with galvanizing repair paint. Painted surfaces shall be touched up with paint for the repair of painted surfaces.
- 6 Elevated (Raised Computer) Flooring. Floor covering shall be factory-attached to the floor panel by a non-creep adhesive. The floor system shall be laterally stable in all directions whether the panels are in place or not. The finished assembly shall be rigid and free of vibration and rocking panels. The floor shall be level within 0.10 inch. The floor panels shall be able to be conveniently removed for under-floor servicing and for openings for new equipment. No part of grilles or registers shall project more than 1/8 inch above the floor. Cutouts shall be finished with rigid polyvinylchloride or molded polypropylene edging to conform to the appearance level of the floor surface and to cover raw edges of the cutout panel. Edge strips shall be mechanically secured to the floor panel in a manner to preclude detachment under foot and wheel traffic. The top of the strip shall be flush with the top of the floor covering. There shall be no voids between the floor panels and the contiguous vertical surface trim. When flooring is being replaced or repaired, the subfloor shall be cleared of dust. No cutting, trimming, or other debris-producing operation shall be conducted in the area where any new flooring is being installed.

- 7 Concrete Floors. Cracked, broken or spalled areas shall be patched with a non-shrinking cement mortar. Areas shall be cleaned and all loose concrete removed. Underlying surfaces shall be chipped to ensure bond with the patch. Shallow spalled areas shall be chipped to provide space for an adequate patch thickness. The patch shall be finished even with the adjacent surfaces and finished to match existing texture. Exposed reinforcing steel shall be sandblasted to bare metal and coated with a rust inhibitive primer before restoring concrete.
 - 8 Vinyl Baseboards. Deteriorated or damaged sections of vinyl baseboard shall be removed and wall and floor surfaces cleaned of all dirt, oil, grease, mildew, moisture, adhesive and debris. Loose baseboards shall be resecured to the wall and damaged, deteriorated, or missing baseboard sections shall be replaced with sections of the same color, pattern and size with an adhesive conforming to the manufacturer's recommendations.
 - 9 Ceramic Tile. Ceramic tile floors that are broken, missing, cracked or discolored shall be replaced as required. Floor tiles shall be regouted, as required, to provide a waterproof seal. In those cases where replacement tiles of an exact match cannot be found, the Contractor may be required to remove and replace non-defective tiles to create a pattern and minimize the visual effect of the mis-match.
 - 10 Gymnasium Flooring. Gymnasium flooring that is loose, missing, gouged, warped, disfigured, marred, water stained or otherwise damaged shall be replaced or refinished as necessary. Replacement wooden strips shall, unless otherwise directed, run parallel to adjacent strips, be sanded to 100 grit, cleaned, sealed, finished, buffed and marked as necessary to match the adjacent strips and existing configuration and design.
- (b) Interior Walls, Ceilings, and Trim. Damaged and deteriorated walls, ceilings, and related trim shall be repaired or replaced to provide an attractive surface free of noticeable cracks, spalls, raised areas, holes and dents, and marks and stains. Wood trim items and ceiling fixtures shall be removed as necessary to provide access to the damaged area. On completion of the repair activity, fixtures and trim shall be reinstalled, nails set and filled and items repainted or refinished to restore them to their original condition. When removing wall or ceiling coverings, the Contractor shall inspect the supporting structural system and notify the Contracting Officer immediately of any need for repair before proceeding.
- 1 Drywall. Small dents and holes shall be repaired with spackle over a backing plate when necessary. Spackle shall be feathered on the adjacent surfaces. Holes and other defects in wallboard between two studs or beams shall be repaired by removing a rectangle of gypsum board to the center of the adjoining studs or beams. Replacement gypsum board shall be of the same thickness and texture as the adjacent sheets.
 - 2 Vinyl Wall Covering. Wall covering that has been ripped, scarred, stained, or otherwise damaged shall be repaired or replaced as necessary. Wall covering shall be repaired if the damaged area can be patched and is not noticeable. Wall covering that is extensively damaged, or for which a matching wall covering is not available, shall be repaired by replacing the covering on the entire wall. If matching wall covering is not available, the Contractor shall find a comparable substitute. The Contracting Officer will approve all replacement wall coverings that do not match the existing wall covering. Replacement wall covering shall be hung according to the manufacturer's recommendations.

- 3 Ceramic Tile. Ceramic tile walls and window stools and marble saddles that are broken, missing, cracked or discolored shall be replaced, as required. Tiles shall be regouted as required to provide a waterproof seal. In those cases where replacement tiles of an exact match cannot be found, the Contractor may be required to remove and replace non defective tiles to create a pattern and minimize the visual effect of the mismatch.
 - 4 Masonry. Damaged masonry units (brick or concrete block) shall be replaced with a unit of the same size, color and texture. The mortar shall be completely removed and the cavity cleaned and all debris removed. The masonry unit shall then be resealed in mortar and the remaining cavity packed with mortar. All joints between masonry units shall be pointed to match existing. Damaged mortar joints shall be chipped out, cleaned and dampened before being repointed. Repointed joints shall match undamaged joints. Trim and miscellaneous hardware items shall be removed and replaced as necessary so as not to interfere with the work.
 - 5 Suspended Ceilings. Broken and stained ceiling tiles shall be replaced with tiles of the same material, style, size, and color. Damaged and broken suspended grid system shall be repaired/replaced as necessary to provide a suspended ceiling system as designed. The bid prices for indefinite quantity unit priced tasks for acoustical ceiling tile replacement shall include all costs for removal, disposal, and installation of acoustical ceiling tiles.
- (c) Doors. Interior doors shall be maintained/repared to operate smoothly without binding or sticking. Damaged, deteriorated, or missing doors, glass and associated hardware shall be repaired or replaced as required. The replaced doors shall be the same type and have the same finish as the original doors. All replacement doors shall be installed with the hardware from the damaged door unless the hardware is unrepairable. Small holes in door faces shall be filled with an epoxy filler and finished to match the surrounding door surface.
- (d) Stairs and Stairwells. The Contractor shall secure loose treads, risers, stringers, handrails, brackets and other components. Badly damaged stair and handrail components shall be refinished to match original components. Damaged stair finish shall be repaired. Trim items susceptible to damage during the repair activity shall be removed and reinstalled upon completion of the repair activity.
- (e) Cabinets and Countertops. Damaged or deteriorated cabinets, shelving, and countertops shall be repaired or replaced as required. Missing or inoperative hardware shall be replaced. Countertops shall be free of warped, chipped, burned, cut, or otherwise marred areas. Loose joints shall be secured and filled. Countertops and backsplash shall be the fully formed type comprised of a single unit with the backsplash no less than 3 ½ inches high. Replacement cabinets and countertops shall conform to the requirements of American National Standards Institute publication A161.1. When painting or varnishing repaired/replaced cabinets is required, all cabinets in the room shall be painted/varnished if required to make a satisfactory match.
- (f) Interior Accessories. The Contractor shall repair or replace damaged, inoperative, or missing interior accessories including, but not limited to, paper holders, soap trays, dispensers, towel bars, shower curtain rods, medicine cabinets, mirrors, smoke detectors, and door stops. Loose accessories shall be resecured by tightening or replacing screws or by using a suitable adhesive. Damaged or missing items shall be replaced with items matching the original. Replacement hardware shall conform to the Building Hardware Manufacturer's Association (BHMA) Product Standard. Hardware items requiring lubrication shall be lubricated and restored to an operable condition.

Repairable rusted metal components shall be cleaned of all rust, coated with a rust inhibitor and restored to an operational condition.

(2) General Exterior Work.

- (a) Exterior Walls. The Contractor shall repair or replace as required damaged walls to maintain the aesthetics of the facility and quality of the original construction or latest remodel. Damaged or deteriorated wall areas shall be repaired or replaced to restore them to a serviceable, structurally sound, and watertight condition. This includes, but is not limited to, replacing damaged masonry units, tuckpointing loose or eroded mortar joints, sealing penetrations in wall openings, replacing damaged or deteriorated structural members, siding, underlayment, and exterior trim, replacing miscellaneous hardware items, and removal of vegetation, discoloration, graffiti, or other defects that would render an unsightly appearance to exterior walls.
- 1 Masonry. Damaged masonry units (brick or concrete block) shall be replaced with a unit of the same size, color and texture. The mortar shall be completely removed and the cavity cleaned and all debris removed. The masonry unit shall then be resealed in mortar and the remaining cavity packed with mortar. All joints between masonry units shall be pointed to match existing. Damaged mortar joints shall be chipped out, cleaned and dampened before being repointed. Repointed joints shall match undamaged joints.
 - 2 Hardboard Siding. Damaged hardboard siding shall be removed without damaging adjacent siding or underlayment. Replacement siding shall match the existing siding in color, texture and material. The siding face and edges shall be factory primed and the back shall be factory sealed. Nails shall be of the type and size specified by the manufacturer and shall be driven flush. All joints shall be caulked.
 - 3 Metal Siding. Damaged metal siding shall be removed without damaging adjacent siding, underlayment or insulation. Replacement siding shall match the existing siding in color, type of finish, gage thickness, tensile and yield strength, panel width and length, appearance, texture and material. Siding shall be of the greatest length and arrangement to minimize end laps. Where possible, sheets shall extend the full height of walls without horizontal joints. Sections shall be in full and firm contact with structural supports. Flashings, dormers, closers, metal expansion joints, ridge rolls, fillers, and other sheet metal accessories shall be factory formed material of the same type and quality finish as the siding sheets and the siding face and edges shall be factory painted. Where factory finish is damaged, the finish shall be repaired and made to match the factory finish. Nails, screws and fasteners shall be of the type and size specified by the manufacturer and shall be driven flush. All joints shall be sealed. Sealer color shall match panel colors. The siding shall be installed in accordance with the manufacturer's recommendations.
 - 4 Fabric. The fabric skin on air supported and tension frame membrane structures shall be maintained in good repair to ensure structural integrity and an aesthetically pleasing appearance. Rips, tears, rubs, abrasions and other discrepancies shall be patched in accordance with the structure's manufacturer's recommendations using appropriate adhesive and material matching the existing in color, weight, fabric, pattern, etc. All frames, platforms, cables, tubing, channels, tie-downs, and other supporting structures as well as doors, air barriers, air compressors, and other equipment and components associated with the structural soundness of the structure shall be in good condition, and fully functional as intended and designed.
 - 5 Seams. Seams between window or door frames and exterior walls shall be caulked. Old joints shall be scraped and cleaned with a solvent recommended by the caulking

manufacturer. The caulking shall be applied according to the manufacturer's directions

- 6 Metal Flashing and Trim. Damaged or deteriorated metal flashing and trim shall be repaired or replaced to match the existing trim.
- (b) Exterior Trim. Exterior trim, including all exterior moldings, millwork, shutters, and cornice shall be repaired or replaced as required. Surfaces to receive trim shall be thoroughly cleaned of sealant and paint build-up prior to installation of trim. Damaged or deteriorated insulation board or underlayment shall be replaced with material of the same type, thickness, and quality. Bird screens and soffit vents shall be intact and free of corrosion and missing pieces. All wood trim items shall be prime painted prior to installation.
- (c) Roofing. The Contractor shall immediately remedy roof leaks. Leaking is defined as any moisture penetration beyond the outermost moisture barrier. A roof with moisture in the insulation layer interior to its moisture barrier is considered to be a leaking roof. The Contractor shall accomplish temporary repairs under wet conditions to protect government property and personnel. Durable permanent repairs shall be completed as soon as conditions allow. Damaged, deteriorated, or missing roofing, sheathing, flashing, gravel stops, miscellaneous roof structures and components, and structural supports shall be repaired or replaced as required to provide a watertight seal and to retain the original whole condition of the roof system. All roofing work shall be in accordance with National Roofing Contractors Association (NRCA) standards. Installation of roofing materials shall be in accordance with the roofing material manufacturer's recommendations. Prices for indefinite quantity unit priced tasks for roofing replacement shall include all costs for removal and disposal; roof deck surface preparation; and installation of underlayment and roofing.
- 1 Annual Roof Inspection. Annually, in conjunction with the Facility Condition Assessment discussed in Paragraph C.8.f., *Facility Condition Assessment*, the Contractor shall inspect and perform a condition assessment of all roofs of the facilities listed in Attachment J-C14-21. The inspection criteria shall include all elements of maintenance to protect the facilities from leaks and to preserve the condition of the roof and prevent it from any degradation. The inspection shall contain all elements of roofing, flashing, coping, gravel stops, pitch pockets, penetrations, drains, perimeter edging, fascia, scuppers, and caulking. The Contractor shall track trends, conditions and remedial actions taken. The information obtained shall be compiled by building into a prioritized list (in a format previously approved by the Contracting Officer) of needed roofing requirements and recommendations, identified on roof layout drawings, and provided electronically not later than March 1 annually. This assessment shall be complementary to and referenced in, but not duplicate, the findings of the Facility Condition Assessment and shall be separately firm fixed priced in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*.
- 2 Structural Members. All trusses, joists, sheathing, and other structural roof members shall be repaired or replaced as required to ensure the structure is safe for occupancy and structurally sound. While making repairs, inspection of other supporting members shall be made and deficiencies reported to the Contracting Officer.
- 3 Shingle Roofing. Damaged and deteriorated shingles shall be removed without damaging those in the unaffected areas. Damaged underlayment shall be cut and removed leaving sound material exposed surrounding the repair area. New underlayment and shingles shall be installed in accordance with standard industrial

practices. Vents and other projections through roofs shall be flashed according to the requirements specified below.

- 4 Built-up and Elastomeric Roofing. Damaged and deteriorated roofing shall be removed without damaging unaffected areas. The replaced roofing shall be the same type and size and be compatible with the existing roofing. The roofing shall be installed in accordance with the manufacturers' recommendations.
- 5 Metal Roofing. Damaged metal roofing shall be removed without damaging adjacent roofing, underlayment or insulation. Replacement roofing shall match the existing roofing in color, type of finish, gage thickness, tensile and yield strength, panel length and width, appearance, texture and material. Roofing sheets shall be of sufficient length to bridge at least three purlin spans plus the required end lap. Sections shall be in full and firm contact with structural supports. Very small areas such as punctures may be repaired with patches matching the existing metal roofing in strength and appearance and roof cement. Flashings, fillers, and other sheet metal accessories shall be factory formed material of the same type and quality finish as the roofing sheets and the roofing face and edges shall be factory painted. Where the factory finish is damaged, the finish shall be repaired and made to match the factory finish. Screws and fasteners shall be of the type and size specified by the manufacturer and shall be driven flush. All joints shall be sealed. Sealer color shall match panel colors. The roofing shall be installed in accordance with the manufacturer's recommendations.
- 6 Single Ply Membrane. Damaged and deteriorated roofing shall be removed without damaging unaffected areas. The surface on which roofing is to be applied shall be firm and smooth, free of projections, ice, frost, moisture, dirt and foreign materials. Vents and other items penetrating the roof shall be in position and properly prepared with manufactured flashings or fittings. The replaced roofing shall be the same type and size and be compatible with the existing roofing. The roofing shall be installed in accordance with the manufacturers' recommendations. Adhesives shall be compatible with membranes and materials in which they are bonded.
- 7 Corrugated Fiberglass. Damaged corrugated fiberglass roofing shall be removed without damaging adjacent roofing, underlayment or insulation. Replacement roofing shall match the existing roofing in color, type of finish, gage thickness, tensile and yield strength, panel length and width, appearance, texture and material. Roofing sheets shall be of sufficient length to bridge at least three purlin spans plus the required end lap. Sections shall be in full and firm contact with structural supports. Screws and fasteners shall be of the type and size specified by the manufacturer and shall be driven flush. All joints shall be sealed. The sealer color shall match panel colors. The roofing shall be installed in accordance with the manufacturer's recommendations.
- 8 Roof Flashing. Existing flashing shall be rehabilitated to form an effective water seal. Areas covered with deteriorated bituminous cement shall be cleaned of all loose materials and debris and recoated with cement. Deteriorated mortar joints in chimneys intended to seal and anchor flashing shall be cleared of mortar and the flashing reinserted and the joint filled with mortar patch and finished to match existing joints. Damaged flashing around vent pipes, attic turbines and other mechanical openings shall be replaced with appropriately formed flashing. Shingles around penetrations shall be removed without damaging adjacent roofing or underlayment. The flashing shall be securely nailed into the roof sheathing or roof support. Bituminous plastic cement shall be applied over the nail heads and the flashing edges. The roofing shall be properly replaced and all nail heads and the joint between the flashing and the vent shall be coated with bituminous plastic cement.

Flashing around mechanical equipment, chimneys, and other large protrusions shall provide an effective water seal

- 9 Miscellaneous Roof Structures and Components. Chimneys, vent stacks, roof ventilators, other items piercing the roof, gravel stops, pitch pockets, ridge caps, and scuppers shall be repaired or replaced so as to function as originally intended and designed.
- (d) Gutters and Downspouts. Clogged gutters and downspouts shall be cleaned out. Broken, damaged, misaligned, or leaking gutters and downspouts shall be repaired or replaced with new material to match the original in gauge, type of material and finish, and loose hangers and fasteners shall be tightened. Missing wire guards, hangers and fasteners for gutters and downspouts, and splash blocks shall be replaced. Splash blocks shall be properly positioned to receive the impact of drainage water.
- (e) Exterior Concrete and Masonry Structures. Damaged footings, foundations, piers, columns, ornamental structures and exterior concrete (Portland cement and asphaltic) surfaced areas within five feet of the building or structure, such as patios, sidewalks, steps, and handicap ramps, shall be repaired so that they are structurally sound, at original alignment and grade except to meet ADA requirements, and are free of damage and major cracks. Roots that cause or contribute to concrete damage shall be removed and the area backfilled. Masonry fences, planters, and steps shall be repaired to replace missing or broken masonry units and repair deteriorated mortar parts, gaps, breaks, and loose components.
- (f) Exterior Accessories. Damaged, deteriorated, or missing building numbers, exhaust fan vent caps, chimney caps, entrance canopies and other miscellaneous components and hardware shall be installed, repaired, or replaced as required.
- (g) Stairs. Damaged or deteriorated stairs and stairways, including treads, risers, nosings, stringers, brackets, balustrades, handrails, and other components shall be repaired or replaced as required.
- (h) Doors, Windows, and Screens. Doors (including storm doors), windows (including storm windows), and screens shall operate smoothly without binding or sticking in accordance with the manufacturer's design. Damaged, deteriorated, or missing doors, windows, and screens, and associated components shall be repaired or replaced as required. Caulking, glazing, and weather-stripping shall be fully intact to maintain a fully weather tight seal. Replacement glass shall be of the same size, type, and quality as the existing glass.
- 1 Doors. Damaged, deteriorated, warped, swollen, and sagged doors shall be repaired or replaced with doors the same type and size. Exterior doors shall be removed and replaced the same workday. All replaced doors shall be installed with closers and other hardware from existing doors, if practicable. All locking hardware must accept specified and provided locks. Cracked and broken glass in doors shall be replaced with glass of the same quality, type, and size. Damaged or deteriorated weather stripping shall be replaced in accordance with its manufacturer's recommendations. Flattened spring-type weather stripping shall be lifted or replaced to provide an effective seal.
- 2 Large and Small Sliding Doors. Damaged and/or deteriorated metal and wooden sliding doors and related hardware shall be repaired/replaced with doors and related hardware of the same type, size, and color.

- 3 Screens and Screen Doors. Replacement screening shall be of the same material as the existing metallic screening. Small holes (less than four square inches) in screens may be repaired with a patch matching the existing screening. The free end wires of patches shall be bent around screen to secure patch in position. Exposed screening ends shall be cemented with a colorless plastic cement. No exposed screening ends shall protrude from the screen. Warped screen doors and frames shall be straightened if possible to fit squarely in opening. If beyond repair, warped items shall be replaced.
- 4 Hardware. Damaged, inoperable, or missing hardware such as hinges, locks, striker plates, latches, keepers, panic devices, window operating mechanisms, door closures, springs, etc. shall be adjusted, repaired, repacked, or replaced as required. Replacement hardware shall match existing hardware in type, size, quality and finish and meet the Building Hardware Manufacturer's Association (BHMA) Product Standards. All locking hardware must accept specified and provided locks. Hardware shall be installed in accordance with the manufacturer's recommendations.
- 5 Overhead or Rolling doors. After repairs or adjustment rails shall be checked for alignment. Rusted or corroded areas shall be repaired or replaced. All bearings, rollers, gears, and pulleys shall be properly lubricated. All hangers, bolts, springs, and pins shall be free of rust and corrosion and shall be tightly mounted and secured. Motors shall operate properly and be properly lubricated. Cables and fusible links shall be correctly installed and free from corrosion and rust.
- 6 Windows. Broken and cracked window glass shall be replaced to match the original to avoid personal injury, leaks and to keep solar coverings over windows in good repair. Windows designed to open and close shall move freely and be able to be secured as designed.

(3) Miscellaneous Work.

- (a) Scaffolding and Staging. The Contractor shall provide and install safe, secure and sufficient scaffolding and staging in support of the maintenance and repair effort. All scaffolding shall comply with OSHA requirements. Scaffolding and staging erected or installed in conjunction with trouble calls, recurring work, and other fixed-price services is considered incidental to and part of the job, and shall be provided at no additional cost to the Government. Scaffolding and staging shall be ordered from the indefinite quantity portion of the contract only if the description of the work is beyond the scope of a trouble call. Additionally, the Contractor shall provide and install scaffolding and other supporting structures specifically in support of research and development operations performed by others. This operational support shall be included under the indefinite quantity portion of the contract.
- (b) Shipping Containers and Storage Boxes. The Contractor shall fabricate customized, tailored wooden containers, boxes, and crates and provide chocking and blocking for the movement of material on an as-needed basis specifically in support of research and development and logistics operations performed by others. This operational support shall be included under the indefinite quantity portion of the contract.
- (c) Miscellaneous Buildings and Structures. The Contractor shall perform maintenance and repair on miscellaneous buildings and structures such as employee recreation and child day care facilities, grandstands, bleachers, research structures, communication and other towers, storage platforms, guard shacks, picnic and bus stop shelters, grease and elevated garbage racks, flagpoles, monuments, fueling stations, playground and gymnasium equipment, and other miscellaneous structures listed in Attachment J-C1-21A.

- (d) Signs. The Contractor shall furnish, fabricate, and/or make a variety of signs to consist of identifying plates, warning signs, directory signs, and general signs on sheet metal, aluminum, plastic, and wood using paint, or baked-on reflective products. The Contractor shall install the various types of signs using different fasteners and mounts.
- i. Requirements For Painting. Also see Subsection C-17, *Corrosion Control and Coating Services*. Interior and exterior painting under this subsection shall include architectural, preservation, spot, and touch-up incidental to repair painting of all types of surfaces on buildings and miscellaneous structures and equipment including machinery, pipes, ducts, conduit, structural steel, walls and siding, chain link fencing, and platforms. Interior and exterior painting performed in conjunction with trouble calls, recurring work, and other fixed-price services is considered incidental to and part of the job, and shall be provided at no additional cost to the Government. Painting shall be ordered from the indefinite quantity portion of the contract only if the description of the work is beyond the scope of a trouble call. The indefinite quantity unit prices bid shall include all costs for surface preparation, caulking, required spot priming, protection of items which are not to be painted; and other requirements as specified in this paragraph. All painting, whether interior or exterior, fixed-price or indefinite quantity, shall include all work necessary for a finished job including special markings (such as arrows, color coding or product identification (e.g., CO2), windows, door frames, trim, molding, closets, and shelves. Attachment J-C19-17 provides a schedule for corrosion control (Subsection C.17) and the coating of various interior and exterior surfaces encountered at LaRC.
- (1) Certificates of Compliance. Certificates of compliance from the manufacturer shall be submitted for all paint types listed in the Paint Schedule (Attachment J-C19-17).
- (2) Protection of Areas. All furnishings, equipment, floor coverings, and other surfaces not to be painted shall be carefully moved, covered, or otherwise protected prior to painting. Items such as hardware, hardware accessories, machined surfaces, signs, blinds, curtains, plates, light fixtures, and similar items in contact with painted surfaces shall be removed, masked, or otherwise protected prior to surface preparation. After painting, the Contractor shall remove paint, both old and new paint, from surfaces not to be painted and restore the surfaces to their original condition. All removed items shall be repositioned and furnishings and other property returned to their original position. Painted items such as windows, doors, and cabinets shall operate smoothly without binding. The Contractor shall be responsible for the cost of repairing any damage caused to Government or personal property.
- (3) Surface Preparation. Surfaces to be painted shall be cleaned to remove all dirt, dust, rust, scale, splinters, mildew, chalked paint, loose particles, disintegrated coatings, grease, oil, and other deleterious substances. Sanding, sand- and water blasting, wire brushing, washing, and chemical treatments shall be used as necessary to properly prepare the surface for painting, except that water and sand blasting shall not be used on unpainted wood. All scratches, nicks, cracks, gouges, spalls, alligatoring, and irregularities due to partial peeling of previous paint shall be repaired, sanded, spackled, caulked, or otherwise treated to render such defects practically imperceptible. Caulking and other compounds shall be allowed to cure for the times stated in the manufacturer's literature prior to painting. Existing enamel and other glossy surfaces shall be sanded. All new work, surfaces bared by surface preparation, and exposed nails and other ferrous metals shall be primed.
- (4) Airless Sprayers. Application of paint by airless spray shall be accomplished only by firms and persons experienced in the use of this type of equipment. At least 15 calendar days prior to application of paint by airless spray, the Contractor shall submit data for the approval of the Contracting Officer demonstrating that the proposed applicators have successfully applied paint with airless spray equipment. The data shall include the names and locations of at least two locations where the applicators referred to above, have used the airless spray method for applying paint. The Contractor shall indicate the type and design of the airless spray

equipment and certify that this method of applying paint has been performed satisfactorily. All equipment shall be in good condition and operated in accordance with the manufacturer's instructions.

- (5) Workmanship. Paint shall be applied carefully with good, clean brushes, rollers, or approved airless sprayers to provide smooth finished surfaces free from runs, drips, ridges, waves, laps, brush marks, variations in color, or other defects. Two coats shall be applied to all new surfaces, or surfaces bared by surface preparation, and as required to completely cover stains and marks. First coats shall be thoroughly dry prior to application of second coats, and there shall be an easily perceptible difference in shades of successive coats. Each coat shall be of sufficient thickness to completely cover the preceding coat or surface. Paint used in touch up painting shall blend with the color and texture of the surrounding areas.
- (6) Paint Requirements and Schedule. Reference specifications and coating schedule are listed in Attachment J-C19-17. The Contracting Officer will specify the colors for finish coats from Federal Standard 595. Paint shall be delivered to the job site in original, unopened containers bearing the manufacturer's name, brand designation, and instructions for application. Thinners shall be used only when mandatory for the type of paint being used and with prior approval of the Contracting Officer. Paint products that meet NASA LaRC performance specifications are manufactured by Pittsburgh Paints, Sherwin-Williams and Glidden. Note that NASA LaRC follows the specifications and standards of the Steel Structures Painting Council (SSPC) for coating exposed structural steel. Paint manufacturer's recommendations shall be followed including the weather and other environmental conditions under which the paint should be applied.
- j. Requirements For Plumbing and Piping Systems. Plumbing and piping work shall include maintenance and repair of the plumbing and piping systems and fixtures of each facility. Included are conventional plumbing, industrial piping, compressed air systems, high pressure gas distribution systems, filtration systems, bottled gas manifold systems, water distillation systems, water sterilizers, propane systems, natural gas systems, water distribution systems, sanitation systems, metering stations, pressure reducing stations, stills, autoclaves, expansion devices, vibration eliminators (pertinent to piping systems), filters, strainers, grease traps, and valves. Included also are the replacement, cleaning, relining, and installation of pipe and tubing. Excavation and backfilling services shall be provided by the Contractor. The Contractor shall obtain a digging permit for all excavations greater than 6 inches deep in accordance with LHB 1740.2, *Facility Safety Requirements*. Where excavations are provided for the work, the Contractor shall restore the area to its original condition. Flow adjustments shall be made in accordance with established flow control diagrams. When repaired, plumbing systems and fixtures shall be free flowing, in good, safe operating condition, free of leaks and drips. Domestic water lines shall be maintained from and include the service cut-off box or five feet beyond the outside of the building to and including any tap or plumbing fixture. Waste and sewage lines (including all lines six inches in diameter and smaller) shall be maintained from a point five feet beyond the outside of the building to and including any drain or plumbing fixture. Natural and propane gas lines shall be maintained from and including the cut-off valve at the pressure regulator and/or storage tank to and including the appliance, heater, or water heater connection. Hydraulic and pneumatic systems shall be maintained for leak-free and proper operation. All work shall meet the workmanship and material requirements of the American National Standards Institute A40.8-55, National Plumbing Code and applicable specifications. All work shall be performed in accordance with the LaRC Safety Manual and particularly, LHB 1710.40, *Safety Regulations Covering Pressurized Systems*.
- (1) Major Internal Piping Systems. The work under this paragraph shall include trouble call work, recurring work, and indefinite quantity work on major piping, insulation and associated system components, including relief and pressure reducing valves, piping regulators, high pressure switches, transmitters, and hydraulic pumps. Non-destructive testing shall be performed on all systems above 125 psi and shall consist of , as appropriate, radiograph inspection,

magnetic particle inspection, and die penetrant testing. See also Subsection C.31., *Research Facilities Mechanical, Electrical and Fluid Systems Maintenance and Repair*. The following major types of piping systems are found in the various buildings and structures at LaRC:

- (a) Compressed Air Systems. up to 6,000 psi. Appropriate pipe materials and sizes apply up to 24 inches.
 - (b) High and Low Pressure Gaseous and Liquid Nitrogen Systems. Appropriate pipe materials apply for pressure up to 12,000 psi.
 - (c) Methane Gas Systems. Appropriate pipe materials apply for pressures up to 6,000 psi.
 - (d) Liquid/Gaseous Oxygen Systems. Appropriate pipe materials apply for pressures up to 6,000 psi.
 - (e) Helium Systems. Appropriate pipe materials apply for pressures up to 6,000 psi.
 - (f) High Pressure Water Systems. Appropriate pipe materials apply for pressures up to 6,000 psi.
 - (g) Argon Systems. Appropriate pipe materials for low-pressure purge.
 - (h) CF₄ Gas System. Appropriate pipe materials for pressures up to 2,500 psi.
 - (i) Vacuum Systems. Piping diameter is up to 72 inches.
 - (j) Silane Systems. Appropriate pipe materials apply.
 - (k) Domestic Water System, 14 inches and smaller, under- and above ground throughout the facilities. Materials are PVC, CPVC, cast iron, galvanized, and copper. See also Subsection C.29., *Potable Water System Maintenance and Repair*.
 - (l) Sewage and Wastewater System, consisting of an 8-inch forced main and standard drainage systems. See also Subsection C.30., *Sanitary Sewer System Maintenance and Repair*.
- (2) Hydraulic Systems. The work under this paragraph shall include trouble call work, recurring work, and indefinite quantity work on major hydraulic systems within LaRC facilities. Included is the maintenance and repair of piping, tubing, hoses, accumulators, gages, valves, pumps, servo control valves, filters, check valves, and fail-safe systems. See also Subsection C.31., *Research Facilities Mechanical, Electrical and Fluid Systems Maintenance and Repair*.
 - (3) Clean-up/Restoration. The Contractor shall mop up, vacuum, or otherwise remove water resulting from overflowing fixtures, leaks, clogged drains, etc. as part of the repair. Walls, ceilings, and other structures, paved areas such as sidewalks and roads, grassed areas, etc. which are damaged by and/or removed to gain access to leaks, clogs, or other defects shall be restored by the Contractor to original condition.
 - (4) Plumbing Fixtures. All sinks, tubs, toilets, urinals, basins, and faucets, lavatories, showers, drain lines, traps, etc. shall be free of leaks and drips, operate properly, drain freely, and be free of excessive dripping, cracks, and coloration. All fixtures and components thereof that cannot be repaired shall be replaced with fixtures that are in strict compliance with BOCA Basic Plumbing Code 978-4th Edition. ADA access requirements must be met.
 - (5) Domestic Water Heaters. Domestic water heaters shall be repaired or replaced as required to provide hot water at least 140° F, without leaks. Controls, control devices, and safety

devices shall operate safely and properly. Water heater insulation jackets (3 inch minimum thickness) shall be installed on all replacement water heaters and/or existing units when excessively worn, damaged, or missing.

- (6) Drinking Fountains. The Contractor shall maintain, repair, and replace all drinking fountains and their component parts. Fountains shall be free of leaks and shall operate in accordance with the manufacturer's design specifications. All damaged and worn component parts shall be replaced. Replacement fountains or component parts shall be equal to or better in quality, size, and capacity to that being replaced. ADA requirements must be met. Fountains shall be firmly secured to support structures, and free of movement and vibration.
- (7) Pipe Covering and Insulation. The Contractor shall cover and insulate all piping to eliminate failure due to extreme temperatures. This work shall include the application of various materials to piping, maintaining jackets on insulated piping and maintaining identification medium on piping surfaces.
- k. Requirements For Security Fences. The Contractor shall provide maintenance, repair, and replacement of security fences identified in Attachment J-C1-21C to ensure that all exterior and interior fences are kept in good repair. All gates shall be maintained security tight and all hinges and locking devices shall be kept in good working order. Repairs required include, but are not limited to, the following: repairing holes in the chain link fence and wire cages; stringing barbed wire on top of the fence; replacing or resetting fence support stanchions; replacing or repairing hinges and locking devices; and removing rust and painting fences.
- l. Requirements For Machining, Welding, and Metal Work. The Contractor shall provide maintenance, repair, or replacement of metal components of buildings and structures, installed building equipment such as exhaust fans, and shall construct and install metal components in support of other repair activities as required by this subsection. Machining, welding and metal work performed in conjunction with trouble calls, recurring work, and other fixed-price services is considered incidental to and part of the job, and shall be provided at no additional cost to the Government. This work shall be ordered from the indefinite quantity portion of the contract only if the description of the work is beyond the scope of a trouble call.
 - (1) Metal Work. Metal work shall include heating and bending to form metal shapes, drilling, torch cutting, hammer forging, grinding, sawing and fitting of metal parts. The Contractor shall perform metal work to maintain and repair or fabricate and replace metal components of buildings and structures, installed building equipment, and kitchen and shop equipment. Also included is the construction and installation of metal components in support of other maintenance activities. The Contractor shall work with materials from a variety of sheet metal stocks including aluminum, copper, galvanized and stainless steel.
 - (2) Piping and Tubing Fabrication. The Contractor shall fabricate and install piping of various materials including carbon steel, stainless steel, monel, inconel, and aluminum, using fit-up and weld methods such as open butt E.B. insert, socket weld, and chill rings. Additionally, the Contractor shall fabricate and install high-pressure stainless steel tubing. The work requires bending, flaring, soldering, welding, and the installation of various types of compression fittings.
 - (3) Welding. The Contractor shall provide all types of welding and brazing required for the maintenance and repair of buildings, structures, appurtenances, pressure systems, and machinery in accordance with applicable codes. Welding shall be performed on light, heavy gauge and hardened metals and castings using flat, vertical, horizontal, and overhead positions. Welding typically shall be performed on fixtures, brackets, tools, machinery, high pressure piping systems, pressure vessels, grates, catwalks, handrails, structural steel and test support stands. Processes include shielded metal arc welding (SMAW), gas metal arc welding (GMAW), preheating, brazing, bead welding, tack welding, plasma and flame cutting,

pressure welding and heat treating. Welding, burning and open flame work shall be subject to the following conditions: (1) the method must be approved by the Contracting Officer, (2) applicable code compliance in the area of Welding Procedure Specification, Welding Procedure Qualification, and Welder Qualification shall be satisfied for all welding work to be performed under this contract, including testing, documentation and record keeping and (3) the Contractor shall provide an adequate fire watch and the required fire extinguishing equipment, and (4) the Contractor shall notify the Contracting Officer and obtain a welding permit before proceeding. Applicable codes include American Society of Mechanical Engineers (ASME) Section IX, American National Standards Institute (ANSI), and American Welding Society (AWS) D1.1 and D1.3 standards.

- (4) Machinist Tasks. The Contractor shall perform machinist tasks such as drilling, tapping, boring, reaming, and grinding a variety of materials such as steel, cast iron, stainless steel, aluminum, copper, brass, bearing bronze, manganese, babbitt, etc. The Contractor shall install equipment requiring critical alignment of motors, pumps, blowers, gear reducers, etc.
- m. Requirements For Shop Equipment. The Contractor shall provide maintenance and repair services for a variety of plant property and personal property shop equipment such as milling machines, lathes, routers, band saws, and drill presses. The Contractor shall insure that the interval between monthly PMs for shop equipment in Building 1225, listed in J. C.9.4, does not exceed 35 days. The shop equipment is identified in Attachment J-C1-22A-G.
- n. Requirements For Food Service Equipment. The Contractor shall provide maintenance and repair services for a variety of food service type equipment such as electric and/or gas baking ovens, grills, ranges, deep fat fryers, microwave ovens, ice cream boxes, food serving and salad bars, and dishwashers. These are identified in Attachment J-C1-22A-G.
- o. Requirements for Special Events Support. Special event support typically involves erecting tents, staging, running temporary power and lighting, setting up chairs, preparing the site, post-event cleanup and take down, etc., and shall be ordered from the unit price labor and/or task listings in Section B in accordance with the *Indefinite Quantity Work* provisions of Subsection C.13.
- p. Housekeeping. See Paragraph C.7.t., *Housekeeping*.
- q. Hazardous Materials. See paragraph C.7.r, *Hazardous Materials*.

END OF SUBSECTION C.21

C.22 HEATING, VENTILATION, AIR CONDITIONING (HVAC) AND REFRIGERATION MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall operate, maintain, troubleshoot, and repair heating, ventilating, air conditioning, and refrigeration (HVAC/R), and HVAC control air systems and associated equipment at NASA LaRC (see J-C1). This work shall be in accordance with the requirements specified in this contract.
- b. Scope of Work:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and this subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance, cooling tower and closed loop water treatment, cooling tower structure inspection and the preparation and maintenance of the Operation Procedures Plan. This recurring work shall be accomplished in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*, and this subsection.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. Additionally, Attachments J-C6-22 and J-C6-22A-C lists the records and reports required of the Contractor as part of this work and report formats, respectively. System and equipment deficiency information obtained from failed and marginally passed tests and certifications, or noticed during trouble calls, operator maintenance or preventive maintenance work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the heating, ventilation, air conditioning and refrigeration systems at LaRC. The objective is to perform HVAC/R work in accordance with written and bound procedures to ensure that LaRC is provided safe, reliable, and efficient operation of the HVAC/R systems. The Plan shall be developed using the following guidelines: (1) existing LaRC operating procedures, (2) industry standards, (3) equipment & system manufacturer's instructions, (4) procedures outlined in the *LaRC Safety Manual*. The Plan shall address:
- (1) Any special instructions and procedures to be used in performing HVAC/R work, observations and adjustments to be made, and any special qualifications of the technician who will be performing the task.
 - (2) Cooling tower and closed loop water treatment requirements, controls and indices to be met.
 - (3) Safety and accident procedures.
 - (4) R-12 refrigerant recycling and hazardous waste protection, packaging and disposal procedures.

A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written

memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Equipment and System Types. Services shall be provided on the following types of equipment and systems, as listed in Attachment J-C1-22A-H.
- (1) Air conditioning equipment and systems, including reverse cycle cooling/heating systems, electrical resistance strip heating elements in window and through the wall type units, package units, and split/central system units with factory built-in elements and contained within the evaporator/air handling unit cabinet as an integral part of the system.
 - (2) Absorption, centrifugal, split systems, screw machine, and reciprocating chilled water systems.
 - (3) Scroll compressors and reheat equipment.
 - (4) Cooling towers and closed loop (hot water and chilled water) systems including structures, components, and systems
 - (5) Evaporative cooling systems.
 - (6) Ventilation equipment and systems.
 - (7) Refrigeration equipment and systems.
 - (8) Pneumatic, electrical, and electronic controls (including direct digital controls) and systems for air conditioning, heating and refrigeration systems.
 - (9) Miscellaneous equipment and facilities and systems.
 - (10) Unique cooling systems supporting research projects, processes or Control/computer rooms.
 - (11) Dehumidification equipment
 - (12) Peripheral systems.
- f. Requirements for HVAC&R Recurring and Non-recurring Work. In addition to Subsection C.12, General Requirements and Procedures for Recurring Work, the following general performance and workmanship standards for HVAC&R work are included.
- (1) HVAC System PM Shutdowns. PM checks, other than those included in the annual building shutdowns, which require shutting off the HVAC system for more than 30 minutes shall be performed after regular work hours or on weekends.
 - (2) Purge Steam Absorption Units. Purge all steam absorption units every two weeks. See Attachment J-C9-22C for unit locations and PM requirements.
 - (3) Periodic Cleaning, Sanitation. Routine and scheduled cleaning of work areas and systems, drains, drain piping, traps and pans (basin), condenser coils, oil filters, applicable air filters, after coolers, cooling and/or heating coils, blower shields and fans, grills, registers, screens, diffusers, electrical contacts switch boxes, motors, gauges, strainers, dampers, actuators, louvers, safety controls, and any other applicable equipment, shall be accomplished as a part of the regular scheduled PM and service, or more frequently as may be necessary to maintain a clean and sanitary operating condition. Cleaning and disposal of sludge from

cooling tower pans (sumps) shall be performed in accordance with environmental rules and regulations since sludge is considered hazardous waste.

- (4) Lubrication, Oil.
- (a) Check applicable equipment for excessive bearing temperatures, noise, and inadequate lubrication of bearings and moving parts. Lubricate in accordance with manufacturer's instructions, historical data in equipment history file or RCM guidance (See Attachment J-C33 as to type of lubricant/oil and frequency of lubrication). Check oil level and quality and change dirty/contaminated oil in accordance with manufacturer's instructions or RCM guidance (See Attachment J-C33). The Contractor shall make other adjustments to oil systems as required and check oil temperatures and pressures.
- (b) A laboratory oil analysis shall check for acid, moisture, metals content and other contaminants in accordance with the particular chiller manufacturer's requirements. The Contractor shall submit the name of the proposed testing laboratory not more than 30 calendar days after the start date of the contract for the Contracting Officer's approval. Oil samples shall be drawn 45 days to 60 days prior to the appropriate PM, and copies of test results submitted to the Contracting Officer not more than two (2) weeks later. The oil sampling and analysis is a part of the PM program.
- (5) Replacement and Cleaning of Air Filters. Cleaning of air filters shall include a check for dust, grease, and other deposits and for missing or improperly fitted filters. Replace throwaway type filters and those missing or having improper fit, wash permanent type filters in soapsuds or solvents, rinse with hot water, and restore viscous coating in accordance with manufacturer's instructions.
- (6) Rust and Corrosion. Clean rusted and corroded areas on equipment. Prime the cleaned surfaces and paint using a primer and paint suitable for the particular equipment and material surfaces being painted (See Paragraph C.21.i., *Requirements for Painting*). Paint colors shall be matched as closely as possible to original or previous colors, or as otherwise approved by the Contracting Officer. Equipment identification data and manufacture name plate data shall not be obscured or covered up with paint.
- (7) Motors, Drives, Sheaves, Shafts, Couplings, Blowers, Fans, Hubs, Belts, Bearings, Gearboxes, and Guards. Check for accumulations of dust, dirt, grease, and oil. Clean, adjust, service, repair, or replace items as necessary to correct existing deficiencies such as: worn, loose, missing, or damaged parts, guards, connections, and connectors; bent blades; worn, loose, broken or missing belts; unbalanced moving parts; shaft misalignment; worn or damaged couplings; excessive noises and vibrations; end play of shafts; bad bearings; ineffective isolators; vibration absorbers; etc. Check full load and run load amps of each electric motor, other than motors less than one horsepower and compare with manufacturer's data plate ratings. Check condition of motor windings and brushes.
- (8) Wiring, Electrical Control Circuits, Systems. Check for loose, charred, broken, or damaged wires and insulation; short circuits, loose or weak contact springs; worn or pitted contacts; proper sizing of fuses; defective operation of parts and components; and other deficiencies. All wire splice connections shall be properly insulated. All electrical wiring, circuits, etc. shall be in accordance with the National Electrical Code for the particular application in which used. Clean, adjust, service, repair, or replace items found to be deficient.
- (9) Fire and Safety Hazards. Check for dust, dirt, soot, oil and grease deposits and accumulations, drippings, presence of flammable materials, rags, debris, and any other conditions that may be construed to be a potential fire or safety hazard. Correct or remove from the site all fire and safety hazards.

- (10) Thermostats, Sub-bases, Guards, Covers, Ambientstats, Sub & Master Controllers, Sensors, Transmitters, Temperature and Pressure Controls, Etc. Check for improper settings, defective operation, calibration and cleanliness, proper control voltages, and pneumatic air operating pressures. Check for deficiencies in wiring, tubing, piping, switches, relays, coils, solenoids, transformers, controls, sensors, thermostats and protective covers and guards, ambientstats, aquastats, pressure switches, reversing relays, timing devices, master and sub-master controllers, outdoor authority override controllers, etc. Clean, adjust, service, repair, or replace items found to be deficient.
- (11) Air Handler Units, Ducts, Plenums, Grilles, Registers, Diffusers, Screens, Dampers, Vanes, Mixing Boxes, variable air volume (VAV) Boxes, and Balancing of Air Systems. Check plenum chambers, supply and return air ducts, branch ducts, mixing boxes, VAV boxes, dampers, registers, grilles, diffusers, louvers, and insect and bird screens. Check for dirt, dust and trash; air leaks, broken, ripped or torn insulation and disconnected ducts; loose or broken connections, brackets, hangers, supports, and other parts; excessive vibrations or other movements; defects in metal, fiber glass, and other materials; proper operation of movable parts such as dampers, louvers, and vanes in relation to the controlling device; and inadequate air flow and/or distribution in main and branch duct circuits. Check air handler unit systems for proper operation and correct cubic feet per minute (CFM) air flow. Balance air distribution systems to original design specifications for all areas being serviced by the systems. Check air temperatures and static pressures. Check turning vanes, fire dampers, access openings, doors, panels, outside air make-up systems, ducts, and screens. Clean by sweeping, brushing, dusting, vacuuming, washing, hosing with water, detergents, degreasers, solvents, chemicals, air pressure, steam, or other methods as are applicable to the nature of the item being cleaned, and as may be required to obtain desired results. Clean, adjust, service, repair or replace all items found to be deficient.
- (12) Structures, Casings, Hangers, Supports, Beams, Platforms, Slabs, Pads, Vibration Absorbers, and Sound Isolators. Check mounting bolts; loose, broken, or missing parts, connections and hardware; improper level of equipment; and defective sound cushion isolators and vibration absorbers. Check for dirt, dust, trash, and other debris accumulated on or around the equipment. Check the security of all mounting and attaching points. Check for vibrations and other unusual movements. Clean, adjust, service, repair, or replace all items found to be deficient.
- (13) Coils: Cooling/Heating, Condenser (Water and Refrigerant). Check for obstructions to airflow through all coils. Check for dust, dirt, and foreign materials accumulation, unusual noises and vibrations, and loose, missing or damaged parts. On direct expansion systems check for frosting or icing of coils; proper operation of expansion valves, capillary tubes and spider distributors; proper operation of automatic temperature controls and defrost timers; and check superheat across evaporator coils. Check all coils for leaks. On water cooling/heating coils check for proper water flow, temperature, and pressures across the coil. Clean and flush the waterside of water cooling/heating coils (as applicable) as necessary to correct any deficiencies not allowing for proper operation. Check for damaged, bent or corroded coil fins on all coils. Clean, adjust, service, repair, or replace items found to be deficient.
- (14) Condensate Drains, Pans, Piping, Traps. Check all condensate drain pans for algae growth and sedimentation, damaged coatings and insulation, rust corrosion, and leaks. Check condensate drainpipes and traps to assure they are open and water flow is not restricted. Clean, adjust, service, repair, or replace items found to be deficient.
- (15) Piping: Water, Refrigerate, Oil, and Air. Check for leaks, rust, corrosion, deformation, and material defects of all applicable piping and tubing. Check for piping and tubing vibrations, looseness, and rubbing against objects that can cause damage to the equipment; proper support for the piping and tubing; and vibraabsorbers, expansion joints and rupture discs.

Piping, tubing, and fittings being replaced shall be compatible with existing materials. Clean, adjust, service, repair, or replace all items found to be deficient.

- (16) Compressors. Check for dust, dirt, oil and grease deposits and accumulations, leakage of refrigerant and oil, cracked/clear sight glasses and gauges, damaged fittings, piping, valves, etc. Check for loose connections, excessive or unusual noise and vibrations, proper suction and discharge temperature and pressures, and indications of excessive heat. Check oil levels, unloaders for proper operation, and change out dirty/contaminated oil and filters. Check compressor full load and run load amps, compare against manufacturer's data plate rating, and record the findings. Check all electrical wiring and related components. Record the suction and discharge pressures and type and amount of refrigerant and/or oil added to the system, on the log sheet for air conditioning and control air compressors. Clean, adjust, service, repair, or replace all items found to be deficient.
- (17) Air Cooled Condensers. Check for dust, dirt, foreign materials, oil and grease accumulations, leaks, excessive or unusual noise and vibrations; and loose, missing, or damaged parts. Check motors, sheaves, belts, bearings, shafts, supports, brackets, hardware, etc; check operation and calibration of fan cycling controls, low ambient switch controls and dampers, head pressure control louvers, actuators, and regulators, as applicable. Check for proper air flow through the condenser coil; and bent, damaged or corroded coil fins and fan blades. Remove weeds, bushes, and other obstructions within three feet of air cooled condensers. Clean, adjust, service, repair, or replace all items found to be deficient.
- (18) Refrigerant and Oil Systems: Separators, Dryers, Strainers, Filters, and Oil Traps. Check for proper operation, refrigerant and oil leaks, and other material defects; check sight glass for clarity, cracks, or moisture. Check refrigerant and oil charges and levels. All systems with changeable core type filters/dryers shall be changed as part of the regular PM and service. Clean, adjust, service, repair, or replace all items found to be deficient.
- (19) Pump Units. Check for dust, dirt, and other deposits; leaks; excessive or unusual noise and vibrations; and loose, broken, or missing parts and connections. Check for correct rotation and prime. Check seals, gaskets, packing, bearings, mounting bases and hardware, couplings, guards, and inlet and discharge pressures, and overall operations. Clean, adjust, service, repair, or replace all items found to be deficient.
- (20) Tanks, After Coolers, Heat Exchangers, Heat Recoveries, Receivers, Accumulators. Check pressure tanks and other equipment items for damage and deterioration. Blow down or drain air tanks. Check all equipment items for leaks and missing or defective parts. Check pressure relief valves, check valves and regulators for proper operation. Check liquid levels, sight glasses, heat transfer, temperature differentials, and pressures as applicable.
- (21) Balancing Chilled and Condenser Water Systems. Perform test of chilled and condenser water systems to assure these systems are providing the most efficient and economical operations attainable for that equipment and the facilities which it services. Check balance and rebalance if necessary to meet design specifications. Bleed air from chilled and condenser water loops as required to maintain efficient and standard operating conditions. Repair or replace automatic/manual bleed off valves in systems as required for proper operation.
- (22) Insulation. Check for wet, damaged, missing, and deteriorated insulation and vapor barriers, broken tie wires, loose or missing binding bands, torn canvas jackets, etc. The insulation on all applicable system components shall be repaired or replaced as needed, with insulation materials having a vapor barrier and insulating value equal to or better than original or existing insulation materials. Insulated surfaces having moisture condensing on the surfaces shall be considered inferior and shall be replaced. Clean, adjust, service, repair, or replace all items found to be deficient.

- (23) Exhaust Air and Ventilating Systems. Check for dust, dirt, grease, and oil accumulations; air flow and weather and elements integrity; suction pressure at air intake; operation of dampers, baffles, solenoids, protective guards, insect and bird screens; and caulking around flashing, ducts, collectors, smoke pipes, cowlings, hoods, caps, and covers. Clean or replace filters as applicable. Check for clogging, broken, or separated joints and seams in ducts, stacks, couplings, sheaves, belts, fan blades, blowers, etc. Check thermal insulation, protective coverings, vapor barriers, and loose or missing fasteners and hardware. Check for material defects and improper operation of moveable parts and components in relation to the controlling device. Check for loose, missing, or poor fitting flashing, fire and safety hazards, warning alarms, etc. Clean, adjust, service, repair, or replace all items found to be deficient.
- (24) Valves: Hand, Check, Relief, three-way, Reversing, Float, Makeup, Bleedoff, Etc. Check applicable valves for operation, leakage, linkages, travel, range limitations, rust, dust, dirt, corrosion, scale, seizing, binding, mounting, clogging, broken, damaged or missing parts, and material defects. Check source of valve operation, i.e., pneumatic, electrical, pneumatic/electric, etc., for required pressures, electrical power voltages, etc. Clean, adjust, service, repair, or replace any parts, materials, components, or combinations thereof found to be deficient as a result of these inspections, to restore valves to a standard operating condition.
- (25) Cabinets, Cases, Doors, Lids, Panels, Gaskets, Latches, Handles, Hinges, Hardware. Check for cracks, scrapes, gouges, separation, missing, broken or damaged parts and components, bad insulation, bad gaskets, leaks, fitting of doors, etc. Clean, adjust, service, repair, or replace all items found to be deficient.
- (26) Cooling Towers. Check for external scale; leaks; defective valves and float assemblies; and deterioration and improper positioning of slats, baffles, and eliminators used to control water spray and/or distribution. See Subsection C.22.i, *Cooling Tower (CT) Systems*, for requirements for treatment of cooling tower water. Check for structural damage, rust, and corrosion. Check condition and operation of gearboxes (gear reducers), fans, blades and hubs, motors, drives, shafts, couplings, guards, bearings, etc. Check cooling tower water level, water make-up, drains, valves, overflow, and bleed-off. Inspect spray nozzles and cooling tower fill, clean, adjust, service, repair or replace all items found to be deficient and prepare and submit an inspection report per Attachment J-C6-22.
- g. R-12 Refrigerant Management. The Contractor shall not knowingly vent or otherwise dispose of any refrigerant in a manner that would permit its release into the environment. Refrigerants shall be captured and recycled in conformance with all applicable federal, state, and local laws and regulations. The Contractor shall be responsible for control and distribution of the government owned R-12 refrigerant as shown in the inventory in Attachment J-C4-22. This includes maintaining accurate documentation of where refrigerant was used, the amount used and maintaining the inventory up-to-date. A yearly electronic report shall be provided to the Contracting Officer not later than October 1 of each year as specified in Attachment J-C6-22. The report shall include the amount of refrigerant used each month during the year and the refrigerant available
- h. Air Conditioning Equipment. Air conditioning systems to be operated, maintained, and repaired are listed in Attachment J-C1-22A-H. These systems vary in size from 1 ton to 380 tons. Maintenance, repair, and operation of these systems shall be performed in accordance with the recommendations of the manufacturer and the provisions of this contract, including the following:
- (1) Replacement of Burned out Air Conditioning and Refrigeration Compressors. When compressors are replaced, the internal refrigeration system shall be thoroughly cleaned in accordance with the Contracting Officer approved manufacturer's procedures. Additional precautions shall be taken following approved and acceptable industry standards and

practice to further control refrigerant system contamination and prevent damage to replacement compressors and components. Clean-up methods should include, but are not limited to, the use of clean up kits, suction and discharge line filters/dryers, moisture indicating sight glasses, acid testing kits, changing or adding of oil filters and system flushing, changing the oil, deep vacuuming of refrigerant system, leak checking, etc. Clean-up methods shall be used as appropriate for the particular system.

- (2) Portable Air Conditioning (AC) Equipment. The portable AC equipment listed in Attachment J-C1-22A-H shall be transported, set up, operated, and maintained by the Contractor if needed to provide temporary cooling during periods when the Contractor is performing repairs. This work shall be performed as part of the trouble call or IQ work, as appropriate. When directed by the Contracting Officer the portable air conditioning equipment shall be provided under the Non Recurring Work (Subsection C.13) provisions of the contract. The system shall be maintained, repaired, and operated by the Contractor to the same extent as other equipment included in the contract, including equipment inspections, start-up and shut-down service, and daily operational checks when in use.
 - (a) Procedures. Setup procedures for the trailer mounted portable systems stored at Building 1156 are as follows. The Contractor shall provide equipment and labor as required to transport the system to the needed location and back to storage. When the system is needed by the Contractor and is available, the Contractor shall notify the Contracting Officer that the equipment is to be used. This notification shall be at least two days in advance in the case of routine requirements and as soon as the requirement is known in the case of emergency or urgent requirements. The Contractor shall acquire and maintain all hoses, connections, flanges, couplings, hardware, and other components needed; and all labor as required for setting up and connecting the system to the building being served.
 - (b) Records. The Contractor shall maintain a log that list location of portable units, name of requester, and dates requested, installed, and returned.
- (3) Condensate Piping and Lines. Condensate drain pans, piping and lines, insulation materials, valves, traps, brackets, supports, flanges, hardware, and other related components shall be maintained.
- (4) Two Pipe Cooling/Heating Water Distribution Systems. All equipment components, pumps, motors, valves, water coils, controls, etc., associated with two pipe water distribution systems shall be maintained and repaired. This includes distribution systems where water is chilled at a central or auxiliary cooling plant, and includes all piping and its insulation, supports and hangers and all equipment components such as pumps, motors, valves, controls, etc.
- (5) Window and Through-the-Wall Type Air Conditioning Units. Window and through-the-wall units include straight cooling types, cooling/heating reverse cycle types, types with electrical resistance strip heat as primary heat source, and cool/heat reverse cycle units with supplemental electrical resistance strip heat. The inventory of window air conditioning systems is in Attachment J-C1-22H and the PM requirements are in Attachment J-C9-22B. Maintenance and repair of these units include work on cabinets, casings, openings, carpentry trim work, caulking, insulation, brackets, supports, painting, and other work normally associated with these types of equipment. When window or through-the-wall type units are removed for servicing or replacement, the opening shall be covered with a weather and element resistant material in such a way as to prevent the entrance of water, dust, and insects into the facility from which the unit was removed.
- (6) Filter Maintenance. The filters listed in the PM program shall be changed or cleaned at the frequencies specified. See Attachment J-C16-22 for filter location and filter sizes.

- (7) HVAC Ducting. The Contractor shall clean, repair and replace HVAC ducting (sheetmetal, fiberboard, and prefab plastic) as required to maintain the air distribution system in accordance with industry standards.
- i. Cooling Tower (CT) Systems. The Contractor shall furnish services for the maintenance and repair of cooling tower systems, and for the treatment of cooling tower-circulating water as recurring work. These services shall be carried out in compliance with environmental regulations. The services shall consist of, but not be limited to, development of a treatment program for each cooling tower; flushing and cleaning of cooling towers; and testing and treatment of circulating water to prevent accumulation by precipitation of scale, corrosion, biological growths, and other foreign materials. Attachment J-C17-22 provides a list of the cooling towers requiring service.
- (1) Treatment Program. The Contractor shall provide a circulating water treatment program for each cooling tower listed in Attachment J-C17-22 in accordance with the following requirements. Attachment J-C17-22 also provides data on the existing treatment program. After approval the Contractor's program shall be continuously monitored and modified by the Contractor as required to meet the treatment standards specified. All proposed changes to the approved program shall be submitted in advance for the Contracting Officer's approval.
- (a) Proposed Treatment Program. An outline of proposed chemical treatment procedures shall be provided for the Contracting Officer's approval at least 15 calendar days prior to the start date of the contract. In developing the treatment program the Contractor shall utilize chemicals and procedures which shall require the smallest water make-up in order to reduce water consumption. The proposed procedures shall comply with the requirements specified in clause (b), Treatment and Control Requirements, below, and shall include:
- 1 The manufacture, amount, type, and methods of feeding and controlling of chemicals to be used. Where applicable, include chemical active ingredient levels in parts per million (PPM).
 - 2 Shop drawings showing the proposed installation of chemical feed equipment and coupons required for corrosion testing. Information should include type of coupon to be used and length of test.
 - 3 Proposed limits for pH, total dissolved solids, corrosion inhibitor, scale inhibitor, and biocide. The concentration ratio to be used as the operating base, as discussed in Paragraph C.22.i.(1)(b)5 shall also be provided.
 - 4 Proposed chemical shipping, handling, and storage procedures. Include specimen label, product registration number, and application instructions for all proposed algaecides.
 - 5 Proposed record keeping forms and procedures.
 - 6 Proposed circulating water, makeup water, and scale and corrosion testing procedures.
 - 7 Name, address, background, and other pertinent information on proposed independent testing laboratory.
- (b) Treatment and Control Requirements. The Contractor's cooling tower water treatment program shall be designed to minimize corrosion, scale, deposition, and microbiological activity and shall be effective over the entire expected temperature range. All chemicals shall be commercially available for use in the treatment of cooling tower water. All chemical additions and treatment methods shall comply with the latest Environmental

Protection Agency requirements and recommendations, and bleedoff water and other discharges shall be maintained in compliance with all applicable federal, state, and local laws and regulations. Chromates and other chemicals that are considered potential pollutants shall not be used. Present system limits are cycles 4 to 6, ph max 8.9 and ortho phosphates 5-10.

1 Corrosion Control.

- a Mild steel corrosion rates shall be maintained below 4 mils per year (mpy).
- b Copper and cupro nickel corrosion rates shall be below 3 mpy.
- c Corrosion rates for other cupon material shall not exceed 5 mpy.
- d Historical records shall be maintained electronically on chemical consumption for each tower and a report submitted to the CO yearly.
- e EPA bans chromium for use in cooling tower water treatment and shall not be used.

2 Scale Control. Sufficient scale inhibitor/polymer shall be applied to prevent any calcium carbonate or calcium sulfate scale. Control limits for pH shall be designed to prevent such scaling. No acid will be used.

3 Deposit Control. Specific deposit control agents shall be applied to prevent and minimize suspended solids deposition within exchangers.

4 Microbiological Control.

- a Bacterial testing shall be performed to determine bacterial levels in the cooling tower. Test results shall be used to indicate when the biocide treatment should be changed or altered. Towers shall be shocked whenever microbiological growth is 5 or greater using the Easy Cult method. Historical data on results shall be maintained electronically to determine the most effective treatment and submitted to the CO monthly(See Attachment J-C6-22A).
- b Algae growth shall be minimized and no heavy accumulations of algae shall exist in the system.
- c The total lethal dosage rate of biocide used shall never drop below a 25% level.
- d No deterioration of wood components shall occur as a result of the treatment program.
- e Algaecides used shall be registered with the Environmental Protection Agency under the *Federal Insecticide, Fungicide, and Rodenticide Act*, as amended (7 U.S.C. 136 (et seq.)) specifically for use in cooling towers. The algaecide shall be used in strict conformance with label instructions.

5 Cycles of Concentration. The dissolved solids concentration in the circulating water shall be controlled within the range of accepted chemical treatment practice and such that the treatment program provided shall positively prevent scale and corrosion. The Contractor shall calculate a concentration ratio as the operating base and shall consistently control the concentration ratio of the circulating water within plus or minus one of the operating base. The operating base shall be calculated with regard to the makeup water quality and the maximum concentrations of mineral solids

(silica, hardness, and alkalinity) allowable under the chemical treatment program. For information only, 5 cycles were used previously.

- 6 Cleaning and Flushing. All cooling towers shall be cleaned and flushed of scale, trash, mud, dirt, algae, slime, and other foreign material as necessary to remove excess accumulations of such foreign material.

(2) Test Requirements

- (a) Circulating Water Testing. Circulating water from each cooling tower shall be tested weekly for pH; conductivity; scale and corrosion inhibitor levels; biocide; and bacterial levels. Cycles of concentrations shall be calculated weekly using chlorides. Where applicable, tests shall be conducted in accordance with the latest edition of *Standard Methods for the Examination of Water and Wastewater*. Test results shall be submitted with each monthly invoice.
- (b) Makeup Water Testing. Makeup water comes from the LaRC potable water source. The Contractor shall obtain an analysis of this water monthly to check constituent variability, and adjust chemical treatment procedures as required with respect to pH, color, turbidity, P alkalinity, MO alkalinity, total hardness, non carbonate hardness, carbonate hardness, total dissolved solids, specific conductance, calcium, magnesium, sodium, potassium, hydroxide, bicarbonate, carbonate, sulfate, chloride, nitrate, iron, manganese, silica, fluoride, and chlorine residual. Tests shall be conducted in accordance with the latest edition of *Standard Methods for the Examination of Water and Wastewater*. Test results shall be provided to the Contracting Officer within five working days after sampling.
- (c) Scale and Corrosion and Deposition Tests. The Contractor shall provide for accurate measurement of corrosion consistent with ASTM D2688 (Coupon Test Method) or the corrosion test method described by the National Association of Corrosion Engineers (NACE). As a minimum the Contractor shall furnish and install mild steel and copper corrosion coupons in each metal cooling tower system as depicted in the latest edition of ASTM D2688, Method B, *Standard Methods of Test for Corrosivity of Water in the Absence of Heat Transfer, Coupon Test*. Coupons shall be installed at the beginning of the contract and replaced every 90 days. Coupon holders shall be repaired or replaced as required to maintain in compliance with ASTM or NACE standards. Identifying marks shall be placed on each coupon and complete records shall be kept of installation and removal dates, locations, initial weight, final weight, length, width, thickness, amount of fouling, and exposure time. Scale and corrosion tests shall be conducted by the approved independent testing laboratory in accordance with ASTM D2688, and results provided to the Contracting Officer within 14 working days of each coupon's replacement. Reports shall include a scale analysis or corrosion rate in mils per year, and a written description based on ASTM D2688.

(3) Equipment Requirements. All equipment used in the approved treatment program shall be furnished and installed by the Contractor, and shall comply with the following:

- (a) Automatic Bleedoff and Chemical Feed Control. Automatic bleedoff and chemical feed controls shall consist of a conductivity meter, which controls both the bleedoff and chemical feed of the cooling tower system. Automatic bleedoff controls shall monitor the circulating water and regulate bleedoff water to maintain the proper concentration. The chemical feed shall be properly controlled so that the proper amount of chemicals is automatically fed to replace that lost through bleedoff.
- (b) Pumps. Pumps shall have a capacity compatible with the chemical feed requirements of the individual cooling tower system served. Pump operation shall be controlled by an automatic adjustment that shall proportion the chemical feed at a step rate in accordance

with the bleedoff rate. In addition, a manual switch shall be provided to allow control of the pump independently of the feeding regulator. Manual adjustments necessary to accomplish capacity control shall be simple and positive. The pump shall be of noncorrosive construction and shall have an internal checking device or shall be provided with an externally mounted noncorrosive check valve. The pump shall be capable of discharging against a pressure of not less than 1 1/2 times the line pressure at the point of connection.

- (c) Chemical Solution Tank. Chemical solution tanks shall be constructed of non-corrosive material, and have a sufficient capacity to require recharging only once per seven days during normal operation. The charging concentration chosen shall prevent deterioration of the chemical solution during the twenty one-day period and prevent concentration of ingredients in the chemical solution. The tank shall be provided with a valved cold water line and, if necessary, a valved hot water fill line. Both shall have a suitable air gap. The tank shall have a graduated sight glass or other suitable device to indicate the quantity of solution in the tank. In addition, the tank shall be equipped with a suitable removable perforated non-corrosive basket for dissolving chemicals in the tank. A suitable electric mixing device shall be provided with the tank.
- (4) Maintenance and Repair. Cooling tower structures and all components thereof shall be maintained and repaired, including all motors, fans, gearboxes (gear reducers), and hubs; drives, shafts, couplings, sheaves, belts, and guards; float assemblies and valves; drain lines, piping, and valves from the cooling tower pan (basin) to the point at which water is discharged into the sewer or storm drain system, including all supports, brackets, flanges, and hardware to maintain the piping; bleed off systems; and make up water piping and valves (from the valve itself into the cooling towers and systems). See Attachment J-C9-22A for a cooling tower PM checklist, which shall be completed and submitted to the CO within 5 days of the inspection.
- (5) Cooling Tower Water Consumption. The Contractor shall read CT make-up water meters as listed in Attachment J-C17-22 and record the results in the CMMS in accordance with the requirements specified in Attachment J-C6-22. The Contractor shall observe CT water usage both on CT with meters and those without meters and should the observations reveal a substantial change or high water consumption the Contractor shall determine the cause and take appropriate corrective action. When observations reveal substantial change or high consumption the Contractor shall notify the Contracting Officer within one working day of the observation. One of the Centers environmental goals is to reduce water consumption, therefore the Contractor shall operate and maintain cooling towers with this goal as a guide.
- (6) Cooling Tower Inspection. Cooling tower structures shall be inspected yearly, including all components both internal and external. The Contractor shall document the inspection in the CMMS. The date of the inspection, inspector's name, and inspection findings including deficiencies shall be recorded.
- j. Chemical Treatment of Closed Loop Water Distribution Systems. Attachment J-C18-22A provides a list of facilities containing chilled and hot water distribution systems that have an established chemical treatment program. Attachment J-C18-22A and J-C18-22B provide data on the existing treatment program. The Contractor shall continue the existing treatment program for the first 90 days of the contract term, then, every 90 days thereafter, provide an inspection check and subsequent adjustments in chemicals to maintain pH limits of 7.0 to 10.0, and nitrite levels of 500 to 1,000 PPM as N02. Inspection checks and any required adjustments shall be made at 90-day intervals throughout the term of the contract. The Contractor shall maintain detailed records of the results of all inspection checks and chemical treatments to include: building number and system, date chemicals were applied, description of chemicals used, quantity of chemicals used per system to maintain standards, chemical level readings in system before and after adjustments, date of inspection check and adjustment, and name of person(s) performing the inspections and/or

adjustments. This information shall be provided to the Contracting Officer in writing within five working days of each inspection check.

- k. Refrigeration Units and Systems. The refrigeration units and systems to be maintained and repaired are listed in Attachment J-C1-21A-G. These systems include cold storage plants with freezer and refrigerated walk-in rooms, walk-in freezer reach-in freezer and refrigerated boxes, refrigerated display cases, salad bars, sandwich bars, food bars, beverage coolers and dispensers, milk storage and dispensing units, ice cream freezer units, ice making equipment, medical and immunization supplies refrigeration units, and refrigeration units; and various other miscellaneous equipment. Maintenance and repair of these systems shall be performed in accordance with the recommendations of, and as to meet the rated temperature ranges specified by, the manufacturer and the provisions of this contract.
- l. Miscellaneous Equipment and Systems. Miscellaneous equipment and systems listed in Attachment J-C1-22A-G shall be maintained and repaired in accordance with the recommendations of the manufacturer and the provisions of this contract, including the following:
- (1) Ventilating Equipment and Systems. The Contractor shall maintain and repair ventilating equipment consisting of ventilating, exhaust, and utility fans, and those systems associated with the operation of these items of equipment.
 - (2) Peripheral Systems. The Contractor shall maintain and repair peripheral systems associated with the equipment included in Attachment J-C1-22A-H, including the following:
 - (a) Pneumatic and/or electrical/electronic controls shall be maintained and repaired, including air compressors and all related components; air dryers, refrigeration and/or chilled water systems; and timing devices, switches, microprocessors, transformers, relays, sensors, gauges, thermometers, thermostats, subbases, covers, guards, sending units, dampers, wiring, tubing actuators, valves, fittings, piping, regulators, master and submaster controllers, etc., normally associated with the contracted equipment.
 - (b) All electrical wiring and conduit from the load side of the equipment starter; the equipment starter; the respective electrical drive motor for all equipment with remote magnetic starters, contacts, relays, etc.
 - (c) All refrigeration and oil systems piping and components thereof.
 - (d) All insulation of refrigeration and oil piping, chilled water piping, and other piping associated with equipment.
 - (e) All motors, starters, heaters, contacts, relays, fuses, timing devices, switches, transformers, wiring, etc. not specifically included elsewhere in the contract.
 - (f) Condenser water and chilled water circulating pumps, motors, starters, contacts, relays, switches, fuses, wiring, heaters, base mounts, shafts, couplings, drives, guards, valves, seals, gaskets, rupture discs, pressure gauges, strainers, filters, thermometers, and piping between pumps and equipment, etc.
 - (g) Chilled water make-up system to include all piping, valves, filters, strainers, expansion tanks, and other related components thereof that are down stream from the make-up water regulating valve and/or manual by-pass valves, and to that point where the make-up water enters the chilled water system.
 - (h) On systems that have a magnetic starter, contact, or relay as an integral part of the unit, the Contractor shall maintain the wiring and conduit in between, up to the load side of the disconnect switch and/or circuit breaker, whichever is nearest to the unit. On systems

without magnetic starters, contacts, relays, etc., (such as exhaust fans), the Contractor shall maintain the wiring and conduit in between, up to the load side of the disconnect switch, on/off switch, and/or circuit breaker, whichever is nearest to the unit.

- (i) All incidental materials, hardware panels, boxes, brackets, supports, weather-stripping, caulking, sealing, flashing, connections, etc., as required.
 - (j) Any other equipment, systems, components, and parts relative to the maintenance, repair, and operation of equipment not specifically covered elsewhere in this contract, unless specifically excluded.
- (3) Dehumidification Units and Systems. Dehumidification units shall be maintained and repaired to the recommended standards of the manufacturer and in accordance with the provisions of this contract.
- (4) Vacuum Pump Units and Systems. Vacuum pump units and systems shall be maintained and repaired in accordance with the manufacturer's manuals and procedures and the provisions of this contract.
- (5) Drinking Fountains. Drinking fountains shall be maintained and repaired in accordance with the recommended standards of the manufacturer and in accordance with the provisions of this contract. Water temperatures shall be maintained within design specifications and coolers well adjusted to provide for a suitable and adequate water flow when dispensing. Systems include supply water piping, filters, screens, strainers, and valves from the supply water shut-off valve to the unit; and drain water piping and traps from the unit to the point where water discharges into the floor drain or other drain system, or to that point where the drain piping passes through a wall or floor.

END OF SUBSECTION C.22

C.23 HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall operate and maintain the electrical distribution and emergency power generation and backup systems at NASA LaRC (see J-C1). Electrical distribution includes all facility electrical distribution systems such as overhead and underground transmission and distribution lines (from delivery points to all main service entrance switches in buildings and structures including substations and accessories), electrical manholes, exterior lighting systems (including street, flood, perimeter and security lighting), secondary drops to the building or structure weatherhead or first connection to the building system, and emergency power generation and backup power systems. The work includes the identification, planning, scheduling, status reporting, and analysis of electrical distribution and emergency power generation and backup systems operations, maintenance and repair. Also included is the testing and inspection of safety equipment. *The work under this subsection is not confined to the property of LaRC, but also includes limited support to Langley Air Force Base and to the Hampton Roads Trash Burning Facility (RECOUP) consisting of the 2.4 kV feeder up to and including air switch number 4S13 located at RECOUP.*
- b. Scope of Work.
- (1) Trouble Call Work. Trouble calls shall be received, managed and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and is included in the firm fixed price portion of the contract.
 - (2) Recurring Work. Recurring Work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance (including replacing empty nitrogen cylinders) periodic transformer and battery checks, testing and inspection of safety equipment, substation relay calibrations, meter reading, and the preparation and maintenance of the Operation Procedures Plan, and shall be performed in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work* and this Subsection.
 - (3) Non-recurring Work. Non-recurring work shall be performed in accordance with Subsection C.13, *General Requirements and Procedures for Non-Recurring (Indefinite Quantity) Work*.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work and C.13 for Indefinite Quantity Work. Additionally Attachments J-C6-23 and J-C6-23A-H lists the records and reports required of the Contractor as part of this work and provides required formats, respectively. System and equipment deficiency information obtained from failed and marginally passed tests and certifications, or noticed during trouble calls, PT&I or preventive maintenance work shall be reported in accordance with Paragraph C.7.o., *Reporting System and Equipment Deficiencies*.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the high and low voltage distribution system at LaRC. The objective is to perform Power Distribution work in accordance with written and bound procedures to ensure that LaRC is provided safe, reliable, and efficient operation of the electrical distribution system. The Operations plan should address the contractor's approach to furnish a steady, fault-free power supply during mission support periods, during system or major component failure, during severe weather, and during commercial power load shed and brown-out periods. The Plan shall be developed using the following guidelines: (1) existing LaRC operating procedures, (2) the National Electrical Code (NEC), (3) equipment and system manufacturer's instructions, (4) procedures outlined in the *LaRC Safety Manual*. The Plan shall address:
- (1) A description of the conditions warranting emergency power generation and the provision of backup power. (including the correct sequential steps to be taken)

- (2) Load shedding and mission support/severe weather contingency procedures using the LaRC Emergency Plan, LHB 1047.1, *Disaster Control Data – Hurricanes and High Tides. LaRC Buildings and Equipment*
- (3) Procedures for testing hot sticks, rubber sleeves and rubber blankets if not otherwise specifically addressed in the PM program.
- (4) Safety and accident reporting procedures.
- (5) Procedures governing the handling of PCB and other hazardous waste
- (6) The plan should explain in general terms the steps that will be taken to restore power to a facility or system. As an example, for a high/medium voltage cable fault:
 - (a) The power source(s) would be isolated and Red Tagged to the appropriate person
 - (b) All loads would be isolated and the cable insulation tested with the correct "megger" device
 - (c) The possible fault location will be isolated down to the point where a single cable is identified as the problem area. This will be accomplished by isolating cables from each other
 - (d) Examine the system to determine the best method to restore power to the affected facilities/systems using portable generators/alternate feeders/installing temporary cable (above ground/below ground)
 - (e) Repair the cable fault after the power to all facilities has been stabilized by the sources mentioned above

A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Safety. All Contractor employees are responsible for observing safe practices and procedures in their work environment in accordance with the Government-approved Operations Plan, *LaRC Safety Manual*, and in particular, with LHB 1710.6, *Electrical Safety*, and LHB 1740.2, *Facility Safety Requirements* and the codes and standards referenced therein. See also Subsection C.7.c., *Safety Requirements and Reports*.
 - (1) Two-Person Safety Rule. In the following situations the Contractor shall provide at least two (2) persons to work together – one (1) person, trained to recognize electrical hazards, shall be delegated to watch the movements of the other(s) doing the work so that the other(s) can be warned if they get dangerously close to live conductors or perform other unsafe acts and so that they can be assisted by that person in the case of an accident:
 - (a) Work on energized overhead lines, bus and switchgear.
 - (b) Work in energized substations.
 - (c) Work at remote or isolated locations.
 - (d) Work at night or during inclement weather conditions.
 - (e) Work involving handling energized conductors or apparatus.
 - (f) Confined space entry.

- (2) Red Hold-Off Tags/Lockout Safety clearance procedures and responsibilities (red tag) are set forth in LHB 1710.10, *Safety Clearance Procedures (Red Tag)*. Refer also to Subsection C.7.c (same title).

f. Electrical Work.

- (1) Work Performance The Contractor shall operate, maintain, construct, repair and/or replace the electrical systems and their associated components covered by this subsection in accordance with the Government-approved Operations Plan (Subsection C.23.d.). Attachments J-C13-23A-C lists the drawings that are available of LaRC high- and low-voltage electrical systems. Services shall include installation, modification, repair and troubleshooting of electrical feeders, branch circuits, lighting fixtures, lighting and power systems, and associated support. These systems include solid state industrial controls. Large contractors and switchgear operate at voltages up to 115,000 volts. The Contractor shall operate and maintain the electrical systems and their associated components as defined herein and as recommended by the manufacturer. Contractor personnel working with and around high voltage distribution systems shall be trained, experienced and certified to work with them. The workmanship for new construction and renovation shall meet, as a minimum, the requirements as specified by the National Electrical Code (NEC) and applicable IEEE standards. The Contractor shall schedule and obtain approval for electrical power outages in accordance with the written documentation submitted (Attachments J-C6-23E-F). Power outage request processing is a part of the firm fixed price portion of the contract. The Power Outage Request Form is to be used when the extent of an electrical power outage involves or affects personnel outside of the facility, such as impacts on fire protection, air conditioning crew (who are needed to reset HVAC systems), and security or other systems affected by the outage and are controlled from outside of the facility. The Contractor shall first obtain approval in writing from the Contracting Officer prior to any deviation from the NEC requirements and the Government-approved Operations Plan. Further, the overall quality of any repair, including materials, shall comply with the applicable specifications, codes and standards (see Attachment J-H1). Work shall be comparable to the original construction quality for the system or unit and shall be made in such a manner as to assure a safe and reliable electrical system.
- (2) Documentation. All work shall be documented on the CMMS in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. Additionally, Attachment J-C6-23 A-D lists the records and reports required of the Contractor as part of this work. System deficiency information obtained from failed and marginally passed tests and certifications, or noticed during trouble calls or preventive maintenance work shall be compiled into a prioritized list of repairs. Any systematic problems or problems with equipment components shall be reported to the Contracting Officer within 24 hours from the time the discrepancy is first discovered. Within one working day after any 2.3 kV and above system or component failure or an unplanned outage: a follow up typed or electronic report shall be given to the Contracting Officer. It should detail the name(s) of the personnel that responded to the trouble call, date and time of call, initial description of the conditions (breaker trip, relay target on A phase, etc.), facilities/systems effected, troubleshooting and corrective actions taken, time power restored, resulting capacity of the restored power and an estimate of resources required to fully restore operations. Also within that time the data shall be entered into the CMMS database in accordance with Subsection C.8.c., *Data Management*.
- (3) Electrical Equipment. The Contractor, as part of the firm fixed price portion of this contract shall maintain electrical equipment listed in Attachments J-C1-22A-H and J-C1-23. This includes air, oil, vacuum, and SF₆-type circuit breakers and contactors, transformers, tap changers, switchgear, motors ranging from fractional horsepower to approximately 135,000 HP, generators, large banks of batteries, uninterruptable power supply systems, capacitor banks, control equipment and instruments associated with electrical power distribution,

primary substations, etc. The Contractor shall maintain electrical equipment so as to eliminate electrical distribution failures and power fluctuations. All activities shall be conducted in accordance with the Government-approved Operations Plan, applicable sections of the National Electrical Code and other guidance as specified (see Attachment J-H-1). In addition to Subsection C.12., *General Requirements and Procedures for Recurring Work*, the following general performance and workmanship standards for high and low voltage electrical distribution work are included.

- (a) Primary Substations. The Contractor shall maintain primary substations in accordance with the procedures listed in Attachment J-C9-12C. This includes:
- 1 Substations involving voltage levels of 115 kV, 34.5 kV, 22 kV, 13.8 kV, 6.9 kV and 2.4 kV lines to their point of attachment to incoming lines.
 - 2 All primary substation equipment such as cutouts; disconnect switches; SF₆ circuit switchers; air switches; air, vacuum, oil and SF₆-type circuit breakers; current and potential instrument transformers and associated metering and control devices.
 - 3 Oil-filled and dry type transformers, grounding and lightning protection systems, and associated bus work and cables.
 - 4 Overhead and underground primary servicing lines to the point of service connection feeding the substations.
 - 5 Battery banks. See Attachment J-C1-23B. There are 18 battery banks that are located in either research facilities or substations. There are 4 battery banks that support the Communication Facilities that are used for UPS. Weekly PM on all 22 battery banks shall consist of random testing on three cells to include specific gravity measurement, voltage measurement, temperature measurement, checking and maintaining proper water levels, cleaning the batteries and the battery room and recording the test results and problems found. Monthly and quarterly maintenance shall be in accordance with Attachment J-C9.
- (b) Transformers. The Contractor, shall perform a weekly nitrogen system, cathode protection and oil filled cable reservoir check and a monthly visual inspection of each transformer in use or stored for reuse. All transformers are listed in Attachment J-C1-22A-H and J-C1-23A.
- 1 Weekly Checks. The weekly nitrogen system, cathode protection, cable oil reservoir checks and generator operational check out shall be done at a frequency of at least every seven (7) days. The devices to be checked are listed on the Substation Inspection Record (See Attachment J-C6-23H-I).
 - a. Nitrogen System. The nitrogen blanket system on transformers and high voltage cables shall be accomplished in a manner that does not allow the gas filled devices to exhaust the supply at any time. Under normal circumstances, nitrogen cylinders are replaced if the documented historic consumption rate will not allow its continued operation until the next scheduled inspection, typically performed on Fridays. On the occasions where the nitrogen filled device develops a leak rate which will not allow maintaining adequate pressure until the next inspection, the Contractor shall replace the cylinders at an increased frequency to meet the demand and system requirements until a scheduled repair of the leak can be instituted. Replacement cylinders shall be ordered and their delivery coordinated in a timely manner. The historical data indicates approximately 200 nitrogen cylinders per year are consumed. In addition to the

nitrogen bottle inspection performed at Building 1290, the Contractor shall switch fan banks from one side to the other for 1KA and 1KB transformers

b. Cathode Protection. Cathode protection monitoring consists of the notation of the power supplies output voltage and current on the various systems. Any changes from the normal levels shall be reported to the Contracting Officer for corrective action.

c. Cable Oil Reservoir. The cable oil reservoir check requires the Contractor to note that the tanks contain the proper level of cable oil and if equipped are not in alarm. On 1D cable oil reservoir the two chart recorders shall have their recorded charts removed, replaced and the old charts stored in the Building 1233 Control House.

d. Portable Emergency Generators. Emergency generator operational checks include starting and operating the equipment a minimum of 30 minutes operation per month. The devices shall be kept with an amount of fuel in their tanks to allow extended emergency operation when required. Any problems discovered with the generators shall be reported to the Contracting Officer. Attachment J-C1-23C lists the portable generators.

2 Monthly Visual Inspection. These inspections are part of the PM program, and may take place at any time during the month as long as there is a minimum of 30 days between inspections. The visual inspection shall include the investigation for any leak of dielectric fluid on or around the transformer and any other oil filled devices in the substations designated for inspection. The inspection shall be performed on devices only in the substations listed on the Substation Inspection Record (Attachment J-C6-23H-I). The inspection shall depend on the physical constraints of each transformer installation and should not require an electrical shutdown of the transformer being inspected. The Contractor shall inspect all transformers that are in service including PCB-containing and PCB-contaminated transformers. The transformer inspections shall also note the following elements:

- a** The presence of the appropriate labeling on both the transformer and the access to the transformer. If there is no labeling, or the labeling is in error, the Contractor shall notify the Contracting Officer.
- b** The presence of combustible materials within 15 feet of the transformer. If combustibles are present, the Contractor shall identify the situation and notify the Contracting Officer.
- c** The presence of secondary containment around the transformer.
- d** Transformer fan operational checks require the Contractor to switch all designated transformers with cooling fans out of the automatic fan position into the manual fan position and noting any devices not functioning and report them to the Contracting Officer.
- e** Operation and function of the temperature switch (every 4 years).
- f** Examine fences, gates and doors for proper grounding conductors, connections and operation. Report all problems noted or unsafe conditions to the Contracting Officer.

- g Inspect grounds for trash and excessive vegetation, check for circuit breaker oil leaks and for any other unsafe conditions. Report all problems noted or unsafe conditions to the Contracting Officer.
- (c) Secondary Equipment. The Contractor shall maintain secondary equipment involving voltages of 600 volts and below at nominal voltage levels of 480, 277, 208, and 120 single and three phase, at 60 hertz. This includes equipment consisting of substation secondary gear involving circuit breakers, current and potential instrument transformers, fuses, meters, recorders, relays, contractors, magnetic starters, bus ducts, cables, grounding systems, lightning systems, ground fault systems, and feeders.
- (d) Power and Exterior Lighting. The Contractor shall maintain power and exterior lighting distribution systems including circuit breakers, switches, panels, receptacles, lighting fixtures, dimmers, contractors, motors, built-in appliances, emergency lighting and lighted exit sign systems, static grounding systems, obstruction lighting, relamping, fusing, conduits, and conductors. The Contractor shall relamp all burned out street and perimeter light fixtures and repair or replace all broken fixtures. Any inoperative fixtures reported to the Contractor by a trouble call shall be placed back in service within five (5) working days from initial notification. See also Subsection C.21.k., *Buildings and Structures - Requirements for Electrical*.
- (e) Emergency Power Generation.
- 1 Standby Power Generation Plants. The Contractor shall perform monthly maintenance existing standby gas or diesel power generating plants in Buildings 1215, 1261, 1297, and 1236A. These plants include transformers, circuit breakers, gas or diesel engine-driven generators, associated control systems, batteries, chargers, gas supply line regulators, valves, controls, distribution systems with associated switchgear, fused cutouts, and unit load centers. The Contractor shall perform services on battery-operated emergency lighting systems, laboratory battery banks, and substation service batteries.
 - 2 Fire Station and Emergency Communication Center (ECC). The NASA LaRC fire station, Building 1248, has a UPS, and a backup diesel generator. All backup power must be inspected, tested and maintained in accordance with the NFPA standards and LAPG 1710.11, the *LaRC Fire Protection Handbook*. The Contractor shall ensure that all backup power for the fire station central fire alarm system and Emergency Communication Center (ECC) located in Building 1248 is 100% operational at all times. (See also Subsection C.25, *Fire Protection and Life Safety Systems Maintenance and Repair*.)
- (f) Uninterruptable Power Supply (UPS). The Contractor shall perform maintenance on fixed-mounted UPS systems in buildings 1236A, 1215, 1297, and 1261. Contractor maintenance shall be performed in accordance with manufacturer's recommendations. The Contractor shall inspect each UPS system every six (6) months. The inspection shall include inspecting each UPS system battery for proper battery fluid level, leaks, cracks, and deterioration, and test for specific gravity and voltage output as well as system current and voltage harmonic content, harmonic content of the ground and neutral currents, noise levels, static switch operation, switch closing time, battery bank current, and voltage output. The Contractor shall test all items under a simulated emergency. All defective batteries shall be replaced. The Contractor shall retain all inspection and test reports and enter the data, in a format approved by the Contracting Officer, into the CMMS within one (1) calendar day after the test.
- (g) Miscellaneous. Under this subsection the Contractor shall inspect and maintain the electrical system of miscellaneous equipment, including parts, such as motors,

generators, coils, pumps, solenoid valves, controllers, regulators, back-up and power generation equipment. Also auxiliary equipment such as, shock absorbers, bumpers, position indicators, latch checking indicators, nitrogen systems, oil tanks on underground feeders, link boxes, cathodic protection systems, duct banks, underground conduits, conduits, vaults, and pull boxes.

- (h) Substation Relays. The Contractor shall calibrate all substation relays requiring calibration biennially in accordance with requirements set forth in J-C9-0 thru 6, and J-C9-23. This work is highly specialized and may be performed only by technicians with appropriate training and experience with the test equipment to be used. The Government-furnished test equipment is manufactured by Doble Engineering Company and identified in Attachment J-C3 - 5C. Protective relay locations are listed in Attachment J-C1 - 23D.
- (i) Materials and Contractor Equipment. The Contractor shall test and inspect high voltage rubber gloves at least every six (6) months and hot sticks, rubber sleeves, and rubber blankets at least every 12 months as part of the recurring work. The in-service high voltage rubber gloves (27 pairs) are to be removed from service by the Contractor every six months and replaced with gloves from the Contractor maintained spare inventory. The gloves removed from service shall be sent to a testing laboratory for certification. The Contractor shall replace in service gloves with gloves of the same size and voltage/classification rating (or greater). All gloves rejected by the testing laboratory shall be destroyed and replaced so that the spare glove inventory maintains at least the number of gloves in service plus 10. The historic cost for glove testing is approximately \$133 every six months. The Contractor shall collect all high voltage rubber sleeves (6 pair) and send them out for testing and certification. All rejected units shall be destroyed and replacements obtained by the Contractor. The spare glove inventory and rubber blankets and sleeves are listed under Attachment J-C4-23. These and other electrical materials and equipment shall comply with the specifications and standards listed in LHB 1710.6, *Electrical Safety*.
- g. Meter Reading. The Contractor shall record readings of all electric meters regularly on the last working day of each month, except where noted otherwise, and shall coordinate readings with any utility company readings where possible. Meter reading is recurring work and is included in the firm fixed-price portion of the contract.
- (1) Meter Locations. Meter locations are identified in Attachment J-C25.
- (2) Documentation. The meter readings shall be recorded in a format developed by the LaRC Energy managers Office. The format shall contain previous month's kilowatt hours (KWH) data, previous years KWH data, previous month's meter reading, meter multiplying factor, current month, and a place to document the meter readers name. If any meters are equipped with demand information, it needs to be recorded on the form. The Contractor shall record all information on the form and submit to the Contracting Officer within one (1) workday of the data being taken. The Contractor shall record the information in the CMMS within two (2) work days of the reading of the meters. In addition, the following meters shall be read at Building 1233 between the 20th and 25th day of each month: meters number 1, 904, 905 and 906. Demand information, if used for the meters, shall also be recorded. The documentation shall be furnished to the Contracting Officer on or before the 25th of each month. Any hardcopies of the report data shall be maintained by the Contractor and submitted to the Contracting Officer within five (5) days of contract expiration or termination.
- h. Polychlorinated Biphenyls (PCBs) Contaminated Transformers and Equipment. The Contractor shall note that at LaRC there are transformers, transformer bushings and other equipment containing PCBs. These are identified in Attachment J-C1-23 A. The Environmental Protection Agency (EPA) has determined that due to the difficulty in determining if transformer bushings are

PCB-contaminated, if the transformer is found to be PCB-contaminated, its associated bushings shall likewise be considered to be PCB-contaminated. A copy of this determination is found in Attachment J-C23. Working with, handling, maintenance of, packaging, and disposal of PCB associated parts and equipment shall be done in strict adherence to the *LaRC Safety Manual* and OSHA and other statutory, regulatory, and local requirements. Refer to Attachment J-H1. Actual disposal of packaged hazardous waste will be done by others.

END OF SUBSECTION C.23

C.24. STEAM GENERATION, DISTRIBUTION SYSTEM AND REMOTE HEATING PLANT OPERATION, MAINTENANCE AND REPAIR

- a. **General Requirements.** The Contractor shall perform operation, monitoring, preventive maintenance, trouble calls, repair and overhaul of the Central Steam Plant (Building 1215) at NASA LaRC in accordance with the requirements specified herein. Included are associated steam distribution and condensate return systems, and remote heating plants and associated facilities and equipment (including utility tunnels). Also included are other systems in Building 1215, such as the service air system (compressors, dryers, and valves), natural gas distribution system, domestic water and the distilled and deionized water system. Attachments J-C1-22A-G list and Attachments J-C1-24A-B describe the facilities and equipment to be maintained in this contract subsection. The work also includes water sampling, testing, analysis, and treatment; fuel oil monitoring, handling delivery and transfer; annual boiler inspection, tuning, and certification; and the maintenance of records and preparation of reports in order to provide high pressure steam (up to 350 psig) 24 hours per day, seven (7) days a week throughout the term of the contract. All duties are to be performed in accordance with OSHA, the *LaRC Safety Manual* and the safety and policy manuals and procedural guidance listed in Attachment J-H-1. Any deviation from Standard Operating Procedures shall be done only with the concurrence of the Contracting Officer.
- b. **Scope of Work.** The work in this subsection includes:
- (1) **Trouble Call Work.** Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed, and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and this subsection. Repairs performed during the course of Operator Maintenance will not be considered or qualify as Trouble Call work.
 - (2) **Recurring Work.** Recurring work (included in the firm fixed price portion of the contract) in this subsection shall be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work* and includes:
 - (a) Operating the Central Steam Plant.
 - (b) Operator Maintenance on Central Steam Plant equipment and systems.
 - (c) Preventive maintenance on equipment and systems, including remote on-site boilers and heating systems.
 - (d) Operating remote heating plants (See Subsection C.24.e.(1), *Steam and Service Air Generation*).
 - (e) Checking fuel storage levels as necessary at Building 1215 and remote locations, and delivering fuel to them when required to ensure continual service.
 - (f) Providing support for annual boiler/pressure vessel inspections, developing boiler overhaul requirements, and documenting the results.
 - (g) Performing daily boiler water, feedwater, and condensate chemical sampling, testing and treatment from each operating boiler, cooling tower, and closed loop system.
 - (h) Performing annual boiler water chemical mix evaluations and analyses.
 - (i) Monitoring alarms.
 - (j) Preparation of the Operations Procedure Plan

- (k) Daily monitoring of the LaRC steam distribution system (see Subsection C.24 I "*Steam Distribution System*")
- (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. Additionally Attachment J-C6-24 lists the records and reports required of the Contractor as part of this work. System and equipment deficiency information obtained from daily operations, failed and marginally passed tests and certifications, or noticed during operator maintenance, trouble calls, PT&I or preventive maintenance work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*.
- (1) Plant Operations Logs. The Contractor shall maintain daily Central Steam Plant operating logs that record data such as equipment instrument readings and operating parameters, laboratory tests and results, plant and system maintenance performed, special operator tasks assigned, emergency conditions, all treatment chemicals used amount of propane used, and fuel tank soundings. The Contractor shall keep all operation, maintenance, and repair records orderly, up-to-date, readily accessible, and simply referenced in such a manner as to be quickly accessed, preferably on the CMMS, by all authorized Government officials at any time. The Contractor personnel shall be intimately familiar with the normal operating range of the equipment such that when taking readings of condition (temperature, speed, pressure, etc.) the Contractor can recognize anomalies and take corrective action. The Contractor shall turn the records (hardcopy and electronic) over to the Contracting Officer at the time of expiration or termination of the contract.
- (2) Configuration Documentation Support. The Contractor shall follow current configuration controlled operations procedures and checklists. The Contractor shall initiate Change Notification Sheets when required to update, prepare and maintain accurate procedures, checklists, and as-built drawings when systems are deleted, added or modified in accordance with Subsection C.7.j., *As-built Drawings*.
- (3) The Contractor shall collect the steam data listed below daily and submitted by the 5th of the following month to the CO in Excel format; Steam ejector usage by facility; Fuel consumed to produce steam; Gallows of Water softened; Salt utilized; Outside high and low daily temperatures; Degree days; Average monthly efficiency; Boiler steaming hours by boiler; Steam generated by boiler; Total steam produced by Recoup; Steam supplied to LaRC by Recoup; Total steam consumed by LaRC east area.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for operating and performing work on steam, heat and service air generating equipment and distribution systems at LaRC. The objective is to perform steam, heat and service air related work in accordance with written and bound procedures to ensure that LaRC is provided safe, reliable, and efficient operation of these systems without preventable interruption. The Operations plan should address the contractor's approach to furnish a steady, fault-free steam, heat and service air supply during mission support periods and system or major component failure. The Plan shall be developed using the following guidelines: (1) existing LaRC operating procedures, (2) industry standards and national codes (National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME, etc.), (3) equipment and system manufacturer's instructions, and (4) procedures outlined in the *LaRC Safety Manual*. The Plan shall address:

- (1) Normal operating ranges (i.e., temperature, speed, pressure, etc.) of the steam, heat and service air generation equipment that must be met.
- (2) The systems' operating instructions including a detailed description in correct sequence of the observations and adjustments to be made, the minimum frequency of the observations and adjustments, and who shall perform them.
- (3) Procedures used for calculating boiler efficiency standards, determining actual efficiency, and for reporting the results.
- (4) Procedures for interfacing with 1288 to insure maximum operational efficiency of the steam system is maintained, fuel consumption is minimized and the system is not over pressurized or wasting steam.
- (5) Boiler water sampling, testing and treatment plan and procedures.
- (6) Boiler overhaul plan and procedures
- (7) Systems inspection and certification plan and procedures, as applicable.
- (8) Emergency procedures for steam production and/or distribution disruptions.
- (9) Safety and accident response and reporting procedures.

A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

e. System Description.

- (1) Steam and Service Air Generation. The primary purpose of this function is the provision of reliable and efficiently produced steam, heat, hot water and service air. These products are generated through the operation of the Central Steam Generation Plant, Building 1215; the operation of three (3) - 350 horsepower boilers at buildings 647 and 646; the operation of 12 individual heating units using propane, natural gas and oil; the operation of two (2) steam to water heat exchangers in buildings 1203 and 1154; the operation of three (3) air compressors in Building 1215 (One 2,166 cfm and one 1,500 cfm air compressor, with one running continuously, supply the 110-psi air, and one 1,000 cfm air compressor supplies the 350-psi air.) for the production of service air. The Steam Generation Plant is manned on a 24-hour basis and serves as the coordinating center for activities beyond regular working hours through the Duty Office. Steam is used for building heat, domestic hot water, air condition absorption units, re-heat, JT heaters, steam ejectors, heat exchangers, and research facilities projects. Production is approximately 124,000,000 pounds of steam per year. The Refuse Steam Generating Facility (Building 1288 RECOUP) furnishes approximately 378,000,000 pounds of steam per year. RECOUP is Government owned (NASA/LAFB) and operated and maintained by the City of Hampton, Va. The Steam Generating Plant Building 1215 has a total connected steam capacity of 390,000 pounds per hour using natural gas as fuel and 340,000 pounds per hour using #2 fuel oil. The fuel storage capacity for #2 fuel is 250,000 gallons in five underground storage tanks. The total capacity of the individual heating units is 10,170,000 BTU per hour using #2 fuel oil and 4,188,000 BTU per hour using propane and

natural gas (See Attachments J-C1-24B and J-C13-24B for a description and drawings of the natural gas distribution system.)

- (2) Steam and Service Air Distribution. Attachments J-C13-24A and J-C13-31 list the drawings associated with the steam and air distribution systems, respectively. Underground walk-through tunnels are used to convey the steam and service air from the generating plant. They total 11,841 linear feet of walk-through tunnels; also there are 4,925 linear feet of shallow trenches. There are 50 steam reducing stations, approximately 140 steam trap assemblies, 28 condensate tanks with tandem pump units, and 28 sump pump stations with one (1) electric and one (1) air driven pump at each station. The domestic hot water is supplied by two (2) instantaneous hot water heaters and circulated by two (2) centrifugal pumps, with one (1) running continuously.
- f. Parts and Materials. The Contractor shall maintain a stock of spare parts in accordance with Subsection C.5., *Government Furnished Property and Services*, and C.6., *Contractor Furnished Items*. Experience has shown that selected items of long lead time parts and materials must be stocked to ensure repair of critical equipment in the event of failure. A list of these critical reserve items and minimal stocking levels is contained in Attachment J-C4-5.
- g. Steam Plant (Building 1215) Operation, Maintenance, and Repair.
 - (1) Steam Plant Requirements. The Contractor shall be responsible for the effective and efficient operation, maintenance, and repair of the central steam, service air, natural gas, and domestic water systems 24 hours per day, 7 days per week, including holidays. The domestic water booster pumps shall be available to meet 100% of the system design capacity at all times. The steam system includes boilers, the physical plant, and related equipment including fuel oil storage and handling, natural gas distribution, water treatment equipment, associated pumps, components, controls, and the steam distribution system including steam lines, condensate return lines, and related equipment as identified in the Attachments J-C1-22A-G and J-C1-24. Work to be performed by the Contractor includes, but is not limited to:
 - (a) Operation and monitoring of boilers, air compressors, air dryers, hot water systems, domestic water booster pumps, water softeners, emergency generators, and auxiliary equipment.
 - (b) Monitoring, maintenance, repair and overhaul of all hot water and steam reducing valves, control valves, relief valves, pressure reducing valves, pumps, steam turbines, air compressors, air dryers, piping regulators, high pressure switches, transmitters, hydraulic pumps, and forced draft and flue gas recirculation fans in the Central Steam Plant (Building 1215) and utility tunnels.
 - (c) Weekly checks of sump pumps, telephones and alarms in the utility tunnels and shallow trenches.
 - (d) Daily checks of remote boilers (Buildings 646 and 647), furnaces and heat exchangers during the heating season.
 - (e) Preventive maintenance to the equipment and systems listed in Attachment J-C1-22A-H in accordance with the frequencies and job plans identified in Attachment J-C9.
 - (f) Installation, modification and repair of piping systems and insulation in the Central Steam Plant (Building 1215) and utility tunnels. Periodic maintenance shall be performed on heat exchangers, steam traps, backflow devices, expansion devices, and/or vibration eliminators, hangers, brackets, filters, strainers, and reducing stations.

- (g) Purchase, installation and operation of various units of auxiliary equipment such as distillers, deionizers, water softeners and pumps.
 - (h) Testing and maintenance of all boiler, return condensate and cooling tower water for proper chemistry.
 - (i) Maintenance of the spare parts inventory for critical systems.
 - (j) Maintenance of data recording equipment for all machinery and systems.
 - (k) Painting and preservation of building equipment and systems. Surfaces to be coated under this subsection include interior steel structures, piping, boilers and other mechanical equipment. See also Subsection C.17, *Corrosion Control and Coating Services*.
 - (l) Hydrostatic testing of all piping and system components prior to installation into systems above 125 psig, including research-metering devices, controls, gages, and temperature/pressure readout devices. See also Subsection C.19., *Calibration, Testing and Component Verification*.
 - (m) Boiler overhauls and recertification support of all boilers and pressure vessels listed in Attachment J-C1-22A-G. See also Subsection C.21, *Buildings and Structures Maintenance and Repair*.
 - (n) Monitoring fuel tank levels and maintaining at least a 90% of capacity fuel supply for Buildings 1215 and 647, remote boilers and furnaces.
 - (o) Reviewing drawings, securing and venting systems, and red tagging systems.
 - (p) Monitoring all chemical usage, maintenance of MSDSs, and reporting chemical usage and other data quarterly to the Contracting Officer.
 - (q) Operation of fuel transport equipment to refuel all generators, diesel pumps, and the NASA LaRC boat when the boat is stationed at LaRC.
 - (r) Maintenance of building and utility tunnel cleanliness.
 - (s) Handling, removing, working with, and/or packaging for disposal, hazardous materials.
- (2) **Plant Operation.** The operation of the central heating plant (Building 1215) includes the start-up and shutdown of heating equipment, operator inspection, and the efficient and economical production of steam to assure its availability to the Government at the lowest possible cost. The LaRC heating season spans from approximately October 15 to April 15 annually.
- (a) **Steam Generation.** The Contractor shall operate, maintain, and repair all LaRC equipment including, but not limited to, power boilers, electrical and mechanical controls, gauges, thermometers, flowmeters, pumps, sample coolers, dampers, stacks, chemical treatment, fans, valves, piping, piping supports and hangars, regulators, relief and safety valves, traps, radiators, coils, thermostats, monitoring systems, heaters, and insulation. Equipment shall be in operation continually, 24 hours a day, 365 days per year, at designated capacities and efficiencies, to meet year round domestic and industrial hot water and seasonal domestic heating demand requirements and to ensure system reliability.

- (b) Steam Pressure. The Contractor shall maintain the steam pressure at the required pressure (maximum 350 psig) and the maximum temperature of 436 degrees F exiting the Central steam plant, Building 1215, for distribution. The pressure of condensate is 15 psig and 30 psig.
- (c) Other Utility Operations
- 1 Domestic Water. The Contractor shall operate, monitor, and maintain the domestic water booster pumps located in Building 1215 to ensure that the system is capable of operating at 100% of design capacity at all times (See also Subsection C.29., *Potable Water Distribution System Maintenance and Repair*.) The Contractor shall submit monthly, to the CO by the 5th of the following month, the water usage for LaRC in Excel format.
 - 2 Low-pressure Air. The Contractor shall operate, monitor and maintain low pressure air compressors (two (2) at 100 psig and one (1) at 350 psig) located in Building 1215. The Contractor shall submit monthly, by the 5th of the following month, the total air produced by each system daily to the CO in Excel format.
 - 3 Natural Gas. The Contractor shall monitor, maintain and repair the natural gas distribution system, as described in Attachments J-C1-24B and J-C13-24B. Natural gas is used to fire the boilers in the steam plant, heat furnaces in the foundry, support research operations, and provide building heat. The Contractor shall submit monthly by the 5th of the following month, the amount of natural gas usage and cost by facility to the CO in Excel format.
- (d) Operator Maintenance. The Contractor shall perform operator maintenance as a collateral duty on facility equipment within facilities where operation services are provided. Operator maintenance includes individual maintenance, inspection, troubleshooting, or repair tasks up to 16 hours or \$2,000 total material, labor, and equipment costs (the same as TC scope). Repairs or maintenance that exceed those limitations, and which are not covered by the Preventive Maintenance program furnished in Attachment J-C9, will be considered IQ work. Operator maintenance is firm fixed price recurring work, and shall not be included in the Trouble Call quantity or documentation. However, a log shall be kept in the CMMS of all operator maintenance performed for the Contracting Officer's review. The Contractor shall follow approved maintenance procedures and associated checklists in the performance of operator maintenance work. In addition to performing operator maintenance on on-line equipment, the Contractor shall periodically operate and inspect idle equipment and clean, preserve, lubricate, and adjust personal property equipment listed in Attachment J-C1-22A-G.
- (3) Plant Maintenance and Repair. The maintenance of the central boiler plant shall include steam heating sources; fuel storage and handling, feedwater, condensing, flue gas, and air system equipment; miscellaneous pumps and plant instrumentation; electrical equipment and components; as well as associated appurtenances necessary to generate and deliver steam to the distribution system external to the plant. When equipment or systems are required to be secured or deenergized for work to be performed, safety clearance shall be provided by the Contractor. Equipment and its respective system, if applicable, shall be available for operations not be less than 90 percent of the time during its operational season. During boiler safety inspections and/or certifications the Contractor shall provide a qualified operator for support. Plant maintenance shall be performed in accordance with the approved operating procedures as defined previously in this subsection and as required by ASME I and IV, American National Standards Institute (ANSI)-B31.1 of 1989 and National Board of Boiler Inspectors of 1989.

- (4) Operational Emergencies. Operational emergencies such as ruptured mains, loss of boilers, etc., that reduce boiler pressure below 80 percent of normal operating pressure for a period extending beyond 30 minutes or which result in a change in the plant's reliability or capacity shall be reported within thirty (30) minutes of the occurrence to the Contracting Officer. The Contractor shall identify the probable cause for the reduction and the estimated time to restore full steam capacity. If full capability cannot be restored within five (5) hours, the Contractor shall install and operate emergency steam generation equipment with a capacity of not less than 350 psig and 436 degrees F. Historically, emergency equipment has not had to be employed over the past three years.
- (5) Water Testing and Treatment. At least once during each day that the plant is in operation the Contractor shall collect feedwater, boiler water, and condensate samples from each operating boiler, cooling tower and closed loop system for testing. The Contractor shall perform or have performed the necessary tests to meet applicable manufacturer requirements or local requirements on hardness, phosphate, sulfite, causticity (alkalinity as OH), pH, conductivity, and total dissolved solids in PPM. Test results shall be made available on the CMMS to the Contracting Officer within two working days of taking the samples, and a monthly water analysis report shall be forwarded to the Contracting Officer by the fifth calendar day of each month for the previous month. The Contractor shall provide all water treatment chemicals required for plant operations. Attachment J-C18-24 lists historical data of the chemical consumption for LaRC boilers. See Subsection C.24.k., *Annual Chemical Evaluation*. Boiler water shall be maintained within the following limits:

Phosphate:	20 - 40 PPM
Conductivity:	2500 - 3000 mmhos
Sulfite:	20 – 50 PPM
pH:	8.2 to 8.5
Hardness:	0-1 PPM
Causticity (alkalinity as OH):	200 – 600 PPM
Total Dissolved Solids:	2000-4000 PPM.

The Contracting Officer must approve changes in the approved water treatment plan discussed in Subsection C.24.d., *Operation Procedures Plan*. At no additional cost to the Government, the Contracting Officer has the option of requiring sampling and testing once per shift, specifying the time(s) the samples are taken, observing the sampling extraction, and directing that the samples be analyzed by an independent laboratory.

- (6) Operation Efficiency Standards. The Contractor shall be responsible for meeting the present operating standard of the heating plant. This shall be based on the present efficiency of the boilers. Boiler efficiency shall be calculated by the ASME input/output method. For boilers not equipped with instrumentation that permits the determination of thermal efficiency by the input/output method, exit flue gas temperatures shall be used as an indicator of the boiler efficiency. Each monthly average 50 degree Fahrenheit increment increase in exit gas temperature above the base temperature shall be equated to a 1 percent decrease in boiler efficiency for the month. The procedure for determining the efficiency used in the calculation shall be consistent throughout the term of the contract. The minimum acceptable boiler efficiency shall be 90% or the maximum exit gas temperature shall be 700 degrees Fahrenheit. These standards are subject to revision based on change in future operational conditions of the boiler plant. For example, improvements in the boiler plant that are

accomplished at Government expense may require an increase in minimum acceptable efficiency.

- (7) Boiler Performance Report. A boiler performance report shall be prepared on the CMMS for each operating boiler on a weekly basis. A copy shall be provided for review by the Contracting Officer as required. This complete, updated and final boiler performance report is due on the CMMS not later than 4:00 PM each Wednesday for the previous week (Sunday through Saturday) and shall include:
- (a) A plot of boiler combustion efficiency versus boiler load.
 - (b) A plot of the temperature difference between the boiler water and exit gas temperature versus load for steam boilers.
 - (c) Plots of combustion efficiency and temperature difference versus load should be reported for the full range of operating loads each week.
 - (d) Combustion efficiency. This can be obtained by direct measurement using a combustion analyzer. Combustion efficiency can also be obtained by measuring boiler intake air temperature, exhaust gas temperature, and CO₂ or O₂ charts for the particular fuel being fired. If measured combustion efficiencies are more than three percent (3%) below the optimum combustion efficiencies, corrective action is required.
 - (e) Water and flue gas temperature difference as an indicator of the cleanliness of the boiler watersides and firesides. The Contractor shall prepare a plot of this temperature difference after the boiler watersides and firesides have been cleaned. If the temperature difference rises by more than 80 degrees at several load points, deposits have probably formed and should be removed. As a check, combustion efficiency should drop as the temperature difference rises.

h. Boiler Overhaul.

- (1) Maintenance work on boilers and direct support auxiliary equipment that cannot be performed while the boiler is in operation shall be accomplished as an overhaul item. Each boiler shall be overhauled annually during the facility's annual shutdown (See Attachment J-C9-12A). The overhaul shall be performed in accordance with the PM program requirements, manufacturer's recommendations, and Section VII of the ASME Boiler and Pressure Vessel Code. All required overhaul work that is not part of the PM program requirements is non-recurring work, and shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*. Boiler Overhaul work shall be fully warranted against defects due to material or workmanship for a period of 180 days.
- (2) The Contractor shall prepare a boiler overhaul schedule indicating the time and duration of the shutdown, and shall be submitted as part of the Operation Procedures Plan (Subsection C.24.d.) to the Contracting Officer for approval. Within 15 days after completion of each overhaul, the Contractor shall prepare and submit a detailed report to the Contracting Officer of the findings and work accomplished. Work affecting the structural or pressure integrity of the boiler shall be performed only when directed by the Contracting Officer and in accordance with written procedures approved by an ASME-certified boiler inspector. The certified boiler inspector prior to returning the affected unit to operation shall inspect completed work.
- (3) In conjunction with the overhaul, the Contractor shall schedule the work with the ASME-certified Boiler Inspector to perform such inspections and witness tests that are required while

the unit is open and before it is returned to service. The PM program in Attachment J-C9 includes the estimated time for inspections and the contractor certification process support.

- i. **Certification.** The Government will provide an ASME-certified boiler inspector for Central Steam Plant boiler and pressure vessel certifications. The Contractor shall not operate any power boiler that does not have a valid inspection certificate. The Contracting Officer shall be notified if unsafe conditions are found, following repair of a pressure part, or after any major modification to boilers, control equipment or auxiliaries. The affected equipment shall not be placed back in operation until written authorization is received from a certified boiler inspector.
 - (1) During the boiler and pressure vessel recertification process, the Contractor shall clean and prepare the steam system boilers and unfired pressure vessels in the system for certification. The Contractor shall operate the boilers during the certification as approved by the inspector. Hydrostatic pressure testing for certification shall be performed by the Contractor.
 - (2) All other (i.e., non-Central Steam Plant) boilers and unfired pressure vessels shall be inspected and certified by a Contractor-provided ASME certified inspector in accordance with the ASME Boiler and Pressure Vessel Code. Units for which certification has been withheld shall not be operated without the written concurrence of the Contracting Officer. Boiler inspection safety certificates shall be void immediately on the discovery of a safety deficiency regardless of the expiration date on the certificate. The certificate will again be valid only after the deficiency has been corrected by the Contractor and concurrence of the certified inspector is obtained.
 - (3) The preparation of boilers for temporary or extended standby shall be performed in accordance with the *LaRC Facility Configuration Management (CM) Program Effort Code 98*.
- j. **Remote Operations.** The Contractor shall maintain completely all oil and gas-fired, remote heating units. All heating units shall be cleaned and tuned for proper operation at the end of the heating season or as needed. This shall include, but not be limited to, maintenance of burners, pumps, switches, stacks, fire box chambers, the outer casings, fire tubes, line strainers, and nozzles. Refer to Subsection C.21., *Buildings and Structures Maintenance and Repair*.
- k. **Annual Chemical Evaluation.** In conjunction with the annual boiler overhaul and certification a chemical evaluation and analysis of the boiler water shall be performed to determine if the proper mix of the most appropriate chemicals has been applied throughout the year and to modify future applications, as necessary. The Contractor is responsible for coordinating and having this analysis performed and for any associated costs. In the past, the supplier of the chemicals has performed this service as part of an annual Contractor-Chemical Supplier agreement at no additional cost to the Government or to the Contractor. Any subcontract for boiler water chemical services is subject to Contracting Officer approval.
- l. **Steam Distribution System.** The Contractor shall monitor daily, maintain and repair the entire steam distribution and condensate return systems, including all aspects of the utility tunnels, identified in Attachments J-C1-22A-G, J-C1-21A-B and J-C13-24 and described in Attachment J-C1-24A to provide a continuous minimum pressure of 15 psig of steam at end points and to minimize condensate losses due to leakage. The steam distribution system originates at the Central Steam Plant (Building 1215) and extends throughout LaRC to and including the pressure-reducing valve (PRV) or the building shut off valve where there is no PRV. This system includes elevated and underground steel steam supply piping and condensate return piping, fittings, valves, traps, insulation and lagging, aluminum jacketing, expansion joints, expansion loops, pipe hangars, anchors, conduit and manholes, structural supports and other related items. The utility tunnels and trenches for which the Contractor is responsible for monitoring and inspecting daily, maintaining and repairing as necessary consist of the following:
 - Tunnel #1 - 3,222 ft.

- Tunnel #2 - 3,147 ft.
- Tunnel #3 - 843 ft.
- Tunnel #4 - 4,620 ft.
- 50 steam reducing stations
- 25 condensate return pump stations
- 21 sets of sump pumps (one eject and one air pump per set)
- Trench – Refuse Fired Steam Generating Facility, Building 1288:
 - 2,000 ft of 2-inch air line
 - 2,000 ft of 8-inch steam line
 - 1,300 ft of high pressure condensate line
 - 5 steam trap stations
 - 3 sump pumps
- Building 1154:
 - 1,200 ft of 4-inch steam line
 - 1,200 ft of low and high-pressure condensate line

m. Fuel Oil.

- (1) The Government will furnish Number 2 fuel oil for boiler operation. The Contractor shall monitor fuel levels of all the fuel tanks listed in Attachment J-C1-24A (including remote sites) and maintain the fuel level in each one at no less than 90% of capacity, keep advised of the amount of Government funds available for fuel purchases, initiate fuel orders directly to the Government fuel supplier when required, receive fuel from tanker trucks at Building 1215 (unless otherwise arranged by the Contractor), transfer the fuel to and among storage tanks (including remote sites), and make all operational fuel transfers. The Contractor shall maintain on the CMMS an accurate record of the amount of fuel received in each delivery. Entries shall be made by the Contractor within 24 hours of each delivery and be easily accessible by the Contracting Officer. A summary report of the total fuel deliveries shall be submitted to the Contracting Officer electronically by the 5th day of each month for the previous month deliveries. Tank soundings shall be taken and recorded before and after each fuel delivery to verify the actual quantities received. The Contractor shall maintain all fuel oil handling equipment including storage tanks, pumps, fuel transport vehicles, piping, and heaters, and shall comply with all federal regulations pertaining to fuel operations. Historical data indicating the quantity of fuel oil used is listed in Attachment J-C8-24. The Contractor shall submit monthly, by the 5th of the following month, the amount of #2 fuel oil and cost, delivered, by Building/Site to the CO in Excel format.
- (2) Fuel Deliveries. The Contractor shall deliver (or have delivered) fuel oil to outlying areas, including emergency generators and remote heating units, listed in Attachment J-C1-24A. Some of these deliveries may be under emergency circumstances. These deliveries are part of the firm fixed price work.

- n. Propane. The Contractor shall furnish propane required for boiler operations. Historical data indicating the quantity of propane used is listed in Attachment J-C8-24. The Contractor shall submit monthly, by the 5th of the following month, the amount and cost of propane usage to the CO in excel format.
- o. Natural Gas. The Government will furnish Natural Gas used for boiler operation. The Contractor shall monitor Natural Gas use in accordance with Subsection C.24.g.(2)(c)3.
- p. Housekeeping. See Subsection C.7.t., *Housekeeping*.

- q Waste Oil and Hazardous Waste. See Subsection C.7.r, *Hazardous Materials*.

END OF SUBSECTION C.24

C.25 FIRE PROTECTION AND LIFE SAFETY SYSTEM MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall provide maintenance, repair and programming services for the fire protection and life safety systems at NASA LaRC (see J-C1) in accordance with the requirements specified herein. These systems and equipment to be serviced under this contract subsection include: fire and smoke detection/alarm and alarm monitoring systems; automatic sprinkler (wet, dry pipe, pre-action, and deluge system) and standpipe systems, including fire water distribution systems, pumps and fire hydrants; deluge systems; gaseous extinguishing systems; dry and wet chemical extinguishing systems; fire and smoke containment systems; and oxygen depletion systems. All work in this subsection shall comply with the most recent edition of the NFPA codes, Underwriter's Laboratories Listings and Factory Mutual Approvals, and other reference specifications and standards listed in Attachment J-H1, unless otherwise specified in the *LaRC Fire Protection Handbook* or by the Contracting Officer. The Contractor shall report in writing within 24 hours to the Contracting Officer the reason for any faults or false alarms in the facility fire protection system.
- b. Scope of Work. Work includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, and this subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance (including system testing and inspection) and preparation and maintenance of the Operation Procedures Plan. This recurring work shall be accomplished in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*, and this subsection.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from system inspections, tests, and maintenance performed. Additional reports required, their formats, and their reporting frequencies are identified in the *LaRC Fire Protection Handbook* and are included in Attachment J-C6-25. System and equipment deficiency information obtained from daily operations, failed and marginally passed tests and certifications, or noticed during maintenance or trouble call work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*. The Contractor shall initiate Change Notification Sheets when required to update, prepare and maintain accurate procedures, checklists, and as-built drawings when systems are deleted, added or modified in accordance with Subsection C.7.j., *As-built Drawings*.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the fire protection and life safety systems at LaRC. The objective is to perform fire protection and life safety system related work in accordance with written and bound procedures to ensure that these systems operate safely, reliably, and efficiently and without preventable interruption. The Operations plan should address the contractor's approach to furnish steady, fault-free fire and emergency alarm and fire suppression system protection at all affected facilities at all times. The Plan shall be developed using the following guidelines: (1) applicable LaRC Standard Operating Procedures (SOPs), (2) manufacturer's instructions, (3) industry standards and national codes (National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME, Sections VI and VII of 1989, etc.) and (4) procedures outlined in

the *LaRC Safety Manual*. The Plan shall address (1) the systems' operating procedures including the frequency and description in correct sequence of the observations and adjustments to be made; (2) the systems testing and inspection plan and notification procedures; (3) safety and accident response and reporting procedures; and (4) a prequalified list of subcontractors to perform fire and safety alarm and fire suppression system work on short notice. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Trouble Call Emergency Response for Fire Protection Systems. All emergency trouble calls and system outages shall be responded to at the site within 15 minutes during normal working hours. Such calls during off duty hours, weekends, and holidays shall be responded to within 15 minutes by phone or radio, and if necessary, be at the Center within 2 hours of notification. Refer to Section C.11., *General Requirements and Procedures for Trouble Call Work*.
- f. Requirements for Fire Alarm and Air Sample Detection Systems. The Contractor shall inspect, test, maintain, and repair the fixed fire alarm and air sampling detection systems, emergency sirens, and equipment listed in Attachments J-C1-22A-G and J-C1 -25A so that they are continuously maintained in complete, reliable, and safe operating condition as originally designed and intended. NASA LaRC has fire alarm systems and air sampling detection systems of several different manufacturers in its facilities, with the primary ones being Notifier, Pyrotronics, and Edwards. Also included is a Notifier central fire alarm system. These system and equipment requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits and are included in the non recurring work portion of the contract. The Contractor shall acquire manufacturer's catalog cuts as needed to troubleshoot or repair fire alarm systems if they are not currently available in the Government's files. This requirement shall be performed in accordance with Section C.13, Indefinite Quantity work unless within the limits of a Trouble Call. Electrical connections required to operate alarm and siren systems shall be maintained back to the source of electricity, up to but not including circuit breakers and disconnects. Wires (other than telephone lines) connecting remote station alarm and siren systems shall be maintained throughout the fire alarm system. Telephone lines in remote station alarm systems shall be maintained back to the interface with the main telephone lines. Work on the air sampling detection systems includes, but is not limited to changing filters, pumps, and cleaning air inlets. PMs shall be scheduled and conducted as specified in the Subsection C.12, *General Requirements and Procedures for Recurring Work*, Attachment J-C9, current National Fire Protection Codes, and the recommendations of the equipment manufacturer unless otherwise stipulated in the *LaRC Fire Protection Handbook*.
- (1) Inspections. All equipment shall be visually inspected monthly to ensure that the systems have not been damaged, that the batteries are clean and free of corrosion and that any detector, heat and/or smoke, is clean and free of any dust, lint, paint, or substance that may effect its proper operation. The fire alarm control panel connections and wiring terminals shall be checked to ensure that all points are correctly installed and that none are loose, stripped, or frayed.
- (2) Modifications. The Fire Alarm Systems are under Configuration Management (CM) and all modifications must follow CM procedures. All modifications shall be approved first by the Contracting Officer before the job starts and/or tested and accepted by the Contracting Officer and shall be inspected and tested by the Contractor to ensure compliance with the appropriate NFPA standards as well as compatibility with the existing fire alarm equipment.

- (3) Configuration Document Support. The Contractor shall prepare and maintain accurate as-built drawings and facility resume information when systems are deleted, added or modified and submitted to the Contracting Officer in accordance with Subsection C.7.j., *As-built Drawings*
 - (4) Testing. The Contractor shall notify the Contracting Officer before any tests are conducted. This requirement is also for evacuation drills. As a minimum testing shall comply with the testing criteria and frequencies indicated in the *LaRC Fire Protection Manual*, LAPG 1710.11.
 - (5) Computer Updates. In addition to performing inspection, testing and maintenance of the Notifier central fire alarm system (UNINET), the Contractor shall keep up-to-date the system's computer based graphical displays. This includes changing the facilities' graphical layout as facilities, devices and systems change. Keeping the graphics up-to-date is included in the indefinite quantity portion of the contract (Subsection C.13.)
 - (6) Test Equipment. The Contractor shall provide all equipment, materials, and instruments required for the thorough testing of the systems. These items shall include but not be limited to, the following:
 - (a) Ionization type smoke detector test gas;
 - (b) Photoelectric type smoke detector smoldering fire source;
 - (c) Ionization detector sensitivity and alarm threshold device;
 - (d) Heat producing device suitable for testing all types of thermal detectors;
 - (e) Electrical test equipment including multi-meters;
 - (f) Explosion-proof equipment such as lights and test equipment for work in hazardous areas;
 - (g) Testing UV/IR detectors.
 - (7) Materials and Equipment. Materials and equipment furnished shall be of the same manufacturer as the existing equipment and shall be Underwriters Laboratory (UL) listed or Factory Mutual (FM) approved and shall comply with the specifications as applicable for the specific fire alarm system service. All circuits shall contain a separate grounding conductor with green colored insulation.
 - (8) Reporting System. Where scheduled interruption of the LaRC fire alarm loop is required to perform the required maintenance, a written request to the Contracting Officer shall be submitted scheduling the interruption five (5) days prior to the anticipated date.
- g. Requirements for Automatic Sprinkler and Standpipe Systems. The Contractor shall inspect, test, maintain, and repair fire sprinkler systems listed in Attachments J-C1-22A-G and J-C1 - 25B in accordance with the latest NFPA codes and standards so that they are continuously maintained in complete, reliable, and safe operating condition as originally designed and intended. These system and equipment requirements are recurring work included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits which are included in the non recurring work portion of the contract. The Contractor shall acquire manufacturer's catalog cuts as needed to troubleshoot or repair automatic sprinkler and standpipe systems if they are not currently available in the Government's files. This requirement shall be performed in accordance with Section C.13, Indefinite Quantity work unless within the limits of a Trouble Call. PMs shall be scheduled and conducted as specified in the General Requirements and Procedures For Recurring Work, Subsection C.12, and the recommendations of the equipment manufacturer.
- (1) Automatic Sprinkler and Standpipe Systems. Automatic sprinkler and standpipe systems shall be maintained back to the main water distribution system, including backflow preventers, post indicator valves, check valves, and waterflow meters. Spare sprinkler heads are currently on hand and available for the Contractor's use for each sprinkler system. The

Contractor shall provide a replacement unit within 14 calendar days after the use of any sprinkler head, and shall check and report missing heads and wrenches as part of each PM.

- (a) Inspections. The Contractor shall develop and maintain a log of the inspections and tests performed. This log shall indicate at a minimum: the date tested; building number; name of the facility; type of system or area covered by the system tested; and the type of devices actuated. This log shall also indicate any modifications that have been performed since the last inspection and the maintenance and/or repairs required, if any, to return the system(s) to a working condition. The Contractor shall conduct inspections according to NFPA code requirements, recommendations, and specifications. The Contractor shall visually inspect the existing installation to ensure that the systems have not been damaged, that all valves are in working order, the sprinklers are free of dust, lint, paint, etc., which may affect its proper operation. Any deficiencies noted, including incorrect arrangement of the sprinkler heads or inadequate coverage shall be reported to the Contracting Officer.
- (b) Modifications. The Sprinkler Systems are under Configuration Management (CM) and all modifications must follow CM procedures. The Contractor shall inspect all modifications to ensure system compliance with NFPA codes, standards, and recommended guides and practices. The Contractor shall prepare and maintain accurate as-built drawings and facility resume information when systems are deleted, added or modified and submitted to the Contracting Officer in accordance with Subsection C.7.j., *As-built Drawings*.
- (c) Testing. The Contractor shall conduct testing according to the requirements and recommendations of NFPA codes and the fire equipment manufacturer's recommendations. The Contractor shall notify the Contracting Officer in writing five (5) days prior to testing. As a minimum, sprinkler system testing shall comply with the criteria and frequencies indicated in the *LaRC Fire Protection Manual*, LAPG 1710.11. The Contractor shall:
- 1 Operate *all* control valves, test valves, drain valves, etc., to ensure proper operation and that all valves reseal themselves properly. Check that rising stem valves do in fact operate their valves.
 - 2 Check water pressure gauges on alarm check valves for holding (higher) system pressure above alarm valve.
 - 3 Flush all system strainers, verify that all system water motor gongs operate, and system pressure switches and their related functions notify the station fire department.
 - 4 Perform system drain tests by fully opening the 2-inch drain and note and record the pressure drop on the water supply gauge. When so equipped, check operation of the system alarm check valves by noting pressure gauge readings above and below the alarm check.
 - 5 Inspect all system piping; check for missing or damaged hangars, bent piping, obstructed sprinkler heads and areas where sprinkler coverage is lacking.
 - 6 Fire pumps shall be maintained up to and including the starting equipment. Tests and PMs shall be performed to ensure optimum performance.
- (d) Test Equipment. The Contractor shall provide all equipment, materials, and instruments required for thorough testing of systems.

- (e) Materials and Equipment. Materials and equipment furnished shall be of the same manufacturer as the existing equipment, shall be Underwriter's Laboratory (UL) listed and/or Factory Mutual Approved, and shall comply with the applicable specifications.
 - (f) Securing Water. Five (5) days prior to shutting off any fire protection valve the Contractor shall notify the Contracting Officer of the location of the valve and of the expected duration of the shut off. The Contracting Officer must approve the shut off of any system that will remain off for more than two (2) hours or during an overnight period. The Contractor must follow the "Impairment Policy" as outlined in the *LaRC Fire Protection Handbook*.
- (2) Fire Hydrants. Fire hydrants shall be maintained back to and including the valves and laterals to the main water distribution system. The following summarizes the principal annual tests and PMs required:
- (a) Flush and conduct a flow test of all fire hydrants above and below ground on other than dead-end fire mains. Flow rating information from past tests will be provided to the Contractor, if available. Water shall be discharged until clear and hydrants checked for proper drainage. Flow tests shall be coordinated with the Contracting Officer and test results shall be provided to the Contracting Officer upon completion.
 - (b) Check the general condition and take remedial action as necessary of all hydrants, including: the tightness of nozzles, particularly at the point where the nozzles enter the hydrant barrel; leaks in the top of the hydrant, past gaskets under caps, and defective gaskets; cracks in the barrel; tightness of the valve and seat; the operating nut; nozzle threads for damage; and the stem for sufficient lubrication.
 - (c) Additionally, the following items shall be ordered in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*. Unless noted otherwise in the WSR or in following clauses, all work must be complete within ten (10) days after WSR receipt:
 - 1 Replacement. Fire hydrant replacement shall include removal of the existing hydrant and installation of a new hydrant meeting the requirements specified in the applicable specifications and NFPA 24 and 25, including all required fittings and connections to the water distribution system.
 - 2 Rebuilding. Fire hydrant rebuilding shall include removal and replacement of all packing, gaskets, operating nuts, and nozzle threads. Upon completion the hydrant shall operate as designed.
 - 3 Replace Post Indicator Valves. Post indicator valve replacement shall include removal of the existing valve and installation of a new valve meeting the requirements specified in the applicable specifications and NFPA 24 and 25, including all required fittings and connections to the water distribution system.
- h. Requirements for Deluge Systems. The Contractor shall inspect, test, maintain and repair the deluge systems and equipment listed in Attachments J-C1-22A-G so that they are continuously maintained in complete, reliable, and safe operating condition as originally intended and designed. These system and equipment requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits and are included in the non recurring work portion of the contract. Deluge systems shall be maintained back to the main water distribution system, including backflow preventers, post indicator valves, check valves, and waterflow meters; and electrical connections back to the source of electricity, up to but not including circuit breakers and disconnects. Additionally, there are four (4) diesel fire pumps located in building 1244A. The Contractor shall inspect, test and maintain these units in

accordance with NFPA and *LaRC Fire Protection Handbook* criteria and the four pumps must be fully operational as intended and designed at all times. PMs shall be scheduled and conducted as specified in the *General Requirements and Procedures For Recurring Work* Subsection C.12, and PM procedures shall conform to the recommendations of the equipment manufacturer. Quality and workmanship shall conform to NFPA, the applicable specifications and other standards listed in Attachment J-H-1

- (1) Inspections. The Contractor shall develop and maintain a log of the inspections and tests performed. This log shall indicate at a minimum: the date tested; building number, name of the facility; type of system or area covered by the system tested; and the type of devices actuated. This log shall also indicate any modifications that have been performed since the last inspection and the maintenance and/or repairs required, if any, to return the system(s) to a working condition. The Contractor shall conduct inspections according to NFPA code requirements, recommendations, and specifications. The Contractor shall visually inspect the existing installation to ensure that the systems have not been damaged, that all valves are in working order, and that the nozzles and sprinklers are free of dust, lint, paint, etc., which may affect its proper operation. Any deficiencies noted shall be reported to the Contracting Officer.
 - (2) Modifications. The Contractor shall inspect all modifications to ensure system compliance with NFPA codes. Any noncompliance shall be reported to the Contracting Officer.
 - (3) Testing. The Contractor shall conduct testing according to the requirements and recommendations of NFPA codes, local codes and requirements, and the fire equipment manufacturer's recommendations. The Contractor shall notify the Contracting Officer in writing five (5) days prior to testing.
- i. Requirements for Gaseous Extinguishing Systems. The Contractor shall inspect, maintain, and repair the gaseous extinguishing systems and equipment listed in Attachments J-C1-22A-G and described in Attachment J-C1-25A-D so that they are continuously maintained in complete, reliable, and safe operating condition as originally designed and intended. These system and equipment requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits and are included in the non recurring work portion of the contract. Gaseous extinguishing systems shall be maintained up to and including tanks, cylinders and hoses. Electrical connections shall be maintained back to the source of electricity, up to but not including circuit breakers and disconnects. PMs shall be scheduled and conducted as specified in the *General Requirements And Procedures For Recurring Work* Subsection C.12, and PM procedures shall conform to the recommendations of the equipment manufacturer. Principal tests and PMs include checking and taking remedial action as necessary of: the liquid level in low-pressure CO₂ storage tanks; CO₂ and Halon nozzles and hand hose lines; devices and connections of low-pressure CO₂ systems for leakage; cylinders; tank alarm pressure switches and identification devices; and performing actuating and operating tests of CO₂ and Halon system cylinders. Test and inspection frequencies shall meet NFPA and *LaRC Fire Protection Handbook* requirements.
 - j. Requirements for Dry and Wet Chemical Extinguishing Systems. The Contractor shall inspect, maintain, and repair the dry and wet chemical extinguishing systems and equipment listed in Attachments J-C1-22A-G so that they are continuously maintained in a complete, reliable, and safe operating condition as originally designed and intended. These system and equipment requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits, which are included in the non recurring work portion of the contract. Wet and dry extinguishing systems shall be maintained up to and including cylinders, piping, hoses, detectors, and associated alarm systems. PMs shall be scheduled and conducted as specified in the *General Requirements and Procedures For Recurring Work* Subsection C.12, and PM procedures shall conform to the recommendations of the equipment manufacturer. *Note that systems using alternative gas agents such as FM200 and Inergen are not currently part of LaRC*

inventory; however, installation of these systems is anticipated in the future. Consequently, fire sprinkler technicians must be capable and certified by the manufacturer to work on such alternative gas agent systems by the time the systems are installed and functional. Principal tests and PMs include checking and taking remedial action as necessary on: nozzles and hand hose lines; physical damage to the system; dry chemical expellent gas cylinders; heat links; the condition of the agent; and conducting actuating and operating tests of systems and hydrostatic tests of cylinders and hoses that have evidence of corrosion, pitting, or other damage. Test and inspection frequencies shall meet NFPA and LaRC Fire Protection Handbook requirements.

- k. Specific Requirements for Fire and Smoke Containment Systems. The Contractor shall ensure that fire doors and their respective safety hardware operate correctly and adequately as designed and intended. The Contractor shall inspect, test, maintain, and repair the stairwell pressurization and zoned smoke control systems and equipment listed in Attachments J-C1-22A-G and described in Attachment J-C1-25A-D so that they are continuously maintained in complete, reliable, and safe operating condition as originally designed and intended. These system and equipment requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits and are included in the non recurring work portion of the contract. Smoke control systems shall be maintained up to and including the electrical connections back to the source of electricity, but not including the circuit breakers and disconnects. PMs shall be scheduled and conducted as specified in the *General Requirements and Procedures For Recurring Work* Subsection C.12, and PM procedures shall conform to the recommendations of the equipment manufacturer. Principal tests and PMs required include checking and taking remedial action as necessary on: smoke control system fans, dampers, control devices, and their operating sequences. Test and inspection frequencies shall meet NFPA and LaRC Fire Protection Handbook requirements.
- l. Requirements for Miscellaneous Life Safety Systems.
- (1) Oxygen Depletion Systems. The Contractor shall operate, maintain, calibrate, periodically test, and troubleshoot false alarms for several oxygen depletion systems identified in Attachments J-C1-22A-G and described in Attachment J-C1-25A-D in accordance with procedures set forth in SOP-18A. Calibrations of the O₂ monitoring systems are mandated by the LaRC Metrology Office and shall be performed according to the PM schedule, Attachments J-C9, and shall be reported to the Metrology Office. These systems have components located throughout the facilities, including central, portable, and stand-alone sensors. This work is firm fixed price except for repairs that are beyond the scope of trouble calls, and includes, but is not limited to, changing detector heads and cleaning air inlets. Contractor personnel shall be trained to program, inspect, test, maintain, repair and modify these systems. All work on oxygen depletion systems shall meet NFPA, UL Listing and Factory Mutual Approvals, and manufacturer's guidelines for the respective systems.
- (2) Emergency Lighting. See Paragraph C.21.g., Requirements for Electrical.

END OF SUBSECTION C.25

C.26. ELEVATOR MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform inspection, testing, certification, maintenance, repair, and component replacement required to maintain elevator and dumbwaiter equipment systems at NASA LaRC (see J-C1) in accordance with the manufacturer's original specifications. The Contractor shall perform load tests with test weights provided by the Government (See Subsection C.5, *Government Furnished Property and Services*). There are approximately 31 elevators, two (2) dumbwaiters, and seven (7) manlifts located at LaRC. This work may be performed during the affected facility's Annual Maintenance Shutdown. Refer to Subsection C.8., *Management*.
- b. Scope of Work. Work includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11., *General Requirements and Procedures for Trouble Call Work*, and this subsection. —
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance (including periodic inspection, testing, and certification) and the preparation and maintenance of the Operation Procedures Plan. This recurring work shall be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*, and this subsection.
 - (3) Non-recurring (Indefinite Quantity) Work. Non-recurring work shall be ordered using the fixed rates from Section B and shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from system inspections, tests, and maintenance performed. Additional reports required, their formats, and their reporting frequencies are identified in Attachment J-C6-26. System and equipment deficiency information obtained from daily operations, failed and marginally passed tests and certifications, or noticed during maintenance or trouble call work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the elevator, manlift and dumbwaiter systems at LaRC. The objective is to perform elevator work in accordance with written and bound procedures to ensure that LaRC elevators are safe, reliable, and efficient. The Plan shall be developed using the following guidelines: (1) manufacturer's instructions (2) the *LaRC Safety Manual*, and (3) industry standards and national codes (American Standards Institute, ANSI, National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME A17.1, etc.). The Plan shall address: (1) the systems' operating procedures including the frequency and description in correct sequence of observations and adjustments to be made; (2) systems testing, inspection and certification plan and procedures; (3) safety and accident response and reporting procedures; and (4) a prequalified list of subcontractors to provide elevator repair services on short notice. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter.

Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Requirements for Elevator Work. In addition to Subsection C 12., *General Requirements and Procedures for Recurring Work*, the following general performance and workmanship standards for elevator system work are included.
- (1) Scope. PM work includes periodic Contractor operation, inspection, checks, adjustments, and maintenance of elevator systems as necessary to ensure that each system complies with applicable NASA LaRC, local, ASME, and manufacturers' standards of safety, reliability, and satisfactory operating condition. PM work shall be performed in accordance with the appropriate PM frequency and task code in Attachments J-C-9. The intent of PM is to provide routine maintenance services that permit the early detection and correction of items that, if deficient or defective, would: (a) interfere with the normal effective operation of the elevator, dumbwaiter and manlift systems; (b) endanger life and/or property; or (c) involve high cost or long lead time for repair. PM work shall include, but not necessarily be limited to: comprehensive operational inspection and adjustments to ensure the satisfactory functioning of machinery and normal and emergency operating controls, car speeds, leveling devices, car and hoistway doors, safety edge mechanisms, safety systems and mechanisms, and emergency phones; detecting and correcting the causes of unusual noises or vibrations; manufacturer's recommended machinery lubrication; lubricating and maintaining within allowable limits of wear all cables; adjustments to bring system operation within the manufacturer's specifications; repairs, including defective part and component replacements; equipment space housekeeping; equipment cleaning; changing burned-out lights and indicator lamps; and other services as required to maintain all systems at a safe and acceptable operating condition. Key replacement parts that are normal inspection or code required items shall be labeled to indicate the part replacement date. Maintenance shall include servicing, repairing or replacing all elevator, dumbwaiter and manlift parts including, but not limited to, the following:
- (a) Generators, brushes, controllers, selectors, brake magnet coils, brake motors, windings, motors, coils for operating motor circuits, contacts, magnet frames, car door operating devices, pushbuttons, annunciator indicators, all signals, machines, brake shoes, gears, thrusts, bearings, leveling devices, cams, car and hoistway door hangers, tracks, safety and emergency stops, and all other accessory equipment.
 - (b) The Contractor shall examine and equalize tension of all hoisting cables and renew all hoisting cables, including governor cables, when necessary to ensure proper maintenance or adequate safety factors.
 - (c) The Contractor shall repair or replace all damaged electrical wiring and conductors from the disconnect switch to the unit being serviced.
 - (d) The Contractor shall keep guide rails clean and properly lubricated as required, including replacing guide shoe gibs or rollers required for smooth and quiet operation. All oil reservoirs shall be kept properly sealed to prevent leakage.
 - (e) The Contractor shall keep the exterior of all machinery and equipment parts subject to rusting properly cleaned and painted at all times.
 - (f) The Contractor shall keep motor windings and controller coils properly treated with correct types and grades of insulating compounds.
 - (g) The Contractor shall inspect and refinish, repair or replace damaged elevator car enclosures, hoistway enclosures, hoistway door panels, frames, and/or sills.

- (h) The Contractor shall verify and ensure the proper operation of emergency call phones in all elevators so equipped
- (2) Frequency. Minimum acceptable frequencies for the accomplishment of PM services are indicated in Attachment J-C9.
- (3) PM Documentation. Documentation shall be in compliance with Subsection C.12., *General Requirements and Procedures for Recurring Work*.
- f. Inspections, Testing, and Certification. The Contractor shall provide inspection and testing services as required in accordance with Subsection C.12.a., Preventive Maintenance, to support routine and periodic certification requirements of elevator, dumbwaiter and manlift systems. All inspections and tests shall be performed in the presence of a Contractor-provided certified inspector. All inspection and testing shall be performed in accordance with applicable sections of the American Standards Institute, Inc. (ANSI) Safety Codes, including current revisions, current OSHA regulations, and other statutes, regulations and standards listed in Attachment J-H-1, except as modified herein. Deficiencies discovered during inspection and testing shall be corrected as part of each inspection or test up to trouble call limits for each system to keep the elevators capable of providing their initially designed capacity, speed, and performance in a safe and efficient manner.
- (1) Documentation. The Contractor shall provide copies of the inspection report to the Contracting Officer within two days of completion of the inspection. Each certificate issued shall be posted in its respective elevator with a copy provided to the Contracting Officer within 24 hours of issuing the certificate.
- (2) Scheduling Requirements. The schedule in Attachment J-C9 indicates the month and year during which the Contractor shall provide semiannual, annual, three-year, and five-year inspections/tests during the base and option periods of the contract. Within 30 calendar days after award of the contract the Contractor shall submit for the Contracting Officer's approval a proposed schedule for the accomplishment of all such inspections and tests during the base and option periods of the contract. The schedule shall indicate the proposed date of each inspection or test for each specific system. Schedule changes required by the Government after approval shall be made at no additional cost if notice is provided to the Contractor three (3) working days or more prior to the scheduled date of accomplishment. Changes to the approved schedule proposed by the Contractor shall be submitted for the Contracting Officer's approval at least three (3) working days in advance of the proposed inspection/test date.
- (a) Elevators Equipped for Firefighters' Service. For elevators so equipped, testing of firefighters' service shall be performed monthly in accordance with Rule 1206.7 of ASME A17.1.
- (b) Periodic Five Year Inspection/Test Requirements. ASME A17.1, Rules 1002.3 and 1005.4, requires certain full load and speed tests to be performed at five-year intervals. Electric traction elevators require a safety test that includes testing the governor and safety buffers at rated speed and rated load. The Contractor shall perform these tests on the elevator systems specified in Attachment J-C9 in accordance with the ASME rules specified.
- g. Housekeeping. See Subsection C.7.t, Housekeeping.

- h. Waste Oil and Hazardous Waste See Subsection C.7.r, Hazardous Materials.

END OF SUBSECTION C.26

C.27. ROADS AND OTHER SURFACED AREAS MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform temporary and permanent patching of sections of flexible and rigid pavement, pavement marking, the cutout of pavement for utility repairs, and shoring for utility repairs at NASA LaRC (see J-C1). The Contractor shall also be responsible for the maintenance of signs (street, traffic, etc.) guardrails, gutters, curbs, ramps, sidewalks, pads, wheelblocks and storm drainage structures such as culverts (open ditches are not included), inlets, catchbasins, gutters, storm sewer piping of between 2 and 60 inches in diameter, skimming basins located behind buildings 1223, 1247E and 720. (Outfalls are identified on subsurface drawings.) and minor repair of underground utility systems. All work shall comply with Americans With Disabilities Act (ADA) specifications. Also included in this Subsection is the removal of ice and snow from the surfaced areas of LaRC.
- b. Scope of Work. Work includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed, and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Calls* and this Subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed-price portion of the contract) shall be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*. Recurring work in this contract subsection includes weekly monitoring and cleaning as needed of two storm drainage skimming basins, performing a condition inspection and assessment of roads and surfaced areas annually in early Spring and reporting on their general condition, and preparing and maintaining the Snow Removal Plan of Operations. All other work in this subsection beyond the scope of trouble call will be non-recurring, indefinite quantity work as discussed below.
 - (3) Non-recurring Work. Non-recurring work shall be ordered using the fixed rates from Section B and shall be accomplished in accordance with Subsection C.13, *General Requirement and Procedures for Non-recurring Work* and the following. Indefinite quantity, unit priced labor or task work included in this contract subsection includes:
 - Pavement repairs
 - Replacement of wheel stops in parking areas
 - Repairs to miscellaneous surfaces and drainage/utility access systems
 - Pavement striping and stenciling
 - Signage installation, repair and refurbishment
 - Snow and ice removal
- c. Exclusions. The following work associated with roads and surfaced areas will be performed by others and is excluded from the requirements of this contract:
- (1) Marking underground utilities
 - (2) Surveying
 - (3) Storm drain and culvert inspection
 - (4) Street sweeping

- (5) Maintenance of open drainage ditches
- d. Documentation. All work shall be documented in accordance with the requirements of Subsection C 11 for Trouble Calls, C 12 for Recurring Work, and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from road and surfaced area (including drainage systems) inspections and maintenance performed. Additional reports required, their formats, and their reporting frequencies are identified in Attachment J-C6-27. Facility deficiency information obtained from daily operations, user input, or noticed during maintenance or trouble call work shall be reported in accordance with Paragraph C.7.o., *Reporting System and Equipment Deficiencies*.
- e. Condition Inspection and Assessment. The Contractor shall perform a visual inspection of all roads and surfaced areas identified in Attachment J-C1-27A annually, during each April, and assess and report their conditions and degree of remedial urgency on the CMMS to the Contracting Officer within seven calendar days of the inspections. Specifically, the Contractor shall report conditions that will imminently develop into potholes, sunken asphalt in need of patching, other obstacles to driving safety, large cracks (1/2 inch or greater) in need of filling, deteriorated expansion joints, spalled or broken concrete surfaces, faded road and parking lot markings, displaced wheel blocks in need of replacement and/or repinning, missing or damaged signage, etc. This condition assessment shall complement the Annual Facility Condition Assessment (See C.8.f., *Facility Condition Assessment*) but not duplicate it. This visual inspection and report shall be accomplished as firm fixed price recurring work in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*.
- f. Requirements for Pavements. The Contractor shall provide pavement maintenance, repair, and alteration services for the pavements listed in Attachment J-C1-27A in accordance with the directives/publications listed in Attachment J-H1; applicable specifications as indicated below. All work specified in this Paragraph beyond the limitations of a trouble call is included in the indefinite quantity, unit priced labor or unit priced task portion of the contract.

(1) Bituminous Pavements.

- (a) Sealing Cracks. Cracks and joints 1/8 inch or wider in surfaced areas shall be sealed in accordance with the Asphalt Institute Manual Series No. 4 (MS) 1989 edition *The Asphalt Handbook*. The sealing material shall conform to Federal Specification SS-S-1401 for roads and parking areas and Federal Specification SS-S-1614 for airfield pavements. The areas to be crack sealed shall be thoroughly cleaned of weeds and loose material and sealed under dry conditions.
- (b) Patching.
- 1 Temporary Patch. Potholes and depressions in bituminous and concrete pavements at ordered locations shall be temporarily patched by the Contractor with either bituminous cold mix or hot mix. The final compacted surface of the patched area shall be approximately level with the adjacent pavement surface.
 - 2 Permanent Patch. Areas to be permanently patched shall be properly prepared. Replacement materials shall be of equal or better quality than the existing, and shall equal the existing material in thickness, including all existing overlays up to six (6) inches maximum. Bituminous courses shall be constructed only when the ambient temperature is above 40 degrees F and the underlying base course is dry. Additionally, the Contractor shall ensure that: edges are straight, vertical and square; loose and soft material is removed down to firm support; the bituminous material is bonded to the bottom and sides using a tack coat of rapid-curing cut-back liquid asphalt conforming to ASTM D-2028; base and surface bituminous hot mix conforming to specifications is placed in layers (each not to exceed 2 inches after

compaction) and compacted to match the grade and elevation of the surrounding pavement, and the edges of the new patch are sealed with a pourable crackfiller conforming to Federal Specification and squeegeed straight and smooth.

(2) Portland Cement Concrete

- (a) Concrete Pavement Permanent Patch. The Contractor shall ensure that: edges are straight, squared and the sides saw-cut vertical; shallow patches are primed with a cement or epoxy grout as required; when placing new concrete, the air temperature is at least 40°F and air-entrained Portland cement high early strength concrete with a minimum compressive strength of 3,000 pounds per square inch at 28 days, is used; joints and edges are tooled and fibrous bituminous expansion joint material installed to match existing joints in adjacent pavements in accordance with ACI 325.9R; new concrete is finished by floating and brooming to match the existing adjacent pavement; and freshly deposited concrete is protected from premature drying and excessive hot or cold temperature during the curing period in accordance with the applicable SPECIFICATIONS.
- (b) Concrete Curb and Gutter. Areas designated for new curb and gutter shall be properly prepared in accordance with the applicable specifications and replacement materials shall be of equal or better quality than the existing. The Contractor shall ensure that: edges are taken from an existing joint or saw-cut vertical; the subgrade conforms to ACI standards; when placing new concrete, the air temperature is at least 40°F; air-entrained Portland cement concrete with a minimum compressive strength of 3,000 pounds per square inch at 28 days and a maximum slump of four (4) inches is used; reinforcing steel is in accordance with ACI 315 and ACI 318; concrete is placed using single-course monolithic construction; concrete is finished by floating and brooming to match the existing adjacent concrete, with a uniform texture free of waves and irregularities, true to line and grade and with no variations greater than 1/8 inch under a 10-foot straightedge; edges of the gutter, back top edges of curbs, and joints are rounded to a radius of ¼ inch; joints and edges are tooled and fibrous bituminous expansion joint material installed to match existing joints in adjacent pavements in accordance with ACI 325.9R; and fresh concrete is protected from premature drying and excessive hot or cold temperature during the curing period in accordance with the applicable specifications.
- (c) Parking Bumpers (Wheel Blocks). The Contractor shall replace damaged existing or install new parking bumpers as required. Replacement materials shall be of equal or better quality than the existing. The Contractor shall ensure that the following requirements are met when installing concrete parking bumpers at ordered locations:
- 1 Bumpers shall be reinforced precast concrete, installed in accordance with the recommendations of the manufacturer using steel rods driven into the asphalt pavement and subgrade or glued with an acceptable concrete adhesive to concrete surfaces.
 - 2 Unless otherwise directed by the Contracting Officer, replacement bumpers shall be sized and configured to match existing and adjacent bumpers.
- (d) Concrete Sidewalk. Areas designated for new sidewalk shall be properly prepared in accordance with the applicable specifications and ACI guidance. Replacement materials shall be of equal or better quality than the existing. The Contractor shall ensure that: edges are taken from an existing joint or saw-cut vertical; the subgrade conforms to ACI standards and to the applicable specifications; when placing new concrete, the air temperature is at least 40°F; air-entrained Portland cement concrete with a minimum compressive strength of 3,000 pounds per square inch at 28 days and a maximum slump

of four (4) inches is used; wire mesh and reinforcing steel is in accordance with ACI 315 and ACI 318; concrete is finished by floating and brooming to match the existing adjacent concrete, with a uniform texture free of waves and irregularities, true to line and grade and with no variations greater than 1/8 inch under a 10-foot straightedge; joints and edges are tooled and fibrous bituminous expansion joint material installed to match existing joints in adjacent pavements in accordance with ACI 325.9R; and fresh concrete is protected from premature drying and excessive hot or cold temperature during the curing period in accordance with the applicable specifications

- (e) Concrete Slabs. The replacement of existing or construction of new concrete slabs, such as for dumpster pads, handicap ramps, stoops and patios, require proper preparation and conformance to acceptable standards. Replacement materials shall be of equal or better quality than the existing. Subgrade and concrete material thickness shall be in conformance with applicable standards for the maximum anticipated wheel loads. Additionally, the Contractor shall ensure that: edges are taken from an existing joint or saw-cut vertical; the subgrade conforms to ACI standards and to the applicable specifications; when placing new concrete, the air temperature is at least 40°F; air-entrained Portland cement concrete with a minimum compressive strength of 3,000 pounds per square inch at 28 days and a maximum slump of four (4) inches is used; wire mesh, reinforcing steel and dowels for tying in with existing structures is in accordance with ACI 315 and ACI 318; concrete is finished by floating and brooming to match the existing adjacent concrete, with a uniform texture free of waves and irregularities, true to line and grade and with no variations greater than 1/8 inch under a 10-foot straightedge; joints and edges are tooled and fibrous bituminous expansion joint material installed to match existing joints in adjacent pavements in accordance with ACI 325.9R; and fresh concrete is protected from premature drying and excessive hot or cold temperature during the curing period in accordance with the applicable specifications.
- (f) Sealing Concrete Joints and Cracks. The Contractor shall seal joints and cracks in accordance with the concrete sealant manufacturer's instructions and the applicable specifications, including the removal of all existing sealant; refacing, rebuilding, and cleaning joints; crack preparation and cleaning; and the application and curing of sealant. Sealant material shall be a single component, cold applied, self leveling silicone or a hot-pour, self-leveling rubberized asphalt formulated for sealing cracks in concrete surfaces including roadways.

g. General Requirements for Storm Drainage System and Miscellaneous Surfaces.

- (1) Storm Drainage System. The Contractor shall maintain, patch or repair, as required, pipe culverts, drop inlets and other drainage or utility access systems described in Attachment J-C1-27B so that they operate properly and to their full capacity as designed. Included is approximately 88,850 linear feet of various types of storm drainage pipe ranging in diameter from two to 60 inches, 483 catchbasins and 153 manholes. As part of the firm fixed price, the Contractor shall also monitor weekly and clean as needed two storm drainage outfalls and skimming basins located behind Buildings 1223 and 1247E so they operate correctly and to their full capacity as designed.
- (2) Miscellaneous Surfaces. The Contractor shall provide maintenance, repair, and alteration services for the miscellaneous surfaces (such as earthen, gravel, river rock, etc.) listed in Attachment J-C1-27A in accordance with the directives/publications listed in Attachment J-H1, applicable specifications, and as specified below. Potholes, ruts, washouts, and other irregularities shall be removed and adequate crowns and drainage shall be maintained on all miscellaneous surfaces.

- h. Requirements for Traffic Services. The Contractor shall maintain and repair traffic signs and pavement markings. Work shall be performed on roads and streets in strict conformance with the

Manual of Uniform Traffic Control Devices for Streets and Highways and on airfield taxiways in strict conformance with local LaRC criteria.

- (1) Signs. The Contractor shall repair, refurbish, install and reinstall all types of traffic control signs. All materials and configurations used in the repair, rehabilitation and the installation of traffic control signs shall conform to the *Manual on Uniform Traffic Control Devices* issued by the U. S. Department of Transportation. These requirements are included in the trouble call (firm fixed-price) portion of the contract except for repairs that exceed trouble call limits and are included in the indefinite quantity work portion of the contract.
 - (a) Repair and/or Refurbishment. Signs, including posts and sign supports, shall be repaired and/or refurbished to a like-new condition and shall be of the same size, color, design and durability as the original.
 - (b) New or Replacement. The installation of new and replacement of missing signs shall be as directed by the Contracting Officer.
- (2) Pavement Markings. All work specified in this clause is included in the indefinite quantity, unit price portion of the contract.
 - (a) Material and Equipment. Fast drying paints for airfields and roads and streets shall conform to Federal Specification TT-P-85, color as ordered. Reflective media shall conform to Federal Specifications TT-B-1325, Type III, Gradation A for airfields and Type I, Gradation A for roads and streets. The Contractor shall provide written certification from the paint and reflective media manufacturer that the materials meet these specifications. Paint applicators shall be of the size and type suitable for the particular work.
 - (b) Application.
 - 1 Surface Preparation. Surfaces to be marked shall be thoroughly cleaned and treated for oil and grease deposits before application of the paint.
 - 2 Painting. Apply paint with approved equipment, free of unsightly drip marks and ragged edges, at a rate of coverage specified below. The maximum drying time requirements of the paint specifications shall be strictly enforced to prevent undue softening of bitumen and pickup, displacement, or discoloration by traffic tires. Discontinue painting operations if there is a deficiency in drying of the markings until the cause of the slow drying is determined and corrected. Cones, barricades, reflective tape, etc. should be used for traffic control until the paint is thoroughly dried and to prevent the tracking of paint by vehicles.
 - 3 Reflective Marking Rates. Apply paint evenly to the pavement area to be coated at a rate of 105 (plus or minus 5) square feet per gallon. Apply glass spheres uniformly to the wet paint on airfield pavement at a rate of 10, and on road and street pavement at a rate of 6 (plus or minus 0.5) pounds of glass spheres per gallon.
 - 4 Nonreflective Marking Rates. Apply paint evenly to the pavement surface to be coated at a rate of 105 (plus or minus 5) square feet per gallon.
 - 5 Specifications. Unless otherwise directed by the Contracting Officer, existing layouts shall be followed for restriping. Layout drawings shall be used for new work. General specifications for pavement striping are provided:

Requirement	Color Paint	Specification
Roadway Striping	White or Yellow (Match Existing Unless Otherwise Directed), Reflectorized	Mechanically Applied; 4 Inches Wide; Straight and Continuous; Protect With Traffic Cones
Parking Lot Striping	White	Mechanically Applied; 4 Inches Wide; Straight and Continuous For the Stall Length; Stalls Parallel and Aligned;
Pavement Crosswalks	White Reflectorized	Mechanically Applied; Perpendicular to Traffic Flow; Rung and Rail Lines 6 Inches Wide; Rung Lengths 5 Feet Spaced 16 Inches Apart; Rail Lengths Extend Full Width of Pavement Being Marked; Each Line Segment Straight, Continuous, and Parallel
Pavement Stop Bars	White Reflectorized	Mechanically Applied; Extends Full Width and Perpendicular to Traffic Lane; 12 Inches Wide; In Line With Related Stop Sign Unless Other-wise Directed by CO.
Traffic Letters and Numbers	White	Applied Mechanically or by Hand (Roller) Using 18 Inch Brass or Heavy Gauge Plastic Stencils; Straight and Aligned.
Handicap Symbols	Blue Box, White Symbol and White Border	Applied by Hand (Roller) in Accordance With ADA Specifications; Use Metal or Heavy Gauge Plastic Stencils; White Symbol Centered in Blue Box; Outline Outer Perimeter In White
Parking Stall Letters and Numbers	White	Applied by Hand (Roller) Using 6 Inch Brass or Heavy Gauge Plastic Stencils; Centered at End of Stall
Curb Painting	Yellow, Red or Blue (To Match Existing Unless Otherwise Directed by the CO)	Thoroughly Scrape, Wire Brush or Water Blast All Loose Material; Use Correct Water- or Oil-Based Paint, as Appropriate; Applied By Hand or Mechanically; Protect All Surrounding Surfaces.
Curb Stenciling	White or Black to Match the Existing	Applied by Hand (Roller) Using 4- inch Brass or Heavy Gauge Plastic Stencils; Words or Markings Horizontally Straight and Centered or Evenly Spaced, as Appropriate

- i. Requirements for Snow and Ice Removal. The Contractor shall provide all labor, supervision, tools, materials, equipment, transportation and management necessary for the removal of ice and snow from the roads, walkways, parking lots, handicap ramps, aircraft ramps, taxiways and other surfaced areas identified in Attachments J-C21-27A-C. The Contractor shall provide clear access to safety and emergency systems such as fire hydrants and call boxes. The Contractor shall also remove the sand and other residual materials used during the snow and ice removal process from the surfaced areas at the first opportunity following the unsafe conditions, the cost of which is included in the application cost. All operations shall be performed in accordance with the Government-approved Snow Removal Plan of Operations and LHB 1046.1, *LaRC Emergency Plan*, Chapter 2, unless otherwise specified herein. Work will be ordered in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work.*, with a fixed unit price as defined in the unit price task portion of Section B of this contract.

Section B includes a schedule for snow and ice removal operations based on the official severity of the snowstorm (at LaRC per the official forecast by the LaRC Emergency Preparedness Officer) coupled with the total known quantity from Attachments J-C21-27A-C of surfaced areas that will be serviced. Specifically, work shall be ordered based on prices provided for:

- Snow plowing/removal for each storm up to 4 inches of snow depth
 - Snow plowing/removal for each storm of 4 to 8 inches of snow depth
 - Snow plowing/removal for each storm of 8 to 14 inches of snow depth
 - Snow plowing/removal for each storm greater than 14 inches of snow depth
 - Ice treatment: cost per ton of sand applied
 - Ice treatment: cost per ton of salt applied
 - Ice treatment: cost per ton of other chemicals applied
- (1) Equipment and Material Readiness. Snow and ice removal shall include the use of mechanical equipment, i.e., snowplows, sand spreaders, blowers or other equipment that the Contractor considers necessary. Government furnished equipment available for the Contractor's use is identified in Attachment J-C-3. The Government shall furnish initial quantities of 5 tons of salt and 75 tons of sand in anticipation of inclement weather and worsening safety conditions. The Contractor shall ensure that these quantities are maintained at this level for the duration of the contract. The Contractor shall ensure that the snow and ice equipment intended for use is in an acceptable state of readiness, materials are on hand, and personnel are available to promptly and effectively remove and/or treat the surfaced areas at LaRC for snow and ice immediately when they are required. The Contractor shall provide and install temporary 5-foot stakes to mark fire hydrants, headwalls to culverts, speed bumps, or access roads that might be covered by drifting snow or by snowplow operations as required. The Contractor shall monitor weather conditions and coordinate all snow and ice removal operations with the Contracting Officer.
- (2) Plan of Operation. As part of the firm fixed price work, within thirty (30) calendar days after the contract start date, the Contractor shall submit to the Contracting Officer for approval a Draft General Snow and Ice Removal Plan of Operations. The initial Plan should incorporate existing procedures, standards and scheduling documentation, pertinent to this Subsection and modified and updated as required, and bound. This plan shall provide an anticipated order of precedence for snow and ice removal operations considering all of the affected surfaced areas and their relative priorities as provided in LHB 1046.1, required emergency access such as to fire hydrants and call boxes, equipment that will be used, and available manpower. Additionally, the plan shall identify the quantities of salt, sand, and other chemicals that shall be stockpiled by a specific date in anticipation of seasonal ice and snow conditions. The Contractor shall, at no additional cost to the Government, review the Plan at least twice annually, during the months of November and January, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval no later than the 15th day of each of those months.
- (a) Pre-Storm Update. Additionally, at least four (4) hours prior to a forecasted snow- or icestorm the Contractor shall submit to the Contracting Officer an update of the Plan of Operation, modified as necessary with greater detail to reflect the specific, current forecasted conditions. This update shall include:
- A brief summary of the Contractor's understanding of the scope of the particular storm as conveyed by the LaRC Emergency Preparedness Officer.
 - A prioritized order and estimated schedule for snow and ice removal operations, based on the General Snow and Ice Removal Plan of Operations previously approved and modified as necessary to reflect the immediate conditions.

- Identification of any special circumstances known to the Contractor that may impact on the snow removal operations (such as a known VIP visit or meeting requiring prioritized, early clearance of a particular parking lot).
- (b) Commencement of Operations. The Contractor shall follow the Contracting Officer-approved General Snow and Ice Removal Plan of Operations (updated), including reasonable adherence (within 1 hour except for extenuating circumstances approved by the Contracting Officer) to the estimated schedule, during snow removal and ice treatment operations.
 - 1 Snow. The Contractor shall commence snow removal operations from all surfaced areas listed in Attachment J-C21-27A when 2-inches, or less if and when specifically directed by the Contracting Officer, of snow have accumulated on the surfaced areas at LaRC. This service shall include the sanding and salting of all areas and shall continue until all paved surfaces are clear of accumulated snow; there are no blockages of driveways, sidewalk accesses, and parking lot entrances; there is clear access to safety and emergency systems such as fire hydrants and handicap ramps; and the Contracting Officer concurs with the Contractor that the Center is safe for vehicular and pedestrian traffic.
 - 2 Ice. Preventive measures against ice shall be taken in conjunction with snow removal operations. This includes the dispersal of sand, salt and/or other chemicals as well as scraping or taking other manual or mechanical measures during and immediately following snow removal to minimize ice accumulation and buildup and the hazards of slipping, sliding, skidding, or otherwise causing damage to vehicles, Government property or injury to personnel. This ice prevention shall be included in the fixed, unit price associated with snow removal. Situations not immediately associated with snow removal where ice treatment is required, such as snow thaw and freeze conditions and water run-off freezing during cold temperatures, shall be ordered separately by the Contracting Officer as an indefinite quantity unit price labor contract item.
- (c) Vehicle Towing and Removal of Obstructions. The Contractor shall notify the Contracting Officer immediately when it is known that parked or stalled vehicles or other obstructions hinder access to snow removal areas or preclude the safe, proper and thorough clearing of streets and other paved areas. Unless advised otherwise by the Contracting Officer, these obstructions shall not relieve the Contractor of the responsibility to service these areas. Towing will be by others.
- (d) Post-storm. All residual sand and other materials used during the snow and ice removal operations shall be removed from the affected areas. This process shall begin immediately after the snow and ice have melted sufficiently to permit this activity. The collection of snow removal materials shall be considered a part of the snow removal operations and accordingly included in the appropriate fixed unit price costs.

END OF SUBSECTION C.27

C.28 BUILT-IN CRANES, HOISTS, MONORAILS AND LIFTING DEVICES OPERATIONS, MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform inspection, testing, certification, maintenance, repair, modification, inventory control and component replacement as required to maintain built-in (fixed) cranes at NASA LaRC. Included are such types as overhead traveling, jib and wall cranes; monorails; hoists, slings and other lifting devices; and to inspect and load test certain other equipment such as mobile cranes, forklifts, and specialized research apparatus all in accordance with the manufacturer's original specifications. The Contractor shall perform load tests with test weights provided by the Government (See Subsection C.5., *Government Furnished Property and Services*). There are approximately 74 cranes, 178 hoists, 125 monorails, 1,000 wire rope and nylon slings, and 850 other miscellaneous lifting devices such as chain-falls, come-a-longs, fixed and mobile non-powered cranes, forklifts, jacks, winches, and lifting harnesses. This work may be performed during the affected facility's Annual Maintenance Shutdown. Refer to Subsection C.8., *Management*.
- b. Scope of Work. Work includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11., *General Requirements and Procedures for Trouble Call Work*, and this subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance (including periodic inspection, load testing, and certification) and the preparation and maintenance of the Operation Procedures Plan. This recurring work shall be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*, and this subsection.
 - (3) Non-recurring Work. Non-recurring work shall be ordered using the fixed rates from Section B and shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from system inspections, tests, and maintenance performed. Additional reports required, their formats, and their reporting frequencies are identified in Attachment J-C6-28. System and equipment deficiency information obtained from daily operations, failed and marginally passed tests and certifications, or noticed during maintenance or trouble call work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the crane, hoist, monorail and lifting device systems at LaRC. The objective is to perform crane, hoist, monorail and lifting device work in accordance with written and bound procedures to ensure that they are safe, reliable, and efficient. The Plan shall be developed using the following guidelines: (1) manufacturer's instructions, (2) NSS/GO-1740.9B, *NASA Safety Standard for Lifting Devices and Equipment*, (3) the *LaRC Safety Manual*, and (4) industry standards and national codes (American Standards Institute, ANSI, National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME, etc.). The Plan shall address: (1) the systems' operating procedures including the frequency and description in correct sequence of observations and adjustments to be made; (2) systems testing, inspection and certification plan and procedures; (3) safety and accident response and reporting procedures; and (4) a prequalified list of subcontractors to provide crane repair services on short notice. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the

Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Requirements of Crane Recurring and Non-recurring Work. In addition to Subsection C.12, General Requirements and Procedures for Recurring Work, the following general performance and workmanship standards for crane system work are included. All work shall comply with the original equipment manufacturer's specifications, recommendations and manuals; ANSI Safety Codes; NASA Safety Standard for Lifting Devices and Equipment, NSS/GO 1740.9B; applicable OSHA requirements; and requirements dictated by NASA LHB-1740.2, except as modified herein. Work includes periodic Contractor operation, inspection, checks, adjustments, and maintenance of crane, monorail, hoist, sling and lifting device systems as necessary to ensure that each system complies with applicable NASA, OSHA, ANSI, ASME, and manufacturers' standards of safety, reliability, and satisfactory operating condition. PM work shall be performed in accordance with the appropriate PM frequencies and task codes listed in Attachment J-C9. The intent is to provide routine maintenance services that permit the early detection and correction of items that, if deficient or defective, would: (a) interfere with the normal effective operation of the crane; (b) endanger life and/or property; or (c) involve high cost or long lead time for repair. Work shall include, but not necessarily be limited to: comprehensive operational inspection, load testing, and adjustments to ensure the satisfactory functioning of machinery and controls, trolley, bridge and hoist brakes, gears and bearings, hooks and wire rope, limit switches and emergency stop switches, conductors, etc.; detecting and correcting the causes of unusual noises or vibrations; manufacturer's recommended machinery lubrication; adjustments to bring system operation within the manufacturer's specifications; repairs, including defective part and component replacements; equipment cleaning; and other services as required to maintain all systems at a safe and acceptable operating condition. The Contractor shall take whatever remedial action is necessary to ensure the system is code compliant and recertifiable within five (5) calendar days of failing any certification inspection. This work shall be firm fixed price, except for that beyond trouble call scope which would be indefinite quantity unit priced labor. Key replacement parts that are normal inspection or code required items shall be labeled to indicate the part replacement date.
- f. Safety Inspections and Testing. The Contractor shall provide safety inspection and testing services to ensure safety and to support requirements for the continuous certification of crane, monorail, hoist, sling and lifting device systems, all as part of the firm fixed price recurring work (Subsection C.12). Additionally, load testing shall also be performed on an indefinite quantity, non-recurring basis (Subsection C.13) on certain other equipment such as mobile cranes, forklifts, and special research apparatus. All inspections and tests shall be performed by or in the presence of a Contractor-provided, qualified crane mechanic leader. All inspection and testing shall be performed in accordance with applicable sections of the American Standards Institute, Inc. (ANSI) Safety Codes, current OSHA regulations, NASA Safety Standard NSS/GO 1740.9, ASME B-30 series, and other statutes, regulations and standards listed in Attachment J-H-1, applicable specifications, and the LaRC Safety Manual, except as modified herein. Deficiencies discovered during the inspection and testing of cranes, monorails, hoists, slings and lifting devices shall be corrected as part of each inspection or test up to trouble call limits for each system to keep them capable of providing their initially designed capacity, speed, and performance, as appropriate, in a safe and efficient manner.
- (1) Outside Cranes. In addition to the requirements above, the Contractor, after the inspection, shall ensure that gaskets on motor and control cabinets are firmly in place and all control units are in a secure, watertight condition.

- (2) Hooks and Wire Rope. The Contractor shall check annually, correct and record any deformations found in hooks and wire rope. Magnetic particle crack detection shall be included and performed as part of the annual inspection. Inspection, maintenance and load testing shall be performed in accordance with the approved Operation Procedures Plan; NSS/GO-1740.9B, NASA LaRC Safety Standard for Lifting Devices and Equipment, by the original equipment manufacturer's specifications, recommendations and manuals; ANSI Safety Codes; applicable OSHA requirements; requirements dictated by the LaRC Safety Manual; and other applicable codes listed in Attachment J-H-1.
 - (3) Slings. The Contractor shall inspect annually as required by NSS/GO-1740.9B, NASA LaRC Safety Standard for Lifting Devices and Equipment, all slings and take out of service any that are deformed, fail inspection or testing or otherwise are non-compliant with Code. Attachment J-C1 -28A lists the nylon and steel slings that require inspection.
 - (4) Weights. Weights required for load testing cranes, monorails, hoists, slings, and lifting devices are IAGP (See Attachment J-C3). The Contractor shall store the weights at a location at LaRC as specified by the Government.
 - (5) Documentation. The Contractor shall provide copies of the inspection report to the Contracting Officer within two days of completion of the inspection.
 - (6) Scheduling Requirements. Within 30 calendar days after award of the contract the Contractor shall review the current certification status of all cranes and weight handling systems and then submit for the Contracting Officer's approval a proposed schedule in the Contractor's format for the accomplishment of those inspections and tests during the base and option periods of the contract. The schedule shall indicate the proposed date of each inspection and test for each specific system. Schedule changes required by the Government after approval shall be made at no additional cost if notice is provided to the Contractor three (3) working days or more prior to the scheduled date of accomplishment. Changes to the approved schedule proposed by the Contractor shall be submitted for the Contracting Officer's approval at least three (3) working days in advance of the proposed inspection/test date.
- g. Special Requirements. The Contractor shall perform load testing on components and systems not otherwise covered in this subsection, such as forklifts, mobile cranes and specialized research apparatus, as indefinite quantity non-recurring work in accordance with Subsection C.13., General Requirements and Procedures for Non-Recurring (Indefinite Quantity) Work. The load test results shall be entered onto the CMMS within 24 hours of completion of the test. This documentation shall include as a minimum:
- (1) Identification of the component or system being tested, its location, identification of the requestor and the reason for the test.
 - (2) The name and qualifications of the individual(s) who performed the load test.
 - (3) Test data, including the methodology used and the test results.
 - (4) Any other information the Contractor chooses to include in the report, at no additional cost to the Government.
- h. Housekeeping. See Subsection C.7.t., Housekeeping.

- i. Waste Oil and Hazardous Waste See Subsection C.7.r., Hazardous Materials.

END OF SUBSECTION C.28

C.29. POTABLE WATER DISTRIBUTION SYSTEM MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform operation, maintenance, monitoring and repair of the potable water distribution and storage system at NASA LaRC (see J-C1). These requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits. The work shall include the distribution of potable water via above- and below-ground waterlines (14" and less, PVC, CPV, cast iron, galvanized steel, copper), preventive maintenance and repair of the system, including the domestic water booster pumps in Building 1215, any incidental excavation work, the once per year flushing of a dead-ended water line from the Air Force property and system monitoring to provide potable water 24 hours per day, 7 days per week throughout LaRC for the duration of the contract. Available schematics and line diagrams of those facilities are in Attachment J-C13-29.
- b. Scope of Work. Work includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11., *General Requirements and Procedures for Trouble Call Work*, and this subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes yearly flushing of Bethel Reservoir Supply, operation, monitoring, preventive maintenance and the preparation and maintenance of the Operation Procedures Plan and shall be accomplished in accordance with Subsection C.12. *General Requirements and Procedures for Recurring Work*, and this subsection.
 - (3) Non-recurring Work. Non-recurring work shall be ordered using the fixed rates from Section B and shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- c. Exclusions. Services excluded from this Subsection are:
- (1) The routine testing and chemical treatment of potable water.
 - (2) The water distribution system on Langley Air Force Base (LaRC "East Side") up to the supply valve entering each building (at which point it becomes the Contractor's responsibility under Subsection C.21, *Buildings and Structures Maintenance and Repair*) Refer to Attachment J-C1-29 for details of the water distribution system requirements included under this contract.
- d. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from system inspections, tests, and maintenance performed. System and equipment deficiency information obtained from daily operations, failed and marginal inspections, or noticed during maintenance or trouble call work shall be reported in accordance with Paragraph C.7.o., *Reporting System and Equipment Deficiencies*.
- e. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the potable water distribution system at LaRC. The objective is to perform potable water distribution system-related work in accordance with written and bound procedures to ensure that it is safe, reliable, efficient and without preventable interruption. The Plan shall be developed using the following guidelines: (1) manufacturer's instructions, (2) the *LaRC Safety Manual*, and (3) industry standards and national codes (American Standards Institute, ANSI, National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME, etc.). The Plan shall address: (1) the systems' operating and monitoring procedures including temporary and emergency procedures; (2) systems testing and inspection plan and procedures, including quality standards, system pressures, etc., that are to be met; and (3) safety and accident

response and reporting procedures. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- f. Contract Interfaces. The Contractor is advised that in performing the work under this subsection there will be a need to interact with others at one or more interface points. These interfaces, summarized in Attachment J-C1-29, may be with NASA LaRC, Air Force or other Government, Utility Company or other contractor personnel.
- g. System Performance Requirements. The Contractor shall, as part of the firm fixed price work, monitor, maintain and repair up to Trouble Call limits the potable water pumping, storage and distribution system within the LaRC compound in order to provide the safe, continuous, cost effective, and efficient conveyance of potable water in meeting all end user requirements. Flow shall be maintained within LaRC properties so as to prevent interruptions of service, potable water contamination, and to ensure compliance with applicable health and regulatory agency standards at all times. The system pressure shall be monitored and maintained to ensure system pressure of between 76 and 80 PSI. The Pressure Gauge Readout and domestic water booster pumps are located at Building 1215, the Steam Generation Plant.
- h. Temporary and Emergency Services. Temporary and emergency potable water services may be necessary to accomplish certain repairs, maintenance efforts, and new service connections. Such temporary and emergency services shall be coordinated with the Contracting Officer and shall be accomplished using methods to avoid service interruptions, where possible, or to minimize system downtime where such interruptions of service are unavoidable. The Contracting Officer shall be notified of scheduled temporary service conditions at the time of job scheduling and shall be notified of all service interruptions as soon as possible, with the notification time not to exceed one hour after Contractor identification of an emergency. For the purposes of this specification, an emergency situation is defined as any condition that requires immediate action to eliminate life or serious injury hazards to personnel, prevent loss or damage to Government property, or restore essential services.

END OF SUBSECTION C.29

C.30. SANITARY SEWER SYSTEM MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform operation, maintenance, excavation, and repair of the sanitary sewer system at NASA LaRC, including approximately 30 lift stations, a main pumping station with parallel pumping capability and emergency power backup system in building 1223, an 8-inch force main, and standard drainage system components including cast iron, PVC and terra-cotta piping of between 4 and 24 inches in diameter, in accordance with the requirements herein and referenced in Attachment J-H1 and the applicable specifications. The Hampton Roads Sanitation District provides actual treatment of the sewage. The Contractor is responsible for the sanitary sewer system within the confines of LaRC property. These requirements are included in the firm fixed-price portion of the contract except for repairs that exceed trouble call limits and are included in the non-recurring work portion of the contract. The Contractor shall monitor the sanitary sewer system to ensure that the system provides sewage collection capability throughout LaRC and disposal 24 hours per day, seven (7) days per week for the duration of the contract. Available schematics and line diagrams of those systems are listed in Attachment J-C13-30.
- b. Scope of Work. Work includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed and worked in accordance with Subsection C.11., *General Requirements and Procedures for Trouble Call Work*, and this subsection.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance, sewage system inspections and preparation and maintenance of the Operation Procedures Plan and shall be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*, and this subsection. Refer to Attachment J-C13-30 for details of the sanitary sewer system.
 - (3) Non-recurring (Indefinite Quantity) Work. Non-recurring work shall be ordered using the fixed rates from Section B and shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*.
- c. Exclusions. Services excluded from this Subsection are:
- (1) The routine testing and treatment of sewage.
 - (2) The sanitary sewer system on Langley Air Force Base (LaRC "East Side") up to the five (5) foot line around each LaRC-owned facility listed in Attachment J-C1-21A (at which point it becomes the Contractor's responsibility under Subsection C.21, *Buildings and Structures Maintenance and Repair*).
- d. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from system inspections, tests, and maintenance performed. Additional reports required, their formats, and their reporting frequencies are identified in Attachment J-C6-30. System and equipment deficiency information obtained from daily operations, failed and marginally inspections, or noticed during maintenance or trouble call work shall be reported in accordance with Subsection C.7.o., *Reporting System and Equipment Deficiencies*. The Contractor shall submit monthly, by the 5th of the following month, the amount and cost of effluent discharged, to the CO in Excel format.
- e. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the sanitary sewer system at LaRC. The objective is to perform sanitary sewer

collection system-related work in accordance with written and bound procedures to ensure that it is safe, reliable, efficient and without preventable interruption. The Plan shall be developed using the following guidelines: (1) manufacturer's instructions, (2) the *LaRC Safety Manual*, and (3) industry standards and national codes (American Standards Institute, ANSI, National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME, etc.). The Plan shall address: (1) the systems' operating and monitoring procedures including temporary and emergency procedures; (2) an inspection plan to ensure all pumping stations are in good working order and (3) safety and accident response and reporting procedures. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- f. Contract Interfaces. Work under this subsection often requires interaction with others at one or more interface points. These interfaces, summarized in Attachment J-C1-30A, may be with NASA LaRC, Air Force or other Government, Hampton Roads Sanitary District Commission, or other contractor personnel.
- g. Compliance. The Contractor shall comply with the instructions of the LaRC Office of Safety, Environment and Mission Assurance with respect to avoidance of conditions that create a nuisance or may be hazardous to the health of LaRC personnel. Notice of violations of any local, State, or Federal regulatory permit or law or of any lift station bypassing shall be prepared by the Contractor and submitted to the Contracting Officer within 24 hours of the Contractor's identification of the noncompliance.
- h. System Inspections. The Contractor shall inspect the sewage pumping stations (Attachment J-C1-30A) using the checklist shown in Attachment J-C9-30. Buildings 1223, 1251, 1154, 1291, 1244 and 1231 shall be inspected weekly. The remaining stations shall be inspected monthly. Inspections shall be documented on a sewage inspection form (See Attachment J-C6-30.) and input onto the CMMS, following the prescribed format and available for review by the Government, within one working day of each inspection. This inspection shall be included as part of the firm fixed price recurring work in accordance with Subsection C.12., *General Requirements and Procedures for Recurring Work*.
- i. System Performance Requirements. The Contractor shall, as part of the firm fixed price work, monitor, maintain and repair (within the TC limits) the sanitary sewer system at NASA LaRC in order to provide the safe, continuous, cost effective, and efficient conveyance of sanitary sewage. Flow shall be maintained in gravity lines and force mains within LaRC properties so as to prevent the cause of nuisance odors, interruptions of service and to ensure compliance with applicable health and regulatory agency standards at all times. Systems shall be maintained to minimize unsatisfactory service conditions including flooding conditions, pump station failures, pipe blockages, and excessive infiltration and inflow conditions. The main pumping station is in Building 1223 from which a constant system pressure of 60 psi shall be monitored and maintained to the Hampton Roads Sanitary System facilities. High water alarms are monitored 24 hours per day, seven days per week by the Duty Officer in Building 1215, which is also the location of the insertion valve that records the total sewage flow from LaRC to the Hampton Roads Sanitary System.
- j. Temporary and Emergency Services. Temporary and emergency sanitary sewage services may be necessary to accomplish certain repairs, maintenance efforts, and new service connections. Such temporary and emergency services shall be coordinated with the Contracting Officer and

shall be accomplished using methods to avoid service interruptions, where possible, or to minimize system downtime where such interruptions of service are unavoidable. The Contracting Officer shall be notified of scheduled temporary service conditions at the time of job scheduling and shall be notified of all service interruptions as soon as possible, with notification time not to exceed one hour after Contractor identification of an emergency. For purposes of this specification, an emergency situation is defined as any condition that requires immediate action to eliminate life or serious injury hazards to personnel, prevent loss or damage to Government property, or restore essential services.

END OF SUBSECTION C.30

C.31. RESEARCH FACILITY MECHANICAL, ELECTRICAL AND FLUID SYSTEMS MAINTENANCE AND REPAIR

- a. General Requirements. The Contractor shall perform maintenance, repair, alterations, modifications, and inspection of mechanical, electrical and fluid systems in research facilities at NASA LaRC that will result in their safe, proper, and efficient and reliable operation. These systems include hydraulic and lubrication oil systems; test medium liquid and gas systems; drive systems, including motors and fan blades; mechanical testing equipment; and fluid delivery systems. The fluid systems are comprised of oxygen, hydrogen, argon, refrigerant, and nitrogen pumping and nitrogen dispensing facilities; central high pressure air compression facilities; heavy gas (134A) and helium compression and reclamation facilities and systems. The Contractor shall make every effort to minimize disruptions to Government research activities by developing an acceptable maintenance and repair work schedule. Refer to Subsection C.8.a, *Work Control*.
- b. Scope of Work. Attachment J-C1-22A-G describes the equipment and systems to be maintained in this contract. The work in this subsection includes:
- (1) Trouble Call Work. Trouble calls (included in the firm fixed price portion of the contract) shall be received, managed, and worked in accordance with Subsection C.11, *General Requirements and Procedures for Trouble Call Work*, except that all trouble calls for equipment components and systems included in this subsection (See Subsection C.31.a. *General Requirements*) shall be treated as *Emergency Trouble Calls*.
 - (2) Recurring Work. Recurring work (included in the firm fixed price portion of the contract) in this subsection includes preventive maintenance on equipment and systems and the preparation and maintenance of the Operation Procedures Plan and will be accomplished in accordance with Subsection C.12, *General Requirements and Procedures for Recurring Work*.
 - (3) Non-recurring Work. Non-recurring work shall be accomplished in accordance with Subsection C.13., *General Requirements and Procedures for Non-recurring (Indefinite Quantity) Work*, and this subsection.
- c. Documentation. All work shall be documented in accordance with the requirements of Subsection C.11 for Trouble Calls, C.12 for Recurring Work, and C.13 for Indefinite Quantity Work. The Contractor shall retain and maintain in the CMMS throughout the term of the contract all documentation from system inspections, tests, and maintenance performed. System and equipment deficiency information obtained from daily operations, failed and marginally passed inspections, or noticed during maintenance or trouble call work shall be reported in accordance with Subsection C.7.o, *Reporting System and Equipment Deficiencies*. The Contractor shall prepare and maintain accurate as-built drawings in accordance with Subsection C.7.j, *As Built Drawings*. Required reports, their formats, and their reporting frequencies are identified in Attachment J-C6-31.
- d. Operation Procedures Plan. The Contractor shall develop an Operations Procedures Plan for work on the research facility mechanical, electrical and fluid systems at LaRC. The objective is to perform research facility mechanical, electrical and fluid systems-related work in accordance with written and bound procedures to ensure that the systems are safe, reliable, and operate at their designed precision and without preventable interruption. The Plan shall address procedures for notifying appropriate personnel of work to be performed in research facilities, plans for coordinating the work with on-going facility operations, and emergency, safety and accident reporting procedures. A draft initial plan shall be submitted to the Contracting Officer for approval within 90 days of the contract start date, and the final plan shall be submitted for approval within 45 days after the Contractor receives the Government's response to the initial plan, unless otherwise noted. The initial Plan should incorporate existing LaRC documentation, procedures, and standards pertinent to this Subsection. The Contractor shall review the Plan at least

quarterly, make updates, and resubmit the updated Plan (or a written memorandum validating that the existing Plan is still accurate in all respects) to the Contracting Officer for approval by the third work day of the start of each quarter. Deviation from the approved standard operating procedures is acceptable only with the approval of the Contracting Officer.

- e. Coordination. See Subsection C.7.k., *Interface With Government Personnel and Other Contractors*.
- f. Personnel Qualifications. The Contractor shall ensure that employees are journeyman-level technicians trained and capable of performing all work under this Subsection. See also Subsection C.7.b, *Staffing*.
- g. Requirements For Machining, Welding, and Metal Work. The Contractor shall provide maintenance, repair, or replacement of research facility mechanical, electrical and fluid systems and shall construct and install metal components in support of other repair activities as required by this subsection.
 - (1) Metal Work. Metal work shall include heating and bending to form metal shapes, drilling, torch cutting, hammer forging, grinding, sawing and fitting of metal parts. The Contractor shall perform metal work to maintain and repair or fabricate and replace metal components of research facility mechanical, electrical and fluid systems. Also included is the construction and installation of metal components in support of other maintenance activities. The Contractor shall work with materials from a variety of sheet metal stocks including aluminum, copper, galvanized and stainless steel.
 - (2) Piping and Tubing Fabrication. The Contractor shall fabricate and install piping of various materials including carbon steel, stainless steel, monel, inconel, and aluminum, using fit-up and weld methods such as open butt E.B. insert, socket weld, and chill rings. Additionally, the Contractor shall fabricate and install high-pressure stainless steel tubing. The work requires bending, flaring, soldering, welding, and the installation of various types of compression fittings.
 - (3) Welding. The Contractor shall provide all types of welding and brazing required for the maintenance and repair of research facility mechanical, electrical and fluid systems. Welding shall be performed on light, heavy gauge and hardened metals and castings using flat, vertical, horizontal, and overhead positions. Welding typically shall be performed on fixtures, brackets, tools, machinery, high pressure piping systems, and pressure vessels. Processes include shielded metal arc welding (SMAW), gas metal arc welding (GMAW), preheating, brazing, bead welding, tack welding, plasma and flame cutting, pressure welding and heat treating. Welding, burning and open flame work will be permitted, but shall only be performed under the following conditions: (1) the method must be approved by the Contracting Officer and (2) the Contractor shall provide an adequate fire watch and the required fire extinguishing equipment. The Contractor shall notify the Contracting Officer and obtain a welding permit before proceeding. All Contractor welders shall be qualified and certified for the specific welding process in accordance with applicable American Society of Mechanical Engineers (ASME) Section IX, American National Standards Institute (ANSI), and American Welding Society (AWS) D1.1 and D1.3 standards.
 - (4) Machinist Tasks. The Contractor shall perform machinist tasks such as drilling, tapping, boring, reaming, and grinding a variety of materials such as steel, cast iron, stainless steel, aluminum, copper, brass, bearing bronze, manganese, babbitt, etc. The Contractor shall install equipment requiring critical alignment of motors, pumps, blowers, gear reducers, etc. The Government will provide the Contractor access to IAGP shop equipment located in 1189 and listed in J.C3-5C.

- h. Repair Work. For any individual repair item, the Contractor is responsible to perform any work item within the scope of trouble calls as part of the firm fixed price. When the repair exceeds the trouble call limit, the work shall be processed as indefinite quantity work in accordance with Subsection C.13. After completing repairs to an area that affects the integrity of a fluids system, the Contractor shall pressurize the system and check for leaks. Refer to Subsection C.19., *Calibration, Testing and Component Verification*. If the repair is made to a buried section of the system, a pressure test shall be accomplished prior to covering the repaired area. The appropriate anti-seize compound shall be used on all fasteners. When required by deterioration or missing or damaged threads, the Contractor shall remove the existing and install new fasteners that conform to standards and specifications listed in the applicable specifications. Types of systems that require repairs include, but are not limited to, model support systems, high pressure compressors, standard and unique valves, programmable logic controls, model injection systems, test section drives, arc sectors, test section doors and hydraulic systems.
- i. Requirements for Lubrication and Hydraulic Systems. Work shall include trouble calls, maintenance and repair of the lubrication systems and hydraulic systems up to 10,000 psi in each research facility. Included are various piping systems, tubing, hoses, reservoirs, accumulators, gages, valves, pumps, servo control valves, filters, check valves, and failsafe systems. Included also are troubleshooting; the replacement, cleaning, relining, and installation of pipe and tubing; rebuilding pumps; certification of relief valves and gages; calibration of pressure and temperature switches; installation of sampling ports and quick disconnects; obtaining routine oil samples for analysis by the Government; and adjustments to components in accordance with established flow control diagrams. When repaired, lubrication and hydraulic systems shall be free flowing, in good, safe operating condition, and free of leaks and drips. All fluids shall be filtered to 3 micron absolute before being introduced into the system. The Contractor shall provide lubricant samples to the Government to verify system cleanliness is maintained to manufacturer and NASA LaRC standards. In addition, work will require component calibration and verification, nondestructive testing consisting of hydrostatic testing of all piping and system components prior to installation into systems above 125 PSI, including research metering devices, controls, gages, and temperature/pressure readout devices. See Subsection C.19., *Calibration, Testing and Component Verification*. Configuration controlled documents associated with each research facility describe and provide schematic drawings of each lubrication and hydraulic system covered in this subsection. All work shall be in accordance with LHB 1710.12, *Potentially Hazardous Materials* and LHB 1710.40, *Safety Regulations Covering Pressurized Systems*.
- j. Requirements for Test Medium Liquid and Gas Systems. The Contractor shall provide maintenance, repair, and/or overhaul of mechanical and electrical systems including machinery; centrifugal, rotary and reciprocating compressors; high pressure and vacuum valves; gear and piston-type vacuum and miscellaneous pumps; plant instrumentation; vacuum spheres and gas storage cylinders and tanks; electrical equipment and components; and various mechanical equipment as well as associated appurtenances necessary to generate and deliver various liquids and gases to their respective dispensing or distribution system or to evacuate and reclaim the gases and liquids from such systems. Specifically, these test medium fluid systems include:
- (1) Central High Pressure Compressed Air Plant (Building 1247E). Work shall include the maintenance, repair, and/or overhaul of plant equipment, instrumentation, data recording equipment, system safety alarms, components, various mechanical and electrical ancillary equipment and associated appurtenances necessary to generate and deliver high pressure compressed air to its distribution system.
 - (2) Heavy Gas Compression and Reclamation. Work shall include the maintenance and repair of the heavy gas (134A) handling system and related equipment associated with the Transonic Dynamics Tunnel, Building 648. The Heavy Gas Reclamation System consists of a vaporizer, low temperature condenser, vacuum pumps, compressors, dryers, and a liquid storage vessel required for the evacuation, vaporization and liquification of heavy gas as a test medium.

- (3) Helium Compression and Reclamation. Work shall include the maintenance and repair of helium compressors and related equipment identified in Attachment J-C1-22A-G and located in Buildings 1247B and 1265. Facility systems consist of compressors for the evacuation and purification of helium, as well as the air/nitrogen evacuation and liquid nitrogen pumping equipment. Vacuum spheres and storage vessels shall be maintained as part of the vacuum systems.
- (4) Other Liquid and Gas Test Medium Pumping and Dispensing Systems. Work shall include the maintenance and repair of pumping and dispensing systems identified in Attachments J-C1-22A-G for fluid test mediums in various facilities including, but not limited to liquid and gaseous nitrogen LN₂/GN₂ (Buildings 648, 1236, 1242, 1247B, 1221 and 1277), hydrogen (GH₂) (Building 1265, 1247B, & 1221), liquid oxygen (LOX) (Building 1265), argon (CF₄) (Buildings 1265 and 1275), helium (Building 1265), methane (Building 1265) and silane (Buildings 1221, 1265 and 1275). The Contractor is advised that these fluids are hazardous to personal safety, property and/or the environment and strict adherence to the provisions of LHB 1710.12, *Potentially Hazardous Materials*, is mandatory.

When equipment or systems are required to be secured or deenergized for work to be performed, safety clearance shall be coordinated with the Facility Coordinator. Plant maintenance shall be performed in accordance with the approved operating procedures as defined previously in this subsection and as required by ASME and ANSI.

- k. Requirements For Liquid and Gas Piping/Distribution Systems. The work under this subsection shall include maintenance, trouble calls, repair, and modification to piping, insulation and associated system components, including above- and underground valves, piping regulators, relief valves, servo valves, high pressure switches, transmitters, hydraulic pumps, and pressure reducing valves. In addition, the work involves component calibration and verification (Refer to Subsection C.19., *Calibration, Testing and Component Verification*.), nondestructive testing and hydrostatic testing. Piping systems to be maintained under this subsection include:
- Air systems up to 6,000 psig with piping of various materials and sizes up to 24 inches.
 - High and low pressure gaseous and liquid nitrogen systems with piping of all materials for pressures up to 12,000 psig.
 - Methane gas systems up to 6,000 psig.
 - Liquid and gaseous oxygen systems with pressures up to 6,000 psig.
 - Helium systems up to 6,000 psig.
 - Argon systems – low pressure purge (less than 125 psig).
 - CF₄ gas system up to 2,500 psig.
 - Vacuum systems up to 72 inches (in size)
 - Silane systems
 - Hydrogen systems up to 2,500 psig.
 - Freon R-134 systems up to 600 psig.
 - Natural gas systems
- (1) Piping Services Requirements. Work includes the fabrication and installation of piping using all types of fitup and weld methods including all types of materials: carbon steel, stainless steels, monel, inconel, aluminum, etc. The work also includes the fabrication and installation of high pressure stainless tubing requiring bending, flaring, soldering, welding, and the installation of various types of compression fittings used in high pressure systems. The

Contractor shall have the knowledge, training, and experience necessary to perform all of these requirements so as to meet or exceed applicable work standards and code requirements

- (2) Touch-up Painting. See Subsection C.21.m., *Requirements for Painting*
- (3) Non-Destructive Testing. Non-destructive testing shall be performed as required on all systems above 125 psig. Non-destructive testing includes radiograph inspection, magnetic particle inspection, and/or die penetrant testing and shall be performed in accordance with the applicable specifications.
- I. Requirements for Mechanical and Electrical Drive Systems. The Contractor shall maintain unique mechanical and electrical drive system components to minimize system failures and to prolong the service life of the equipment.
- (1) Work Requirements. The Contractor shall perform all component, equipment and system maintenance and repair in accordance with the specific configuration controlled procedures and checklists prepared for their respective component, equipment or system; the frequencies and job plans listed in Attachment J-C9; the *LaRC Safety Manual*; the applicable specifications; and other standards listed in Attachment J-H-1. Included is a wide variety of work such as setting, aligning, balancing, lubricating, assembling, disassembling, monitoring, testing overhauling, major servicing, and diagnosis of trouble. The Contractor shall install shafts, align couplings and mesh gears in gear boxes, dismantle the equipment, examine for wear, lubricate parts, test circuitry and various alarm systems, and replace worn parts. The Contractor shall test, inspect, scrape, shim, and adjust components for proper operation. The Contractor shall clean systems such as heat exchangers, cooling circuits, and unique heat transfer equipment. Services shall include the disposal of contaminants that are generated by the cleaning process. The Contractor shall perform preventive maintenance (PM) on the equipment and systems listed in Attachment J-C9 in accordance with Subsection C.12.a., *Preventive Maintenance*. The Contractor shall perform these and other tasks on wind tunnel main drive and auxiliary mechanical systems (e.g., motors, bearings, shafts, couplings, gear boxes, compressors, speed control regulators, journals, seals, vanes, fan blades, lubrication systems, etc.); electrical systems (e.g., motor-generators, rheostats, power supplies, circuitry, drive control mechanisms, switchgear, transformers, alarm systems); cooling systems (e.g., cooling towers, isolation valves, pumps, cooling tower fans, piping); research equipment systems (e.g., vacuum pumps, hydraulic systems, test section struts, heat exchangers, valves, other miscellaneous pumps, filters, exhaust fans, compressors, etc.); and other machinery, electrical components, natural gas systems, pumps and equipment within LaRC buildings and structures not otherwise covered in Subsection C.21, *Buildings and Structures Maintenance and Repair*, Subsection C.22., *HVAC and Refrigeration Systems Maintenance and Repair*, or other subsection of this specification. The Contractor shall update PM schedules as necessary to reflect any changes in equipment inventory.
- (2) Mechanical and Electrical Drive and Auxiliary Systems. The Contractor shall perform on-site machining (including precision layout, drilling, tapping, milling, reaming, etc.) of test equipment and apparatus; the assembly of research test hardware and components that could require electrical, mechanical, and controls and fluid systems support; the optical, mechanical and laser alignment of research equipment; and the balance (as appropriate) and repair of mechanical and electrical drive and auxiliary equipment and systems included in this subsection and identified in Attachment J-C1-22A-G, including, but not limited to:

Mechanical and Electrical Drive Systems

- (a) Bearings – babbitt, roller, sleeve, ball, thrust

- (b) Motors – fractional HP to approximately 135,000 HP; AC, DC, synchronous, wound rotor induction (WRIM), condensers
- (c) Generators – operating at voltages up to 13,800 volts
- (d) AC and DC Power Supplies – 10 MW; 6,600V
- (e) Couplings – gear, flexible, rigid
- (f) Alignment – laser, optical and mechanical
- (g) Turning Gears, motors, switches, and Gear Boxes
- (h) Lubrication systems – lift pumps, lube pumps, flow-raters, filters, heat exchangers
- (i) Compressors – high pressure, methane, helium, nitrogen, freon
- (j) Piping and Piping Systems (air, water, gas)
- (k) Integrated Drive and Speed Control Mechanisms and Regulators
- (l) Circuitry (power, control, ground detection, thermal and temperature, annunciator)
- (m) Electrical switchgear (2.3 KV and 13 KV), reostats, transformers, power distribution system and relays
- (n) Alarm Systems (temperature monitoring, vibration monitoring, security)
- (o) Cooling System (cooling towers, isolation valves, pumps, cooling tower fans)
- (p) Balancing of Rotating Equipment.

Auxiliary Systems.

- (a) Vacuum Pumps
- (b) Hydraulic Systems – pumps, filters, control devices, bladders, accumulators
- (c) Test Section Components, Struts, Arc Section Drives, Flat Drives, Corner Fillet Drives, Gear Boxes, Motors, Test Section Side Walls, Test Section Doors, etc.
- (d) Heat Exchangers – air, water, lubricant
- (e) Valves – gas, liquid, vacuum up to 10,000 psi
- (f) Pumps – condensate, sump, hot water, chilled water, water pumps
- (g) Air Filters
- (h) Exhaust Fans
- (i) Compressors – high pressure, nitrogen, helium, freon
- (j) Piping and Piping Systems
- (k) Tunnel Physical Attributes (doors, vanes, interior surfaces, insulation)

- m. Housekeeping. See Subsection C.7.t., *Housekeeping*.
- n. Waste Oil and Hazardous Waste. See Subsection C.7.r., *Hazardous Materials*.

END OF SUBSECTION C.31.

SECTION E - INSPECTION AND ACCEPTANCE

E.1 FINAL INSPECTION AND ACCEPTANCE (LaRC 52.246-94) (OCT 1992)

Final inspection and acceptance of all items specified for delivery under this contract shall be accomplished by the Contracting Officer or his duly authorized representative at destination

E.2 CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES FOR FIRM FIXED PRICE WORK

A. The Government may deduct from the Contractor's invoice or otherwise withhold payment for any item(s) of nonconforming service as specified below. Examples of deductions calculated for reduction of the Contractor's monthly invoice due to non-performed or unsatisfactorily performed work, using the Schedule of Deductions and the Performance Requirements Summary can be found in Exhibit H.

The Government will apply an inspection technique which covers all or part of the work to either assess the Contractor's performance or determine the amount of payment due or both. The defect rate for the purpose of assessing the Contractor's performance will be the sum of all defects observed during the course of the work expressed as a percentage of the total population of work items on a monthly basis. The defect rate will not be extrapolated to the total population of work items to determine payment due. If the defect rate exceeds the Maximum Allowable Defect Rate (MADR) in the Performance Requirements Summary, (PRS), the Contractor has demonstrated a repetitive trend of non-performed and unsatisfactory work and the Contractor's quality control is considered unsatisfactory. Failure to consistently maintain adequate quality control can result in termination for default. Deductions may be taken for each incidence of non-performed or unsatisfactorily performed work, regardless of the MADR.

B. The Government will provide the Contractor written notice of deficiencies prior to deducting for non-performed or unsatisfactory work. Therefore:

1. In the case of non-performed work, the Government:

- a. May deduct from the Contractor's invoice all amounts associated with such non-performed work at the prices established by the Schedule of Deductions and the PRS or provided by other provisions of this contract, or
- b. May, at the Government's option, afford the Contractor an opportunity to perform the non-performed work within a reasonable period subject to the discretion of the Contracting Officer's Technical Representative (COTR) at no additional cost to the Government, or
- c. May, at the Government's option, perform the services by Government personnel or other means, and initiate deductions per paragraph B.1.a above.

2. In the case of unsatisfactory work, the Government

- a. May deduct from the Contractor's invoice all amounts associated with such unsatisfactory work at the prices established by the Schedule of Deductions and the PRS or provided by other provisions of the contract, or
- b. May, at the Government's option, afford the Contractor an opportunity to correct the unsatisfactory work within a reasonable period subject to the discretion of the Contracting Officer's Technical Representative (COTR) at no additional cost to the Government, or
- c. May, at the Government's option, perform the services by Government personnel or other means, and initiate deductions per paragraph B.2.a above.

C. Should the Government elect options B.1.a., B.1.b., B.2.a., or B.2.b. above, the Government will not assess additional remedies if: (1) the Contractor is working in good faith with the Government to correct the problem(s) in the future; (2) the Contractor does not have a repetitive trend of non-performed and unsatisfactory work for the same requirements; and (3) the Contractor is willing to re-perform defective services at no additional cost to the Government

D. Should the Government elect B.1.c. or B.2.c. above, the Government will further reduce the contract payment by the amount paid to any Government personnel (based on wages, retirement and fringe benefits – see H.3) plus material, or the actual costs of other means that accomplished the services.

E. In the event the price of non-performed or unsatisfactory work cannot reasonably be determined from the prices established in the Schedule of Deductions or on the basis of the actual cost to the Government, estimating methods may be used, including Means Facilities Cost Data or other estimating guides and methods. Where appropriate, the Contractor's proposed unit priced labor rates and fixed burden rates will also be used.

F. When the Government exercises its options in B.1.b. or B.2.b., the original inspection results shall not be modified upon re-inspection. Some reductions may be offset upon satisfactory re-performance of the work, when the Contractor in its monthly invoice (see G.5) furnishes proper documentation. However, a deduction will not be eligible for offset where the Contractor has failed to meet a task's timeliness requirement.

G. The Government's exercise of rights under this clause shall not preclude either (1) single occurrences of such nonperformance or unsatisfactory performance, or (2) multiple occurrences of nonperformance or unsatisfactory performance, regardless of whether deductions were taken, from being grounds for termination in accordance with the clause 52.249-8, Default (Fixed Price Supply and Service), in Section I.

E.3 CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES FOR IDIQ WORK

A. The Government will withhold payment for any Work/Service Request (WSR) that does not conform to the requirements specified. The Government will give the Contractor written notice of deficiencies by copy of the final inspection results or other applicable documentation.

B. IDIQ work accepted by the Government may be subject to the following deductions for the reasons specified:

DEDUCTION SCHEDULE FOR IDIQ WORK	
Failure to satisfy WSR requirements by completion date specified on WSR (Timeliness)	Reduce total approved WSR amount by 10%.
Failure to avoid unplanned disruptions to building occupants during WSR performance. (Schedule)	Reduce total approved WSR amount by 5%.

C. Should the Government be required to perform the deficient services by Government or other personnel, the Government will further reduce the contract payment by the amount paid to any Government personnel (based on wages, retirement and fringe benefits – see H.3) plus material and equipment costs, or the actual costs of other means that accomplished the services. If the actual costs

cannot be readily determined, the prices established in the Contractor's WSR proposal may be utilized in establishing a deduction amount.

D The Government's exercise of its rights under this clause shall not preclude the associated occurrences of unperformed work or unsatisfactory work, regardless of whether deductions were taken from being grounds for termination for default in accordance with the clause 52.249-8, Default (Fixed Price Supply and Service) and/or Clause 52.249-10, Default (Fixed Price Construction) in Section I.

E.4 CONTRACTORS SELF- EVALUATION OF PERFORMANCE

A. Contractor's Self-evaluation of Performance shall be submitted by the 10th working day of each month along with the contractor's properly certified invoice, complete with backup and analyses for all firm fixed price and IDIQ work completed in performance of this contract. This includes computing deductions taken from firm fixed price work Schedule of Deductions. The Government in its evaluation will consider the Contractor's self-evaluation.

B. Performance Monitoring. The contractor shall establish and implement a performance-monitoring program to measure contractor performance. Monitoring points, at a minimum, shall include:

(1) Customer Satisfaction Program. The contractor shall establish a program that encourages employees and subcontractors to improve their work performance by process improvement(s) using their own creativity and experience. The contractor shall use a process to measure and evaluate customer feedback to improve work.

(2) Functional Metrics. The contractor shall establish functional and quality measures to evaluate their planning and management techniques. The contractor shall also establish and use internal performance metrics that shall allow supervisors and managers to evaluate work flow.

3) Annual Performance Assessment. The contractor shall perform an annual "third party" performance assessment to provide LaRC, the Corporate Headquarters, and the Project Manager and staff an overall project climate and performance.

E.5 PERFORMANCE EVALUATION MEETINGS

The Contractor shall meet with the Government on a monthly basis to discuss the contractor's prior month performance. The Contractor's Self-evaluation of Performance will be assessed by the Contracting Officer, the Contracting Officer's Technical Representative (COTR), and the Government Quality Assurance Evaluators (QAE). A mutual effort will be made to resolve all problems identified. The Performance Evaluation Meeting and performance results will be determined before monthly invoices are paid. The Contractor's representative and the Government's representative shall sign the written minutes of these meetings, prepared by the Government. Should the Contractor not concur with the minutes, the Contractor shall state, in writing to the Contracting Officer, any areas of disagreement within five (5) working days.

E.6 ALTERNATE DISPUTES RESOLUTION

Notwithstanding the provisions of the clause entitled "Disputes" of this contract, no claim shall be submitted for monthly contract adjustments made pursuant to the "Consequences of Contractor's Failure to Perform Required Services" clauses in Section E.2 and E.3 that in the aggregate for each month do not exceed \$10,000. These adjustments shall be considered final and not subject to the "Disputes" clause of this contract.

The Government and Contractor will develop, after contract award, a mutually acceptable alternative for resolving disputes that may arise during the performance of this contract.

E.7 PERFORMANCE REQUIREMENTS SUMMARY (PRS)

The contract requirements listed in the Performance Requirements Summary (see Exhibit G) summarize specific firm fixed price tasks that are to be performed under this contract, and include:

Work Requirements. A series of subtasks associated with each particular Contract Requirement are listed in column 3 of the PRS.

Weight. The value of each Work Requirement is specified as a percentage of the Contract Requirement with which it is associated in column (4) of the PRS. The percentages are based on judgment, taking into account both the costs incurred by the Contractor in carrying out a particular Work Requirement and the detriment to the Government if the Work Requirement is not satisfied. The Weight compared with the accepted line item unit prices provided in the Schedule of Deductions, will be the primary basis for deducting for partially performed, unsatisfactorily performed and non-performed work.

Maximum Allowable Defect Rate (MADR). The MADR for each Work Requirement is identified in column (4a) of the PRS. The MADR is the defect rate for a monthly population of services which, when exceeded, indicates that the Contractor's quality control is unsatisfactory. The MADR does not represent a threshold for payment deductions. Deductions may be taken for all defects (with appropriate credit for rework) regardless of whether the MADR was exceeded. The MADR is expressed as a percentage of the total population per month or as a number of defects per month.

Standard of Performance. The Standard of Performance for each Work Requirement is identified in column (5) of the PRS with a reference to the respective paragraph in Section C that specifies in detail the work to be performed.

E.8 SCHEDULE OF DEDUCTIONS

The established Schedule of Deductions is at Exhibit I. Unit prices listed will be utilized in calculating deductions pursuant to E.2, "Consequences of Contractor's Failure to Perform Required Services for Firm Fixed Price Work." At contract award, the total annual firm fixed price specified in each Schedule of Deductions shall equal the total annual price for firm fixed price work in the corresponding Price Schedule. Adjustments to the contract value as a result of contract modifications may not warrant an adjustment to this schedule.

SECTION F - DELIVERIES OR PERFORMANCE

F.1 PERIOD OF PERFORMANCE

a. The period of performance of this contract shall be 24 months from the effective date of the contract.

b. The period of performance for each of the three option periods shall be 12 months. In the event the Government elects to exercise its option(s) pursuant to the terms of this contract, Paragraph a. above will be adjusted accordingly.

F.2 PLACE(S) OF PERFORMANCE (LaRC 52.211-98) (OCT 1992)

The place(s) of performance shall be:

NASA, Langley Research Center, Hampton, Virginia; and other sites as may be designated by Work or Service Request (WSR).

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 TECHNICAL DIRECTION (NASA 1852.242-70) (SEP 1993)

(a) Performance of the work under this contract is subject to the written technical direction of the Contracting Officer's Technical Representative (COTR), who shall be specifically appointed by the Contracting Officer in writing in accordance with NASA FAR Supplement 18-42.270. "Technical direction" means a directive to the Contractor that approves approaches, solutions, designs, or refinements; fills in details or otherwise completes the general description of work or documentation items; shifts emphasis among work areas or tasks; or furnishes similar instruction to the Contractor. Technical direction includes requiring studies and pursuit of certain lines of inquiry regarding matters within the general tasks and requirements in Section C of this contract.

(b) The COTR does not have the authority to, and shall not, issue any instructions purporting to be technical direction that -

- (1) Constitutes an assignment of additional work outside the statement of work;
- (2) Constitutes a change as defined in the changes clause;
- (3) In any manner causes an increase or decrease in the total estimated contract cost, the fixed fee (if any), or the time required for contract performance;
- (4) Changes any of the expressed terms, conditions, or specifications of the contract; or
- (5) Interferes with the Contractor's rights to perform the terms and conditions of the contract.

(c) All technical direction shall be issued in writing by the COTR.

(d) The Contractor shall proceed promptly with the performance of technical direction duly issued by the COTR in the manner prescribed by this clause and within the COTR's authority. If, in the Contractor's opinion, any instructions or direction by the COTR falls within any of the categories defined in paragraph (b) above, the Contractor shall not proceed but shall notify the Contracting Officer in writing within 5 working days after receiving it and shall request the Contracting Officer to take action as described in this clause. Upon receiving this notification, the Contracting Officer shall either issue an appropriate contract modification within a reasonable time or advise the Contractor in writing within 30 days that the instruction or direction is -

- (1) Rescinded in its entirety; or
- (2) Within the requirements of the contract and does not constitute a change under the changes clause of the contract and that the Contractor should proceed promptly its performance.

(e) A failure of the Contractor and Contracting Officer to agree that the instruction or direction is both within the requirements of the contract and does not constitute a change under the changes clause, or a failure to agree upon the contract action to be taken with respect to the instruction or direction shall be subject to the Disputes clause of this contract.

(f) Any action(s) taken by the Contractor in response to any direction given by any person other than the Contracting Officer or the COTR shall be at the Contractor's risk.

G.2 LIST OF INSTALLATION-ACCOUNTABLE PROPERTY AND SERVICES
(NASA 18-52.245-77) (JUL 1997)

In accordance with the clause at 1852.245-71, Installation-Accountable Government Property, the Contractor is authorized use of the types of property and services listed below, to the extent they are available, in the performance of this contract within the physical borders of the installation which may include buildings and space owned or directly leased by NASA in close proximity to the installation, if so designated by the Contracting Officer.

(a) Office space, work area space, and utilities. Government telephones are available for official purposes only.

(b) General- and special-purpose equipment, including office furniture.

(1) Equipment to be made available is listed in Attachment J-C3. The Government retains accountability for this property under the clause at 1852.245-71, Installation-Accountable Government Property, regardless of its authorized location.

(2) If the Contractor acquires property, title to which vests in the Government pursuant to other provisions of this contract, this property also shall become accountable to the Government upon its entry into Government records as required by the clause at 1852.245-71, Installation-Accountable Government Property

(3) The Contractor shall not bring to the installation for use under this contract any property owned or leased by the Contractor, or other property that the Contractor is accountable for under any other Government contract, without the Contracting Officer's prior written approval.

(c) Supplies from store stock: Not Available.

(d) Publications and blank forms stocked by the installation.

(e) Safety and fire protection for on-site Contractor personnel and facilities.

(f) Medical treatment of a first-aid nature for Contractor personnel injuries or illnesses sustained during on-site duty.

(g) Cafeteria privileges for Contractor employees during normal operating hours.

(h) Building maintenance for facilities occupied by Contractor personnel.

(i) Moving and hauling for office moves, and delivery of supplies. Moving services shall be provided on-site, as approved by the Contracting Officer.

(j) The user responsibilities of the Contractor are defined in paragraph (a) of the clause at 1852.245-71, Installation-Accountable Government Property.

G.3 PROVIDING FACILITIES TO CONTRACTORS (LaRC 52.245-90) (AUG 1997)

A. In accordance with FAR 45.302-1, it is policy of the Government that Contractors shall furnish all facilities required for performing Government contracts. "Facilities" include real property and plant equipment including personal property such as general purpose off-the-shelf equipment, machine tools, test equipment, furniture and vehicles. "Facilities" do not include material, special test equipment, special tooling or agency-peculiar property.

B. In keeping with the policy set forth in FAR 45.302-1, the Government will not provide NEW "facilities," except as provided for in the Statement of Work.

C. However, the Government will provide EXISTING facilities as listed in G.2 and Attachments J-C2 and J-C3. Any of these existing facilities that reach the end of their useful life during the contract period, or which are beyond economical repair, shall be replaced by the Contractor, if the facilities are still needed for contract performance.

G.4 RESERVED

G.5 INVOICES AND PAYMENTS

A. Proper invoices, as determined under the Section I clause entitled, "Prompt Payment," shall be submitted by the 10th working day of each month to the designated payment office shown in Block 25 on Page 1 of this contract. An information copy, accompanied with a copy of the Contractor's Self-Evaluation of Performance (See E.4), shall be furnished to the Contracting Officer and the Contracting Officer's Technical Representative.

B. The following information shall be provided on all invoices:

Company name and address
 Contract Number
 Invoice Number
 Performance period covered
 Fixed Price Work: 1/12 of the annual fixed price for recurring work
 Fixed Price Work Offset
 Trouble Call Work: 1/12 of the annual fixed price for trouble calls
 Number of trouble calls completed during the period
 Trouble Call Work Offset
 IDIQ Work: Itemize work by WSR for completed and accepted work during the period

C. The Contractor will be paid monthly 1/12 of the annual fixed price for recurring work and 1/12 of the annual fixed price for trouble calls, minus any deductions made by the Government pursuant to Clause E.2, Consequences of Contractor's Failure to Perform Required Services for FFP work. Deductions for nonconforming work will be taken on a monthly basis from the Contractor's invoice. Payments may be offset for satisfactory re-performance for which deductions were made under previous invoices. Include supporting documentation to validate offsets. The Contractor's self-evaluation will be considered by the Government in its monthly evaluation of nonconforming work.

D. The Contractor shall be paid monthly for completed and accepted IDIQ work as ordered through Work/Service Requests (WSRs), minus any deductions made by the Government pursuant to Clause E.2, Consequences of Contractor's Failure to Perform Required Services for IDIQ work.

E. Payments of award fee shall be made in response to and in the amount of the Contracting Officer's written Notice of Award Fee. Payments of award fee are subject to the withholding provisions of the Section I clause entitled "Award Fee". No provisional award fee payments will be made under this contract.

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 RIGHTS TO PROPOSAL DATA (TECHNICAL) (FAR 52.227-23) (JUN 1987)

Except for data contained on pages marked as "proprietary", it is agreed that as a condition of award of this contract, and notwithstanding the conditions of any notice appearing thereon, the Government shall have unlimited rights (as defined in the "Rights in Data - General" clause contained in this contract) in and to the technical data contained in the proposal dated 8/30/99, upon which this contract is based.

H.2 LIMITATION OF FUNDS (FIXED-PRICE CONTRACT) (NASA 18-52.232-77) (MAR 1989)

(a) Of the total price of items identified in Section B.5, the sum of \$_____ for firm fixed price work and \$_____ for indefinite quantity work is presently available for payment and allotted to this contract. It is anticipated that from time to time additional funds will be allocated to the contract on a quarterly basis, until the total price of said items is allotted.

(b) The Contractor agrees to perform or have performed work on the contract as specified in paragraph (a) above up to the point at which, if this contract is terminated pursuant to the Termination for Convenience of the Government clause of this contract, the total amount payable by the Government (including amounts payable for subcontracts and settlement costs) pursuant to paragraphs (f) and (g) of that clause would, in the exercise of reasonable judgment by the Contractor, approximate the total amount at the time allotted to the contract. The Contractor is not obligated to continue performance of the work beyond such point. The Government is not obligated in any event to pay or reimburse the Contractor more than the amount from time to time allotted to the contract, anything to the contrary in the Termination for Convenience of the Government clause notwithstanding.

(c)(1) It is contemplated that funds presently allotted to this contract will cover the work to be performed until _____ (2) If funds allotted are considered by the Contractor

Contractor shall notify the Contracting Officer in writing when within the next 60 days the work will reach a point at which, if the contract is terminated pursuant to the Termination for Convenience of the Government clause of this contract, the total amount payable by the Government (including amounts payable for subcontracts and settlement costs) pursuant to paragraphs (f) and (g) of that clause will approximate 75 percent of the total amount then allotted to the contract. (3)(i) The notice shall state the estimated date when the point referred to in subparagraph (2) above will be reached and the estimated amount of additional funds required to continue performance to the date specified in subparagraph (1) above, or an agreed date substituted for it. (ii) The Contractor shall, 60 days in advance of the date specified in subparagraph (1) above, or an agreed date substituted for it, advise the Contracting Officer in writing as to the estimated amount of additional funds required for the timely performance of the contract for a further period as may be specified in the contract or otherwise agreed to by the parties. (4) If, after the notification referred to in subdivision (3)(ii) above, additional funds are not allotted by the date specified in subparagraph (1) above or an agreed date substituted for it, the Contracting Officer shall, upon the Contractor's written request, terminate this contract on that date or on the date set forth in the request, whichever is later, pursuant to the Termination for Convenience of the Government clause.

(d) When additional funds are allotted from time to time for continued performance of the work under this contract, the parties shall agree on the applicable period of contract performance to be covered by these funds. The provisions of paragraphs (b) and (c) above shall apply to these additional allotted funds and the substituted date pertaining to them, and the contract shall be modified accordingly.

(e) If, solely by reason of the Government's failure to allot additional funds in amounts sufficient for the time by performance of this contract, the Contractor incurs additional costs or is delayed in the performance of the work under this contract, and if additional funds are allotted, an equitable adjustment shall be made in the price or prices (including appropriate target, billing, and ceiling prices where applicable) of the items to be delivered, or in the time of delivery, or both.

(f) The Government may at any time before termination, and, with the consent of the Contractor, after notice of termination, allot additional funds for this contract.

(g) The provisions of this clause with respect to termination shall in no way be deemed to limit the rights of the Government under the default clause of this contract. The provisions of this Limitations of Funds clause are limited to the work on and allotment of funds for the contract set forth in paragraph (a) above. This clause shall become inoperative upon the allotment of funds for the total price of said work except for rights and obligations then existing under this clause.

(h) Nothing in this clause shall affect the right of the Government to terminate this contract pursuant to the Termination for Convenience of the Government clause of this contract.

H.3 STATEMENT OF EQUIVALENT RATES FOR FEDERAL HIRES (FAR 52.222-42) (MAY 1989)

In compliance with the Service Contract Act of 1965, as amended, and the regulations of the Secretary of Labor (29 CFR Part 4), this clause identifies the classes of service employees expected to be employed under the contract and states the wages and fringe benefits payable to each if they were employed by the contracting agency subject to the provisions of 5 U.S.C. 5341 or 5332.

THIS STATEMENT IS FOR INFORMATION ONLY: IT IS NOT A WAGE DETERMINATION

<u>Employee Class</u>	<u>Monetary Wage</u>
Asbestos Worker	\$ 9.73
Asphalt Worker	12.21
Backhoe Operator	13.46
Bricklayer (Mason)	14.09
Carpenter	13.46
Concrete Worker	12.83
Crane Mechanic	14.72
Drywall Finisher/Taper	13.46
Drywall Installer	13.46
Electrician, Fire Alarm Systems	18.55

Electrician, High Voltage	18.55
Electrician	18.55
Electronics Technician	18.55
Elevator Mechanic	13.46
Fire Sprinkler Technician	16.89
Front End Loader Operator	13.46
HVAC Mechanic	14.72
HVAC Technician	16.89
Insulator/Coverer	12.83
Laborer	9.73
Machinist	18.55
Machinist, Precision/Repairman	16.89
Millwright	14.09
Operator, Boiler	14.09
Oxygen Cleaning Technician	14.09
Painter, Maintenance	13.46
Pipefitter, Maintenance	14.09
Power Equipment Operator, Crane	14.72
Rigger, Maintenance	14.09
Roofer	13.46
Sheet Metal Worker	14.72
Engineer, Steam Stationary	16.89
Drafter 1	8.03
Plant Technician	16.89
Specialist, Water Treatment	13.46
Steamfitter	16.89
Person, Utility	6.55
Mechanic	16.89

FRINGE BENEFITS

- Annual Leave - Receives 13 days paid leave for service up to 3 years; 20 days for 3 to 15 years service; and 26 days for 15 years service or over.
- Sick Leave - Receives 13 days paid leave per year.
- Holidays - Receives 10 paid holidays per year.
- Health Insurance - Government pays up to 60% of health insurance.
- Group Life Insurance - Government pays two-thirds of life insurance rate premiums.
- Retirement - The Government provides three retirement plans identified as the Civil Service Retirement System (CSRS), the Federal Employees Retirement System (FERS), and the CSRS Offset. Under the CSRS, the Government contributes 7% of the employees' base pay towards the retirement benefit and 1.45% towards Medicare. Under the FERS, the Government contributes 11.4% of the employees' base pay towards a basic benefit plan, 6.2% to Social Security, 1.45% towards Medicare, and 1% (plus

matching contributions of up to 4% of basic pay, depending on employees' contributions) to a thrift savings plan. Under the CSRS Offset, the Government contributes 0.8% of the employees' base pay towards the retirement benefit, 6.2% to Social Security, and 1.45% towards Medicare.

Part-time Federal employees receive pro rata annual leave, sick leave, holiday leave, health insurance, and group life insurance benefits based on the number of hours worked.

H.4 CONTRACTOR EMPLOYEE'S SECURITY CLEARANCE (LaRC 52.204-90) (OCT 1996)

By virtue of their particular work assignment, certain Contractor employees, may be required to have a security clearance granted in accordance with the National Industry Security Program Operating Manual (NISPOM) dated March 14, 1996. Clearances will be issued by the Department of Defense (DOD). Within 10 working days after an employee is identified by the Government and/or the Contractor as requiring a SECRET or higher clearance, the Contractor shall submit to the Contracting Officer evidence of the submittal of a request for clearance to DOD for such employee. If the clearance for an employee has not been issued by DOD within 120 calendar days of the submittal of the request for clearance to DOD, the Contractor may be required to remove the employee from the contract.

H.5 SECURITY PROGRAM/FOREIGN NATIONAL EMPLOYEE INVESTIGATIVE REQUIREMENTS (LaRC 52.204-91) (AUG 1997)

Prior to reporting to Langley Research Center (LaRC) to perform under a contract or grant, each Foreign National shall have approval for access to LaRC facilities from NASA Headquarters, Office of Space Science and Aeronautics (Code IS). A copy of the access authorization request shall be provided to the LaRC Chief of Security. Additionally, an investigation by the Government shall be completed on each Foreign National contractor prior to reporting to LaRC to perform under a contract or grant. A properly executed "Name Check Request" (NASA Form 531) and a completed "applicant" fingerprint card shall be submitted to the LaRC Security Office, Mail Stop 450, for each Foreign National contractor at least 75 days prior to the estimated entry on duty date. The NF 531 and fingerprint card may be obtained from the LaRC Security Office. If the access approval is obtained from NASA Headquarters prior to completion of the investigation, and the Contracting Officer requires a Foreign National to work on LaRC, an escort request may be considered by the LaRC Chief of Security.

H.6 WORK SCHEDULE--ON-SITE ONLY (LaRC 52.211-103) (JUL 1991)

In order that the necessary and proper inspection of the Contractor's work may be effectively accomplished, and to assure the availability of required Government interface, the Contractor shall schedule work performance hereunder so as to be compatible with the established workweek and hours of work observed by the Government organization having cognizance over the work being performed, which is 7:00 a.m. to 4:30 p.m., Monday through Friday.

H.7 OBSERVATION OF REGULATIONS AND IDENTIFICATION OF CONTRACTOR'S EMPLOYEES--ALTERNATE I (LaRC 52.211-104) (AUG 1998)

A. Observation of Regulations--In performance of that part of the contract work which may be performed at Langley Research Center or other Government installation, the Contractor shall require its employees to observe the rules and regulations as prescribed by the authorities at Langley Research Center or other installation including all applicable Federal, NASA and Langley or other local installation safety, health, environmental and security regulations.

B. Identification Badges--At all times while on LaRC property, the Contractor shall require its employees, subcontractors and agents to wear badges which will be issued by the NASA Contract Badge and Pass Office, located at 1 Langley Boulevard (Building No. 1228). Badges shall be issued only between the hours of 6:30 a.m. and 4:30 p.m., Monday through Friday. Contractors will be held accountable for these badges and may be required to validate outstanding badges on an annual basis

with the NASA LaRC Security Office. Immediately after employee termination or contract completion, badges shall be returned to the NASA Contract Badge and Pass Office.

H.8 QUALITY SYSTEM REQUIREMENTS

A. ISO9002 - The Contractor's quality system shall be compliant with the requirements of ANSI/ISO/ASQC Q9002 – 1994, Quality Systems-Model for Quality Assurance in Production, Installation, and Servicing. In the event the Contractor's quality system is not already compliant with the requirements of ANSI/ISO/ASQC Q9002 – 1994, the contractor shall develop quality system procedures and associated documentation to become compliant within 9 months after the contract effective date. The contractor's quality system shall remain in compliance with ANSI/ISO/ASQC Q9002 – 1994 during the contract term. The Government reserves the right to audit the Contractor's quality system at any time.

NOTE: Compliance achievement will be evaluated in second award fee evaluation during the first contract year.

B. Contractor Quality Management System - The contractor shall provide an ISO 9000-compliant Quality Management System (QMS) which includes established Business Processes, Performance Measurements and a process-based Internal Audit and Inspection Program as defined below. The contractor's QMS shall remain in compliance with ANSI/ISO/ASQC Q9002 – 1994 during the contract term. The contractor shall provide on-line access to Performance Measurement Results and the Internal Audit and Inspection Program accessible by any authorized person.

Business Processes: The contractor shall provide and maintain defined Business Processes to include, at a minimum, administrative, human resource, finance, environmental health and safety, quality, and information technology business areas.

Performance Measurement: The contractor shall develop and collect quantifiable performance measurements through the use of Key Process Indicators (KPIs) and Customer Satisfaction Indicators (CSIs) to define measures of effectiveness.

Process-based Internal Audit and Inspection: The contractor shall conduct internal audits of all management and technical functions to determine how well the established processes and procedures are used to plan, implement and validate work in each Statement of Work (SOW) area.

The contractor shall achieve ISO9000 certification nine months following contract start.

H.9 INCORPORATION OF SECTION K OF THE PROPOSAL BY REFERENCE (LaRC 52.215-107) (JUN 1998)

Pursuant to FAR 15.204-1(b), the completed Section K of the proposal dated July 12, 1999 is hereby incorporated herein by reference.

H.10 ADVANCE APPROVAL FOR RELEASE OF TECHNICAL INFORMATION (LaRC 52.227-92) (JUL 1998)

The Contractor shall not release technical information based on or containing data first produced in the performance of this contract and describing the work performed under this contract unless prior written approval is given by NASA. The Contractor shall submit technical information regarding the contract effort, such as journal articles, meeting papers, and technical documents to the Contracting Officer's Technical Representative (COTR) for review and concurrence with approval by the Center Export Administrator or designee prior to publication, presentation or release to others. The Contractor may proceed upon receipt of written concurrence by the COTR, unless directed otherwise in the COTR concurrence letter.

H.11 DAVIS-BACON ACT –PRICE ADJUSTMENT FOR GENERAL DECISION WAGE DETERMINATIONS

(a) This clause applies to area prevailing general decision wage determinations as identified under Exhibit D of this contract.

(b) The Contractor warrants that the prices in this contract do not include any allowance for any contingency to cover increased costs for which adjustment is provided under this clause.

(c) The general decision wage determination, as amended by the Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, current on the anniversary date of a multiple year contract or the beginning of each renewal option period, shall apply to this contract.

(d) The contract price or contract unit price labor rates will be adjusted to reflect the Contractor's actual increase or decrease in applicable wages and fringe benefits to the extent that the increase is made to comply with or the decrease is voluntarily made by the Contractor as a result of:

(1) The Department of Labor wage determination applicable on the anniversary date of the multiple year contract, or at the beginning of the renewal option period. For example, the prior year wage determination required a minimum wage rate of \$4.00 per hour. The Contractor chose to pay \$4.10. The new wage determination increases the minimum rate to \$4.50 per hour. Even if the Contractor voluntarily increases the rate to \$4.75 per hour, the allowable price adjustment is \$.40 per hour;

(2) An increased or decreased wage determination otherwise applied to the contract by operation of law; or

(e) Any adjustment will be limited to increases or decreases in wages and fringe benefits as described in paragraph (c) of this clause, and the accompanying increases or decreases in social security and unemployment taxes and workers' compensation insurance, but shall not otherwise include any amount for general and administrative costs, overhead, or profit.

(f) The Contractor shall notify the Contracting Officer of any increase claimed under this clause within 30 days after receiving a new wage determination unless this notification period is extended in writing by the Contracting Officer. The Contractor shall promptly notify the Contracting Officer of any decrease under this clause, but nothing in the clause shall preclude the Government from asserting a claim within the period permitted by law. The notice shall contain a statement of the amount claimed and any relevant supporting data, including payroll records, that the Contracting Officer may reasonably require. Upon agreement of the parties, the contract price or contract unit price labor rates shall be modified in writing. The Contractor shall continue performance pending agreement on or determination of any such adjustment and its effective date.

(g) The Contracting Officer or an authorized representative shall have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor until the expiration of 3 years after final payment under the contract."

H.12 YEAR 2000 COMPLIANCE (MAY 1998)

(a) Definition: "Year 2000 compliant", as used in this clause, means that the Information Technology (IT) (hardware, software and firmware, including embedded systems or any other electro-mechanical or processor-based systems used in accordance with its associated documentation) accurately processes date and date-related data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations, to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date and date-related data with it.

(b) Any IT provided or maintained under this contract must be Year 2000 compliant. To ensure this result, the Contractor shall provide documentation describing how the IT items demonstrate Year 2000 compliance.

Documentation and testing for Year 2000 compliance shall be based on complexity and the risk associated with the IT item. The Contractor shall use the documents "NASA Year 2000 Agency Test and Certification Guidelines and Requirements" dated July 2, 1998 (available at <http://cio.larc.nasa.gov/y2k/>) and "NASA LaRC Y2K Guideline for Documentation and Testing Requirements" (Exhibit F) as guidance to establish the appropriate testing and documentation. The Contractor shall provide the "Contractor Y2K Compliance Verification Form" (Exhibit F) for each IT item/system provided or maintained under this contract.

(c) The Contractor warrants that any IT items or services provided under this contract that involve the processing of date and date-related data are Year 2000 compliant. If the contract requires that specific listed products must perform as a system in accordance with the foregoing warranty, then that warranty shall apply to those listed products as a system.

(d) The remedies available under this warranty shall include repair or replacement, at no additional cost to the Government, of any provided items or services whose non-compliance is discovered and made known to the Contractor in writing within 90 days after acceptance. In addition, all other the terms and limitations of the Contractor's standard commercial warranty or warranties shall be available to the Government for the IT items or services acquired under this contract. Nothing in this warranty shall be construed to limit any rights or remedies the Government may otherwise have under this contract with respect to defects other than Year 2000 performance.

H.13 VARIATION IN QUANTITY - TROUBLE CALLS

A. If the furnished or delivered quantity of Trouble Calls (TCs) varies on an annual basis more than 10 percent above or below the 11,000 number of TCs per year, negotiations for an equitable adjustment in the contract price may be initiated by either party. The equitable adjustment shall be based upon any increase or decrease in costs above 110 percent or below 90 percent of the number of TCs specified. An issued TC shall not be counted against the specified quantity of TCs until it is satisfactorily performed.

B. For purposes of determining the applicability of this clause, there shall not be included in the count of Trouble Calls performed: (1) any services or items which the Contractor is required to provide to remedy the consequences of any act or omission on the part of the Contractor, its agents, employees, or subcontractors; (2) any services which the Contractor performs or delivers in order to support its own operations (rather than satisfy the requirements of this contract); or (3) any services which do not conform to the applicable quality standards set forth in the statement of work in Section C (also see the "Consequences of Contractor's Failure to Perform Required Services" clause in Section E).

C. Within 30 working days after the end of a contract year, the Contractor shall submit a proposal comparing furnished or delivered quantities that deviate from the above number of TCs with the associated price impact, if any. Adjustment to the contract price shall be made annually and only for that portion of any increase or decrease in the total cost which exceeds 10 percent for TCs for that contract year. The price adjustment shall be determined by multiplying the TCs outside the 10% accepted variation by the annual average TC cost. (Annual TC cost divided by 11,000 equals annual average TC cost).

H.14 VARIATION IN QUANTITY – PREVENTIVE MAINTENANCE (PM)

The required PM program requirements are set forth in Section C. It is expected that changes will occur to the PM program requirements over the term of the contract. The Government will provide revised PM program requirements to the contractor whenever such changes occur. If the net cost impact of these changes exceeds \$50,000 annually, either the Government or the contractor will be entitled to an

equitable adjustment in the firm-fixed-price set forth in B-5. Any such equitable adjustment will be for the negotiated net cost impact less \$50,000. The Contractor must assert any claim for equitable adjustment under this clause by submitting a proposal within 30 days after the end of a contract year. This proposal shall detail the hours and materials for both the increases and the decreases in effort and shall apply the unit price labor rates and material and equipment burden rates set forth in Section B, Price Schedule, for the appropriate period. The Contractor agrees to prepare an equitable adjustment proposal as set forth above when requested by the Government. Notwithstanding the above, any Contractor initiated savings in recurring costs submitted in the annual work plan will be handled in accordance with Section C.8.b.(d).

H.15 PARTNERING

(a) The terms "partnering" and "partnership" used herein shall mean a relationship of open communications and close cooperation of all parties. There is no intent to create a legal relationship nor a contractual commitment. Partnering will be totally voluntary; however, once an arrangement is agreed upon, commitment to its success is essential.

(b) NASA intends to facilitate contract management by encouraging the foundation of a cohesive partnership with the Contractor, its subcontractors, and NASA's contract management staff. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals.

(c) To implement the partnership relationship, it is anticipated that during the phase-in period the prime Contractor's key personnel, subcontractors key personnel and NASA will attend a partnership development and team building workshop. Follow-up team building workshops will be held periodically throughout the duration of the contract as agreed to by the Contractor and NASA. All cost for activity outside the personnel cost within this fixed price contract will be borne by the Government.

H.16 UNESCORTED ACCESS BY CONTRACTOR EMPLOYEES

Background investigations are required for Contractor employees to have unescorted access to the Langley Research Center. All Contractor employees must as a minimum have a favorably adjudicated National Agency Check (NAC). The NAC is not required if the Contractor can certify that an employee has a Confidential or higher security clearance or a favorably adjudicated current investigation. When it is necessary for an employee to perform work prior to completion of the NAC, the employee may be escorted while at the site by an individual who has a favorable NAC or a higher level of investigation favorably adjudicated, or a Confidential or higher level security clearance or as otherwise approved by the LaRC Security Officer.

H.17 SMALL DISADVANTAGED BUSINESS PARTICIPATION—CONTRACT TARGETS

(LaRC 52.219-91) (JAN 1999)

(a) This clause does not apply to, and should not be completed by, Small Disadvantaged Business (SDB) offerors unless the SDB offeror has waived the price adjustment evaluation adjustment (see paragraph (c) of FAR clause 62.219-23.)

(b) FAR 19.1202-4(a) requires that SDB participation targets be incorporated in the contract.

(i) If the prime offeror is an SDB (including joint venture partners and team members) that has waived the price evaluation adjustment, the target for the work it intends to perform as a prime contractor in authorized SIC Major Groups, as determined by the Department of Commerce (DOC), is as follows:

	<u>Dollars</u>	<u>Percent of Contract Value</u>
1. Basic Year 1		
2. Basic Year 2		
3. Option Year 1		
4. Option Year 2		
5. Option Year 3		

(ii) Targets for SDB participation as subcontractors in authorized SIC Major Groups, as determined by the DOC, are as follows:

	<u>DOC Major SIC Group</u>	<u>Dollar Target</u>	<u>Percent of Contract Value</u>
<u>1. Basic Year 1</u>			
LB&B Associates Inc.	87	██████████	██
Various	50, 51, 52, 59, 73	██████████	██
Total		██████████	██
<u>2. Basic Year 2</u>			
LB&B Associates Inc.	87	██████████	██
Various	50, 51, 52, 59, 73	██████████	██
Total		██████████	██
<u>3. Option Year 1</u>			
LB&B Associates Inc.	87	██████████	██
Various	50, 51, 52, 59, 73	██████████	██
Total		██████████	██
<u>4. Option Year 2</u>			
LB&B Associates Inc.	87	██████████	██
Various	50, 51, 52, 59, 73	██████████	██
Total		██████████	██
<u>5. Option Year 3</u>			
LB&B Associates Inc.	87	██████████	██
Various	50, 51, 52, 59, 73	██████████	██
Total		██████████	██

(c) FAR 19.1202-4(b) requires that SDB concerns that are specifically identified by the offeror be listed in the contract when the extent of the identification of such subcontractors was part of the SDB evaluation subfactor. SDB concerns (subcontractors) specifically identified by the offeror are as follows:

Names of Concerns

LB&B Accociates Inc.

The contractor shall notify the Contracting Officer of any substitution of firms that are not SDB concerns.

H.18 RIGHTS IN DATA

Unlimited rights as used in this clause means that the Government has the right to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so. The Government shall have unlimited rights in-

- (a) all data input into the Computerized Maintenance Management System;
- (b) data first produced in the performance of this contract; and
- (c) all data identified as a deliverable under this contract or delivered under this contract.

H.19 - CONSTRUCTION -- BID BONDS AND PERFORMANCE AND PAYMENT BONDS

For Government selected WSRs issued for construction, the Contractor agrees to obtain performance and payment bonds or alternative payment protection. For the purposes of the Section I clauses 52.228-15, Performance and Payment Bonds – Construction (SEP 1996), 52.228-13, Alternative Payment Protections, and 52.228-2, Additional Bond Security (OCT 1997), the "contract price" shall be deemed to refer to the price of the WSR issued. The Contractor may include in pricing proposals in response to selected construction IQ work the price of performance and payment bonds or alternative payment protection as a separate expense.

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE APPLICABLE TO ENTIRE CONTRACT

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.202-1	Definitions (OCT 1995)
52.203-3	Gratuities (APR 1984)
52.203-5	Covenant Against Contingent Fees (APR 1984)
52.203-6	Restrictions on Contractor Sales to the Government (JUL 1995)
52.203-7	Anti-Kickback Procedures (JUL 1995)
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity (JAN 1997)

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.203-7	Anti-Kickback Procedures (JUL 1995)
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity (JAN 1997)
52.204-4	Printing/Copying Double-Sided on Recycled Paper (JUN 1996)
52.209-6	Protecting the Government's Interest when Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (JUL 1995)
52.211-5	Material Requirements (OCT 1997)
52.211-15	Defense Priority and Allocation Requirements (SEP 1990)
52.215-2	Audit and Records--Negotiation (AUG 1996)
52.215-8	Order of Precedence--Uniform Contract Format (OCT 1997)
52.215-11	Price Reduction for Defective Cost or Pricing Data-- Modifications (OCT 1997)
52.215-13	Subcontractor Cost or Pricing Data--Modifications(OCT 1997)
52.215-14	Integrity of Unit Prices (OCT 1997)
52.215-15	Pension Adjustments and Asset Reversions ((DEC 1998)
52.215-17	Waiver of Facilities Capital Cost of Money (OCT 1997)
52.215-18	Reversion Or Adjustment Of Plans For Postretirement Benefits (PRB) Other Than Pensions (OCT 1997)
52.215-19	Notification of Ownership Changes (OCT 1997)
52.215-21	Requirements For Cost or Pricing Data or Information Other Than Cost or Pricing Data--Modifications (OCT 1997)
52.219-8	Utilization of Small Business Concerns (JAN 1999)
52.219-9	Small Business Subcontracting Plan (JAN 1999) Alternate II (JAN 1999)
52.219-16	Liquidated Damages - Subcontracting Plan (JAN 1999)
52.222-1	Notice to the Government of Labor Disputes (FEB 1997)
52.222-3	Convict Labor (AUG 1996)
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation (JUL 1995)
52.222-26	Equal Opportunity (FEB1999)
52.222-35	Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (APR 1998)
52.222-36	Affirmative Action for Workers with Disabilities (JUN 1998)
52.222-37	Employment Reports on Disabled Veterans and Veterans of the Vietnam Era (JAN 1999)
52.222-43	Fair Labor Standards Act And Service Contract Act - Price Adjustment (Multiple Year And Option Contracts) (MAY 1989)
52.222-50	Nondisplacement of Qualified Workers (AUG 1997)
52.223-2	Clean Air and Water (APR 1984)
52.223-4	Recovered Material Certification (OCT 1997)
52.223-5	Pollution Prevention and Right-To-Know Information (APR 1998)
52.223-6	Drug-Free Workplace (JAN 1997)
52.223-9	Certification and Estimate of Percentage of Recovered Material Content for EPA Designated Items (OCT 1997)
52.223-10	Waste Reduction Program (OCT 1997)
52.223-11	Ozone-Depleting Substances (JUN 1996)
52.223-12	Refrigeration Equipment and Air Conditioners (MAY 1995)
52.223-14	Toxic Chemical Release Reporting (OCT 1996)
52.225-3	Buy American Act - Supplies (JAN 1994)
52.225-11	Restrictions on Certain Foreign Purchases (AUG 1998)
52.227-1	Authorization and Consent (JUL 1995)
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement (AUG 1996)
52.227-3	Patent Indemnity (APR 1984)

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.228-5	Insurance--Work on a Government Installation (JAN 1997)
52.229-3	Federal, State, and Local Taxes (JAN 1991)
52.229-5	Taxes - Contracts Performed in U.S. Possessions or Puerto Rico (APR 1984)
52.230-2	Cost Accounting Standards (APR 1998)
52.230-6	Administration of Cost Accounting Standards (APR 1996)
52.232-1	Payments (APR 1984)
52.232-8	Discounts For Prompt Payment (MAY 1997)
52.232-9	Limitation on Withholding of Payment (APR 1984)
52.232-17	Interest (JUN 1996)
52.232-18	Availability of Funds (APR 1984)
52.232-23	Assignment of Claims (JAN 1986)
52.232-33	Mandatory Information for Electronic Funds Transfer Payment (AUG 1996)
52.233-1	Disputes (DEC 1998)--Alternate I (DEC 1991)
52.233-3	Protest After Award (AUG 1996)
52.237-2	Protection of Government Buildings, Equipment, and Vegetation (APR 1984)
52.237-3	Continuity of Services (JAN 1991)
52.242-14	Suspension Of Work (APR 1984)
52.242-15	Stop-Work Order (AUG 1989)
52.243-1	Changes--Fixed Price (AUG 1987)--Alternate II (APR 1984)
52.245-1	Property Records (APR 1984)
52.245-2	Government Property (Fixed-Price Contracts) (DEC 1989) Alternate I (APR 1984)
52.246-2	Inspection of Supplies--Fixed-Price (AUG 1996)
52.246-4	Inspection of Services--Fixed-Price (AUG 1996)
52.246-13	Inspection - Dismantling, Demolition, Or Removal Of Improvements (APR 1984)
52.246-16	Responsibility for Supplies (APR 1984)
52.246-23	Limitation of Liability (FEB 1997)
52.246-25	Limitation of Liability--Services (FEB 1997)
52.249-2	Termination for Convenience of the Government (Fixed-Price) (SEP 1996)
52.249-8	Default (Fixed-Price Supply and Service) (APR 1984)
52.249-14	Excusable Delays (APR 1984)
52.253-1	Computer Generated Forms (JAN 1991)

NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
1852.208-81	Restrictions On Printing And Duplicating (AUG 1993)
1852.219-74	Use of Rural Area Small Businesses (SEP 1990)
1852.219-75	Small, Small Business, and Women-Owned Small Business Subcontracting Reporting (JUL 1997)
1852.219-76	NASA 8 Percent Goal (JUL 1997)
1852.223-70	Safety and Health (MAR 1997)
1852.223-71	Frequency Authorization (DEC 1988)
1852.228-75	Minimum Insurance Coverage (OCT 1988)
1852.237-70	Emergency Evacuation Procedures (DEC 1988)
1852.243-71	Shared Savings (MAR 1997)
1852.245-71	Installation-Accountable Government Property (JUL 1998)-- Alternate I (JUN 1998) Paragraph (a) "User responsibilities in accordance with NASA Handbook NHB.4200.1, NASA Equipment Management Manual"

I.2 CLAUSES APPLICABLE TO TIME AND MATERIAL INDEFINITE QUANTITY WORK

52.232-7	Payments Under Time-and-Materials and Labor-Hour Contracts (FEB 1997)
52.243-3	Changes--Time-and-Materials or Labor-Hours (AUG 1987)
52.246-6	Inspection - Time-and-Material and Labor-Hour (JAN 1986)

I.3 CLAUSES APPLICABLE TO CONSTRUCTION WORK

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.222-6	Davis-Bacon Act (FEB 1995)
52.222-7	Withholding of Funds (FEB 1988)
52.222-8	Payrolls and Basic Records (FEB 1988)
52.222-9	Apprentices and Trainees (FEB 1988)
52.222-10	Compliance with Copeland Act Requirements (FEB 1988)
52.222-11	Subcontracts (Labor Standards) (FEB 1988)
52.222-12	Contract Termination - Debarment (FEB 1988)
52.222-13	Compliance with Davis-Bacon and Related Act Regulations (FEB 1988)
52.222-14	Disputes Concerning Labor Standards (FEB 1988)
52.222-15	Certification of Eligibility (FEB 1988)
52.222-27	Affirmative Action Compliance Requirements for Construction (APR 1984)
52.225-5	Buy American Act—Construction Materials (JUN 1997)
52.227-4	Patent Indemnity - Construction Contracts (APR 1984)
52.228-2	Additional Bond Security (OCT 1997)
52.228-11	Pledges of Assets (FEB 1992)
52.228-12	Prospective Subcontractor Requests for Bonds (OCT 1995)
52.228-14	Irrevocable Letter of Credit (OCT 1997)
52.228-15	Performance and Payment Bonds—Construction (SEP 1996)
52.232-5	Payments under Fixed-Price Construction Contracts (MAY 1997)
52.232-27	Prompt Payment for Construction Contracts (JUN 1997) (Paragraph (a)(1)(i)(A) is modified to read "30 days.")
52.236-2	Differing Site Conditions (APR 1984)
52.236-3	Site Investigation and Conditions Affecting the Work (APR 1984)
52.236-5	Material and Workmanship (APR 1984)
52.236-6	Superintendent by the Contractor (APR 1984)
52.236-7	Permits and Responsibilities (NOV 1991)
52.236-8	Other Contracts (APR 1984)
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements (APR 1984)
52.236-10	Operations and Storage Area (APR 1984)
52.236-11	Use and Possession Prior to Completion (APR 1984)
52.236-12	Cleaning Up (APR 1984)
52.236-13	Accident Prevention (NOV 1991)
52.236-15	Schedules for Construction Contracts (APR 1984)
52.236-21	Specifications and Drawings for Construction (FEB 1997)—Alternate I (APR 1984)
52.236-26	Preconstruction Conference (FEB 1995)
52.243-4	Changes (AUG 1987)
52.246-12	Inspection of Construction (AUG 1996)
52.246-21	Warranty of Construction (MAR 1994)—Alternate I (APR 1984)
52.248-3	Value Engineering—Construction (MAR 1989)
52.249-10	Default (Fixed-Price Construction) (APR 1984)
1852.209-72	Composition of the Contractor (DEC 1988)
1852.236-73	Hurricane Plan (DEC 1988)

I.4 NONDOMESTIC CONSTRUCTION MATERIALS (NASA 1852.225-71) (DEC 1988)

The requirements of the Buy American Act - Construction Materials clause do not apply to construction materials or their components as set forth below:

I.5 ALTERNATIVE PAYMENT PROTECTIONS (FAR 52.228-13) (Oct 1997)

(a) The Contractor shall submit one of the following payment protections:

a payment bond.

an irrevocable letter of credit (ILC).

(b) The amount of the payment protection shall be 50 percent of the contract price.

(c) The submission of the payment protection is required within 10 days of contract award.

(d) The payment protection shall provide protection for the full contract performance period plus a one-year period.

(e) Except for escrow agreements and payment bonds, which provide their own protection procedures, the Contracting Officer is authorized to access funds under the payment protection when it has been alleged in writing by a supplier of labor or material that a nonpayment has occurred, and to withhold such funds pending resolution by administrative or judicial proceedings or mutual agreement of the parties.

(f) When a tripartite escrow agreement is used, the Contractor shall utilize only suppliers of labor and material that signed the escrow agreement.

I.6 CLAUSES IN FULL TEXT APPLICABLE TO ENTIRE CONTRACT

The clauses listed below follow in full text:

52.252-2	Clauses Incorporated by Reference (FEB 1998)
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity (JAN 1997)
52.203-12	Limitation on Payments to Influence Certain Federal Transactions (JUN 1997)
52.216-18	Ordering (OCT 1995)
52.216-19	Order Limitations (OCT 1995)
52.216-22	Indefinite Quantity (OCT 1995)
52.217-9	Option to Extend the Term of the Contract (MAR 1989)
52.219-4	Notice of Price Evaluation Preference for HUBZone Small Business Concerns (JAN 1999)
52.219-23	Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (OCT 1998)
52.219-25	Small Disadvantaged Business Participation Program—Disadvantaged Status and Reporting (JAN 1999)
52.222-41	Service Contract Act of 1965, As Amended ((MAY 1989)
52.223-3	Hazardous Material Identification and Material Safety Data (JAN 1997)—Alternate I (JUL 1995)
52.232-25	Prompt Payment (JUN 1997)
52.242-13	Bankruptcy (JUL 1995)
52.244-6	Subcontracts for Commercial Items and Commercial Components (OCT 1998)

52.252-6	Authorized Deviations in Clauses (APR 1984)
1852.204-76	Security Requirements For Unclassified Automated Information Resources (SEP 1993)
1852.215-84	Ombudsman (OCT 1996)
1852.216-76	Award Fee For Service Contracts (MAR 1998)
1852.242-72	Observance of Legal Holidays (AUG 1992) Alternate I (SEP 1989)

1.7 CLAUSES INCORPORATED BY REFERENCE (FAR 52.252-2) (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far/>

<http://www.hq.nasa.gov/office/procurement/regs/nfstoc.htm>

1.8 CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (FAR 52.203-8) (JAN 1997)

(a) If the Government receives information that a contractor or a person has engaged in conduct constituting a violation of subsection (a), (b), (c), or (d) of Section 27 of the Office of Federal Procurement Policy Act (41 U.S.C. 423) (the Act), as amended by section 4304 of the 1996 National Defense Authorization Act for Fiscal Year 1996 (Pub. L. 104-106), the Government may--

- (1) Cancel the solicitation, if the contract has not yet been awarded or issued; or
- (2) Rescind the contract with respect to which--

(i) The Contractor or someone acting for the Contractor has been convicted for an offense where the conduct constitutes a violation of subsection 27 (a) or (b) of the Act for the purpose of either--

(A) Exchanging the information covered by such subsections for anything of value; or

(B) Obtaining or giving anyone a competitive advantage in the award of a Federal agency procurement contract; or

(ii) The head of the contracting activity has determined, based upon a preponderance of the evidence, that the Contractor or someone acting for the Contractor has engaged in conduct constituting an offense punishable under subsections 27(e)(1) of the Act.

(b) If the Government rescinds the contract under paragraph (a) of this clause, the Government is entitled to recover, in addition to any penalty prescribed by law, the amount expended under the contract.

(c) The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law, regulation, or under this contract.

1.9 LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (FAR 52.203-12) (JUN 1997)

(a) Definitions.

"Agency," as used in this clause, means executive agency as defined in 2.101.

"Covered Federal action," as used in this clause, means any of the following Federal actions:

- (1) The awarding of any Federal contract.
- (2) The making of any Federal grant.
- (3) The making of any Federal loan.
- (4) The entering into of any cooperative agreement.
- (5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

- (1) An individual who is appointed to a position in the Government under Title 5, United States Code, including a position under a temporary appointment.
- (2) A member of the uniformed services, as defined in subsection 101(3), Title 37, United States Code.
- (3) A special Government employee, as defined in section 202, Title 18, United States Code.
- (4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, Title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State," as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions. (1) Section 1352 of Title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any

agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b)(3)(i)(A) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

(C) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action--

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those services expressly authorized by subdivision (b)(3)(i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3)(ii)(A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because

the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b)(3)(ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(c) Disclosure. (1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes--

(i) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(ii) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(iii) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding \$100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(d) Agreement. The Contractor agrees not to make any payment prohibited by this clause.

(e) Penalties. (1) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(f) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provision.

I.10 ORDERING (FAR 52.216-18) (OCT 1995)

(a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders or task orders by the individuals or activities designated in the Schedule. Such orders may be issued from the date of the contract award through the end of contract performance.

(b) All delivery orders or task orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order or task order and this contract, the contract shall control.

(c) If mailed, a delivery order or task order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods only if authorized in the Schedule.

I.11 ORDER LIMITATIONS (FAR 52.216-19) (OCT 1995)

- (a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than \$25, the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.
- (b) Maximum order. The Contractor is not obligated to honor--
- (1) Any order for a single item in excess of \$1 Million;
 - (2) Any order for a combination of items in excess of \$1 Million; or
 - (3) A series of orders from the same ordering office within 10 days that together call for quantities exceeding the limitation in subparagraph (1) or (2) above.
- (c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) above.
- (d) Notwithstanding paragraphs (b) and (c) above, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within 5 days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

I.12 INDEFINITE QUANTITY (FAR 52.216-22) (OCT 1995)

- (a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.
- (b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the "maximum." The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum."
- (c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.
- (d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after 90 calendar days after the effective period ends.

I.13 OPTION TO EXTEND THE TERM OF THE CONTRACT (FAR 52.217-9) (MAR 1989)

- (a) The Government may extend the term of this contract by written notice to the Contractor within the current contract period of performance; provided, that the Government shall give the Contractor a preliminary written notice of its intent to extend at least 30 days before the contract expires. The preliminary notice does not commit the Government to an extension.
- (b) If the Government exercises this option, the extended contract shall be considered to include this option provision.
- (c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 60 months.

I.14 NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (FAR 52.219-4) (JAN 1999)

- (a) Definition. "HUBZone small business concern," as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.
- (b) Evaluation preference. (1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except—
- (i) Offers from HUBZone small business concerns that have not waived the evaluation preference;
 - (ii) Otherwise successful offers from small business concerns;
 - (iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and
 - (iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.
- (2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.
- (3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer. These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.
- (c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.
- Offeror elects to waive the evaluation preference.
- (d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for—
- (1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;
 - (2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;
 - (3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns; or
 - (4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.
- (e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants.
- (f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

I.15 NOTICE OF PRICE EVALUATION ADJUSTMENT FOR SMALL DISADVANTAGED BUSINESS CONCERNS (FAR 52.219-23) (OCT 1998)

(a) Definitions. As used in this clause—

Small disadvantaged business concern means an offeror that represents, as part of its offer, that it is a small business under the size standard applicable to this acquisition; and either—

- (1) It has received certification by the Small Business Administration as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B; and
 - (i) No material change in disadvantaged ownership and control has occurred since its certification;
 - (ii) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and
 - (iii) It is listed, on the date of its representation, on the register of small disadvantaged business concerns maintained by the Small Business Administration;
- (2) It has submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted. In this case, in order to receive the benefit of a price evaluation adjustment, an offeror must receive certification as a small disadvantaged business concern by the Small Business Administration prior to contract award; or
- (3) Is a joint venture as defined in 13 CFR 124.1002(f).

Historically black college or university means an institution determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. For the Department of Defense (DOD), the National Aeronautics and Space Administration (NASA), and the Coast Guard, the term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institution means an institution of higher education meeting the requirements of Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)) which, for purposes of this clause, includes a Hispanic-serving institution of higher education as defined in Section 316(b)(1) of the Act (20 U.S.C. 1059c(b)(1)).

United States means the United States, its territories and possessions, the Commonwealth of Puerto Rico, the U.S. Trust Territory of the Pacific Islands, and the District of Columbia.

(b) Evaluation adjustment. (1) Offers will be evaluated by adding a factor of 10% percent to the price of all offers, except—

- (i) Offers from small disadvantaged business concerns that have not waived the adjustment;
- (ii) For DOD, NASA, and Coast Guard acquisitions, otherwise successful offers from historically black colleges or universities or minority institutions;
- (iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is equaled or exceeded (see section 25.402 of the Federal Acquisition Regulation (FAR));
- (iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government; and
- (v) For DOD acquisitions, otherwise successful offers of qualifying country end products (see sections 225.000-70 and 252.225-7001 of the Defense FAR Supplement).

(2) The factor shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor. The factor may not be applied if using the adjustment would cause the contract award to be made at a price that exceeds the fair market price by more than the factor in paragraph (b)(1) of this clause.

(c) Waiver of evaluation adjustment. A small disadvantaged business concern may elect to waive the adjustment, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply to offers that waive the adjustment.

— Offeror elects to waive the adjustment.

- (d) Agreements (1) A small disadvantaged business concern, that did not waive the adjustment, agrees that in performance of the contract, in the case of a contract for—
- (i) Services, except construction, at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern;
 - (ii) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern;
 - (iii) General construction, at least 15 percent of the cost of the contract, excluding the cost of materials, will be performed by employees of the concern; or
 - (iv) Construction by special trade contractors, at least 25 percent of the cost of the contract, excluding the cost of materials, will be performed by employees of the concern.
- (2) A small disadvantaged business concern submitting an offer in its own name agrees to furnish in performing this contract only end items manufactured or produced by small disadvantaged business concerns in the United States. This paragraph does not apply in connection with construction or service contracts.

I.16 SMALL DISADVANTAGED BUSINESS PARTICIPATION PROGRAM—DISADVANTAGED STATUS AND REPORTING (FAR 52.219-25) (JAN 1999)

- (a) Disadvantaged status for joint venture partners, team members, and subcontractors. This clause addresses disadvantaged status for joint venture partners, teaming arrangement members, and subcontractors and is applicable if this contract contains small disadvantaged business (SDB) participation targets. The Contractor shall obtain representations of small disadvantaged status from joint venture partners, teaming arrangement members, and subcontractors through use of a provision substantially the same as paragraph (b)(1)(i) of the provision at FAR 52.219-22, Small Disadvantaged Business Status. The Contractor shall confirm that a joint venture partner, team member, or subcontractor representing itself as a small disadvantaged business concern is included in the SBA's on-line list of SDBs at <http://www.sba.gov> or by contacting the SBA's Office of Small Disadvantaged Business Certification and Eligibility.
- (b) Reporting requirement. If this contract contains SDB participation targets, the Contractor shall report on the participation of SDB concerns at contract completion, or as otherwise provided in this contract. Reporting may be on Optional Form 312, Small Disadvantaged Business Participation Report, or in the Contractor's own format providing the same information. This report is required for each contract containing SDB participation targets. If this contract contains an individual Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan, reports may be submitted with the final Subcontracting Report for Individual Contracts (Standard Form 294) at the completion of the contract.

I.17 SERVICE CONTRACT ACT OF 1965, AS AMENDED (FAR 52.222-41) (MAY 1989)

(a) **Definitions.** "Act," as used in this clause, means the Service Contract Act of 1965, as amended (41 U.S.C. 351, et seq.).

"Contractor," as used in this clause or in any subcontract, shall be deemed to refer to the subcontractor, except in the term "Government Prime Contractor."

"Service employee," as used in this clause, means any person engaged in the performance of this contract other than any person employed in a bona fide executive, administrative, or professional capacity, as these terms are defined in Part 541 of Title 29, Code of Federal Regulations, as revised. It includes all such persons regardless of any contractual relationship that may be alleged to exist between a Contractor or subcontractor and such persons.

(b) **Applicability.** This contract is subject to the following provisions and to all other applicable provisions of the Act and regulations of the Secretary of Labor (29 CFR Part 4). This clause does not apply to contracts or subcontracts administratively exempted by the Secretary of Labor or exempted by 41 U.S.C. 356, as interpreted in Subpart C of 29 CFR Part 4.

(c) **Compensation.**

(1) Each service employee employed in the performance of this contract by the Contractor or any subcontractor shall be paid not less than the minimum monetary wages and shall be furnished

fringe benefits in accordance with the wages and fringe benefits determined by the Secretary of Labor, or authorized representative, as specified in any wage determination attached to this contract.

(2) (i) If a wage determination is attached to this contract, the Contractor shall classify any class of service employee which is not listed therein and which is to be employed under this contract (i.e., the work to be performed is not performed by any classification listed in the wage determination) so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed class of employees shall be paid the monetary wages and furnished the fringe benefits as are determined pursuant to the procedures in this paragraph (c).

(ii) This conforming procedure shall be initiated by the Contractor prior to the performance of contract work by the unlisted class of employee. The Contractor shall submit Standard Form (SF) 1444, Request For Authorization of Additional Classification and Rate, to the Contracting Officer no later than 30 days after the unlisted class of employee performs any contract work. The Contracting Officer shall review the proposed classification and rate and promptly submit the completed SF 1444 (which must include information regarding the agreement or disagreement of the employees' authorized representatives or the employees themselves together with the agency recommendation), and all pertinent information to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor. The Wage and Hour Division will approve, modify, or disapprove the action or render a final determination in the event of disagreement within 30 days of receipt or will notify the Contracting Officer within 30 days of receipt that additional time is necessary.

(iii) The final determination of the conformance action by the Wage and Hour Division shall be transmitted to the Contracting Officer who shall promptly notify the Contractor of the action taken. Each affected employee shall be furnished by the Contractor with a written copy of such determination or it shall be posted as a part of the wage determination.

(iv) (A) The process of establishing wage and fringe benefit rates that bear a reasonable relationship to those listed in a wage determination cannot be reduced to any single formula. The approach used may vary from wage determination to wage determination depending on the circumstances. Standard wage and salary administration practices which rank various job classifications by pay grade pursuant to point schemes or other job factors may, for example, be relied upon. Guidance may also be obtained from the way different jobs are rated under Federal pay systems (Federal Wage Board Pay System and the General Schedule) or from other wage determinations issued in the same locality. Basic to the establishment of any conformable wage rate(s) is the concept that a pay relationship should be maintained between job classifications based on the skill required and the duties performed.

(B) In the case of a contract modification, an exercise of an option, or extension of an existing contract, or in any other case where a Contractor succeeds a contract under which the classification in question was previously conformed pursuant to paragraph (c) of this clause, a new conformed wage rate and fringe benefits may be assigned to the conformed classification by indexing (i.e., adjusting) the previous conformed rate and fringe benefits by an amount equal to the average (mean) percentage increase (or decrease, where appropriate) between the wages and fringe benefits specified for all classifications to be used on the contract which are listed in the current wage determination, and those specified for the corresponding classifications in the previously applicable wage determination. Where conforming actions are accomplished in accordance with this paragraph prior to the performance of contract work by the unlisted class of employees, the Contractor shall advise the Contracting Officer of the action taken but the other procedures in subdivision (c)(ii) of this clause need not be followed.

(C) No employee engaged in performing work on this contract shall in any event be paid less than the currently applicable minimum wage specified under section 6(a)(1) of the Fair Labor Standards Act of 1938, as amended.

(v) The wage rate and fringe benefits finally determined under this subparagraph (c)(2) of this clause shall be paid to all employees performing in the classification from the first day on which contract work is performed by them in the classification. Failure to pay the unlisted employees the compensation agreed upon by the interested parties and/or finally determined by the Wage and Hour Division retroactive to the date such class of employees commenced contract work shall be a violation of the Act and this contract.

(vi) Upon discovery of failure to comply with subparagraph (c)(2) of this clause, the Wage and Hour Division shall make a final determination of conformed classification, wage rate, and/or fringe benefits which shall be retroactive to the date such class or classes of employees commenced contract work.

(3) **Adjustment of Compensation.** If the term of this contract is more than 1 year, the minimum monetary wages and fringe benefits required to be paid or furnished thereunder to service employees under this contract shall be subject to adjustment after 1 year and not less often than once every 2 years, under wage determinations issued by the Wage and Hour Division.

(d) **Obligation to Furnish Fringe Benefits.** The Contractor or subcontractor may discharge the obligation to furnish fringe benefits specified in the attachment or determined under subparagraph (c)(2) of this clause by furnishing equivalent combinations of bona fide fringe benefits, or by making equivalent or differential cash payments, only in accordance with Subpart D of 29 CFR Part 4.

(e) **Minimum Wage.** In the absence of a minimum wage attachment for this contract, neither the Contractor nor any subcontractor under this contract shall pay any person performing work under this contract (regardless of whether the person is a service employee) less than the minimum wage specified by section 6(a)(1) of the Fair Labor Standards Act of 1938. Nothing in this clause shall relieve the Contractor or any subcontractor of any other obligation under law or contract for the payment of a higher wage to any employee.

(f) **Successor Contracts.** If this contract succeeds a contract subject to the Act under which substantially the same services were furnished in the same locality and service employees were paid wages and fringe benefits provided for in a collective bargaining agreement, in the absence of the minimum wage attachment for this contract setting forth such collectively bargained wage rates and fringe benefits, neither the Contractor nor any subcontractor under this contract shall pay any service employee performing any of the contract work (regardless of whether or not such employee was employed under the predecessor contract), less than the wages and fringe benefits provided for in such collective bargaining agreement, to which such employee would have been entitled if employed under the predecessor contract, including accrued wages and fringe benefits and any prospective increases in wages and fringe benefits provided for under such agreement. No Contractor or subcontractor under this contract may be relieved of the foregoing obligation unless the limitations of 29 CFR 4.1b(b) apply or unless the Secretary of Labor or the Secretary's authorized representative finds, after a hearing as provided in 29 CFR 4.10 that the wages and/or fringe benefits provided for in such agreement are substantially at variance with those which prevail for services of a character similar in the locality, or determines, as provided in 29 CFR 4.11, that the collective bargaining agreement applicable to service employees employed under the predecessor contract was not entered into as a result of arm's length negotiations. Where it is found in accordance with the review procedures provided in 29 CFR 4.10 and/or 4.11 and Parts 6 and 8 that some or all of the wages and/or fringe benefits contained in a predecessor Contractor's collective bargaining agreement are substantially at variance with those which prevail for services of a character similar in the locality, and/or that the collective bargaining agreement applicable to service employees employed under the predecessor contract was not entered into as a result of arm's length negotiations, the Department will issue a new or revised wage determination setting forth the applicable wage rates and fringe benefits. Such determination shall be made part of the contract or subcontract, in accordance with the decision of the Administrator, the Administrative Law Judge, or the Board of Service Contract Appeals, as the case may be, irrespective of whether such issuance occurs prior to or after the award of a contract or subcontract (53 Comp. Gen. 401 (1973)). In the case of a wage determination issued solely as a result of a finding of substantial variance, such determination shall be effective as of the date of the final administrative decision.

(g) **Notification to Employees.** The Contractor and any subcontractor under this contract shall notify each service employee commencing work on this contract of the minimum monetary wage and any fringe benefits required to be paid pursuant to this contract, or shall post the wage determination attached to this contract. The poster provided by the Department of Labor (Publication WH 1313) shall be posted in a prominent and accessible place at the worksite. Failure to comply with this requirement is a violation of Section 2(a)(4) of the Act and of this contract.

(h) **Safe and Sanitary Working Conditions.** The Contractor or subcontractor shall not permit any part of the services called for by this contract to be performed in buildings or surroundings or under working conditions provided by or under the control or supervision of the Contractor or subcontractor which are unsanitary, hazardous, or dangerous to the health or safety of the service employees. The

Contractor or subcontractor shall comply with the safety and health standards applied under 29 CFR Part 1925.

(i) **Records.** (1) The Contractor and each subcontractor performing work subject to the Act shall make and maintain for 3 years from the completion of the work, and make them available for inspection and transcription by authorized representatives of the Wage and Hour Division, Employment Standards Administration, a record of the following:

(i) For each employee subject to the Act -

(A) Name and address and social security number;

(B) Correct work classification or classifications, rate or rates of monetary wages paid and fringe benefits provided, rate or rates of payments in lieu of fringe benefits, and total daily and weekly compensation;

(C) Daily and weekly hours worked by each employee; and

(D) Any deductions, rebates, or refunds from the total daily or weekly compensation of each employee.

(ii) For those classes of service employees not included in any wage determination attached to this contract, wage rates or fringe benefits determined by the interested parties or by the Administrator or authorized representative, under the terms of paragraph (c) of this clause. A copy of the report required by subdivision (c)(2)(ii) of this clause will fulfill this requirement.

(iii) Any list of the predecessor Contractor's employees which had been furnished to the Contractor as prescribed by paragraph (n) of this clause.

(2) The Contractor shall also make available a copy of this contract for inspection or transcription by authorized representatives of the Wage and Hour Division.

(3) Failure to make and maintain or to make available these records for inspection and transcription shall be a violation of the regulations and this contract, and in the case of failure to produce these records, the Contracting Officer, upon direction of the Department of Labor and notification to the Contractor, shall take action to cause suspension of any further payment or advance of funds until such violation ceases.

(4) The Contractor shall permit authorized representatives of the Wage and Hour Division to conduct interviews with employees at the worksite during normal working hours.

(j) **Pay Periods.** The Contractor shall unconditionally pay to each employee subject to the Act all wages due free and clear and without subsequent deduction (except as otherwise provided by law or Regulations, 29 CFR Part 4), rebate, or kickback on any account. These payments shall be made no later than one pay period following the end of the regular pay period in which the wages were earned or accrued. A pay period under this Act may not be of any duration longer than semi-monthly.

(k) **Withholding of Payment and Termination of Contract.** The Contracting Officer shall withhold or cause to be withheld from the Government Prime Contractor under this or any other Government contract with the Prime Contractor such sums as an appropriate official of the Department of Labor requests or such sums as the Contracting Officer decides may be necessary to pay underpaid employees employed by the Contractor or subcontractor. In the event of failure to pay any employees subject to the Act all or part of the wages or fringe benefits due under the Act, the Contracting Officer may, after authorization or by direction of the Department of Labor and written notification to the Contractor, take action to cause suspension of any further payment or advance of funds until such violations have ceased. Additionally, any failure to comply with the requirements of this clause may be grounds for termination of the right to proceed with the contract work. In such event, the Government may enter into other contracts or arrangements for completion of the work, charging the Contractor in default with any additional cost.

(l) **Subcontracts.** The Contractor agrees to insert this clause in all subcontracts subject to the Act.

(m) **Collective Bargaining Agreements Applicable to Service Employees.** If wages to be paid or fringe benefits to be furnished any service employees employed by the Government Prime Contractor or any subcontractor under the contract are provided for in a collective bargaining agreement which is or will be effective during any period in which the contract is being performed, the Government Prime Contractor shall report this fact to the Contracting Officer, together with full information as to the application and accrual of such wages and fringe benefits, including any prospective increases, to service employees engaged in work on the contract, and a copy of the collective bargaining agreement. Such report shall be made upon commencing performance of the contract, in the case of collective bargaining

agreements effective at such time, and in the case of such agreements or provisions or amendments thereof effective at a later time during the period of contract performance such agreements shall be reported promptly after negotiation thereof.

(n) **Seniority List.** Not less than 10 days prior to completion of any contract being performed at a Federal facility where service employees may be retained in the performance of the succeeding contract and subject to a wage determination which contains vacation or other benefit provisions based upon length of service with a Contractor (predecessor) or successor (29 CFR Part 4.173), the incumbent Prime Contractor shall furnish the Contracting Officer a certified list of the names of all service employees on the Contractor's or subcontractor's payroll during the last month of contract performance. Such list shall also contain anniversary dates of employment on the contract either with the current or predecessor Contractors of each such service employee. The Contracting Officer shall turn over such list to the successor Contractor at the commencement of the succeeding contract.

(o) **Rulings and Interpretations.** Rulings and interpretations of the Act are contained in Regulations, 29 CFR Part 4.

(p) **Contractor's Certification.**

(1) By entering into this contract, the Contractor (and officials thereof) certifies that neither it (nor he or she) nor any person or firm who has substantial interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of the sanctions imposed under section 5 of the Act.

(2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract under section 5 of the Act.

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(q) **Variations, Tolerances, and Exemptions Involving Employment.** Notwithstanding any of the provisions in paragraphs (b) through (o) of this clause, the following employees may be employed in accordance with the following variations, tolerances, and exemptions, which the Secretary of Labor, pursuant to section 4(b) of the Act prior to its amendment by Public L. 92-473, found to be necessary and proper in the public interest or to avoid serious impairment of the conduct of Government business.

(1) Apprentices, student-learners, and workers whose earning capacity is impaired by age, physical or mental deficiency, or injury may be employed at wages lower than the minimum wages otherwise required by section 2(a)(1) or 2(b)(1) of the Act without diminishing any fringe benefits or cash payments in lieu thereof required under section 2(a)(2) of the Act, in accordance with the conditions and procedures prescribed for the employment of apprentices, student-learners, handicapped persons, and handicapped clients of sheltered workshops under Section 14 of the Fair Labor Standards Act of 1938, in the regulations issued by the Administrator (29 CFR Parts 520, 521, 524, and 525).

(2) The Administrator will issue certificates under the Act for the employment of apprentices, student-learners, handicapped persons, or handicapped clients of sheltered workshops not subject to the Fair Labor Standards Act of 1938, or subject to different minimum rates of pay under the two acts, authorizing appropriate rates of minimum wages (but without changing requirements concerning fringe benefits or supplementary cash payments in lieu thereof), applying procedures prescribed by the applicable regulations issued under the Fair Labor Standards Act of 1938 (29 CFR Parts 520, 521, 524, and 525).

(3) The Administrator will also withdraw, annul, or cancel such certificates in accordance with the regulations in 29 CFR Parts 525 and 528.

(r) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed and individually registered in a bona fide apprenticeship program registered with a State Apprenticeship Agency which is recognized by the U.S. Department of Labor, or if no such recognized agency exists in a State, under a program registered with the Bureau of Apprenticeship and Training, Employment and Training Administration, U.S. Department of Labor. Any employee who is not registered as an apprentice in an approved program shall be paid the wage rate and fringe benefits contained in the applicable wage determination for the journeyman classification of work actually performed. The wage rates paid apprentices shall not be less than the wage rate for their level of progress set forth in the registered program, expressed as the appropriate percentage of the journeyman's rate contained in the applicable wage determination. The allowable ratio of apprentices to journeymen employed on the contract work in any craft classification shall not be greater than the ratio permitted to the Contractor as to his entire work force under the registered program.

(s) **Tips.** An employee engaged in an occupation in which the employee customarily and regularly receives more than \$30 a month in tips may have the amount of tips credited by the employer against the minimum wage required by section 2(a)(1) or section 2(b)(1) of the Act, in accordance with section 3(m) of the Fair Labor Standards Act and Regulations 29 CFR Part 531. However, that the amount of credit shall not exceed \$1.34 per hour beginning January 1, 1981. To use this provision -

(1) The employer must inform tipped employees about this tip credit allowance before the credit is utilized;

(2) The employees must be allowed to retain all tips (individually or through a pooling arrangement and regardless of whether the employer elects to take a credit for tips received);

(3) The employer must be able to show by records that the employee receives at least the applicable Service Contract Act minimum wage through the combination of direct wages and tip credit; and

(4) The use of such tip credit must have been permitted under any predecessor collective bargaining agreement applicable by virtue of section 4(c) of the Act.

(t) **Disputes Concerning Labor Standards.** The U.S. Department of Labor has set forth in 29 CFR Parts 4, 6, and 8 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**I.18 HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (FAR 52.223-3)
(JAN 1997)—ALTERNATE I (JUL 1995)**

(a) "Hazardous material," as used in this clause, includes any material defined as hazardous under the latest version of Federal Standard No. 313 (including revisions adopted during the term of the contract.

(b) The offeror must list any hazardous material, as defined in paragraph (a) of this clause, to be delivered under this contract. The hazardous material shall be properly identified and include any applicable identification number, such as National Stock Number or Special Item Number. This information shall also be included on the Material Safety Data Sheet submitted under this contract.

Material [If none, insert *None*]

Identification No.

(c) This list must be updated during performance of the contract whenever the Contractor determines that any other material to be delivered under this contract is hazardous.

(d) The apparently successful offeror agrees to submit, for each item as required, prior to award, a Material Safety Data Sheet, meeting the requirements of 29 CFR 1910.1200(g) and the latest version of Federal Standard No. 313, for all hazardous material identified in paragraph (b) of this clause. Data shall be submitted in accordance with Federal Standard No. 313, whether or not the apparently successful offeror is the actual manufacturer of these items. Failure to submit the Material Safety Data Sheet prior to award may result in the apparently successful offeror being considered nonresponsible and ineligible for award.

(e) If, after award, there is a change in the composition of the item(s) or a revision to Federal Standard No. 313, which renders incomplete or inaccurate the data submitted under Paragraph (d) of this clause, the Contractor shall promptly notify the Contracting Officer and resubmit the data.

(f) Neither the requirements of this clause nor any act or failure to act by the Government shall relieve the Contractor of any responsibility or liability for the safety of Government, Contractor, or subcontractor personnel or property.

(g) Nothing contained in this clause shall relieve the Contractor from complying with applicable Federal, State, and local laws, codes, ordinances, and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

(h) The Government's rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate, and disclose any data to which this clause is applicable. The purposes of this right are to—

(i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials;

(ii) Obtain medical treatment for those affected by the material; and

(iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h)(1) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

(i) Except as provided in paragraph (i)(2), the Contractor shall prepare and submit a sufficient number of Material Safety Data Sheets (MSDS's), meeting the requirements of 29 CFR 1910.1200(g) and the latest version of Federal Standard

No. 313, for all hazardous materials identified in paragraph (b) of this clause.

(1) For items shipped to consignees, the Contractor shall include a copy of the MSDS's with the packing list or other suitable shipping document which accompanies each shipment. Alternatively, the Contractor is permitted to transmit MSDS's to consignees, in advance of receipt of shipments by consignees, if authorized in writing by the Contracting Officer.

(2) For items shipped to consignees identified by mailing address as agency depots, distribution centers or customer supply centers, the Contractor shall provide one copy of the MSDS's in or on each shipping container. If affixed to the outside of each container, the MSDS's must be placed in a weather resistant envelope.

I.19 PROMPT PAYMENT (FAR 52.232-25) (JUN 1997)

Notwithstanding any other payment clause in this contract, the Government will make invoice payments and contract financing payments under the terms and conditions specified in this clause. Payment shall be considered as being made on the day a check is dated or the date of an electronic funds transfer. Definitions of pertinent terms are set forth in section 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see subparagraph (a)(4) of this clause concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments—(1) Due date. (i) Except as indicated in subparagraph (a)(2) and paragraph (c) of this clause, the due date for making invoice payments by the designated payment office shall be the later of the following two events:

(A) The 30th day after the designated billing office has received a proper invoice from the Contractor (except as provided in subdivision (a)(1)(ii) of this clause).

(B) The 30th day after Government acceptance of supplies delivered or services performed by the Contractor. On a final invoice where the payment amount is subject to contract settlement actions, acceptance shall be deemed to have occurred on the effective date of the contract settlement.

(ii) If the designated billing office fails to annotate the invoice with the actual date of receipt at the time of receipt, the invoice payment due date shall be the 30th day after the date of the Contractor's invoice; provided a proper invoice is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(2) Certain food products and other payments. (i) Due dates on Contractor invoices for meat, meat food products, or fish; perishable agricultural commodities; and dairy products, edible fats or oils, and food products prepared from edible fats or oils are—

(A) For meat or meat food products, as defined in section 2(a)(3) of the Packers and Stockyard Act of 1921 (7 U.S.C. 182(3)), and as further defined in Pub. L. 98-181, including any edible fresh or frozen poultry meat, any perishable poultry meat food product, fresh eggs, and any perishable egg product, as close as possible to, but not later than, the 7th day after product delivery.

(B) For fresh or frozen fish, as defined in section 204(3) of the Fish and Seafood Promotion Act of 1986 (16 U.S.C. 4003(3)), as close as possible to, but not later than, the 7th day after product delivery.

(C) For perishable agricultural commodities, as defined in section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(4)), as close as possible to, but not later than, the 10th day after product delivery, unless another date is specified in the contract.

(D) For dairy products, as defined in section 111(e) of the Dairy Production Stabilization Act of 1983 (7 U.S.C. 4502(e)), edible fats or oils, and food products prepared from edible fats or oils, as close as possible to, but not later than, the 10th day after the date on which a proper invoice has been received. Liquid milk, cheese, certain processed cheese products, butter, yogurt, ice cream, mayonnaise, salad dressings, and other similar products, fall within this classification. Nothing in the Act limits this classification to refrigerated products. When questions arise regarding the proper classification of a specific product, prevailing industry practices will be followed in specifying a contract payment due date. The burden of proof that a classification of a specific product is, in fact, prevailing industry practice is upon the Contractor making the representation.

(ii) If the contract does not require submission of an invoice for payment (e.g., periodic lease payments), the due date will be as specified in the contract.

(3) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in subdivisions (a)(3)(i) through (a)(3)(viii) of this clause. If the invoice does not comply with these requirements, it shall be returned within 7 days after the date the designated billing office received the invoice (3 days for meat, meat food products, or fish; 5 days for perishable agricultural commodities, edible fats or oils, and food products prepared from edible fats or oils), with a statement of the reasons why it is not a proper invoice. Untimely notification will be taken into account in computing any interest penalty owed the Contractor in the manner described in subparagraph (a)(5) of this clause.

(i) Name and address of the Contractor.

(ii) Invoice date. (The Contractor is encouraged to date invoices as close as possible to the date of the mailing or transmission.)

(iii) Contract number or other authorization for supplies delivered or services performed (including order number and contract line item number).

(iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.

(v) Shipping and payment terms (e.g., shipment number and date of shipment, prompt payment discount terms). Bill of lading number and weight of shipment will be shown for shipments on Government bills of lading.

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to be notified in the event of a defective invoice.

(viii) Any other information or documentation required by the contract (such as evidence of shipment).

(ix) While not required, the Contractor is strongly encouraged to assign an identification number to each invoice.

(4) Interest penalty. An interest penalty shall be paid automatically by the designated payment office, without request from the Contractor, if payment is not made by the due date and the conditions listed in subdivisions (a)(4)(i) through (a)(4)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday when Federal Government offices are closed and Government business is not expected to be conducted, payment may be made on the following business day without incurring a late payment interest penalty.

(i) A proper invoice was received by the designated billing office.

(ii) A receiving report or other Government documentation authorizing payment was processed, and there was no disagreement over quantity, quality, or Contractor compliance with any contract term or condition.

(iii) In the case of a final invoice for any balance of funds due the Contractor for supplies delivered or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(5) Computing penalty amount. The interest penalty shall be at the rate established by the Secretary of the Treasury under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date, except where the interest penalty is prescribed by other governmental authority (e.g., tariffs). This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the invoice principal payment amount approved by the Government until the payment date of such approved principal amount; and will be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period will be added to the approved invoice principal payment amount and will be subject to interest penalties if not paid in the succeeding 30-day period. If the designated billing office failed to notify the Contractor of a defective invoice within the periods prescribed in subparagraph (a)(3) of this clause, the due date on the corrected invoice will be adjusted by subtracting from such date the number of days taken beyond the prescribed notification of defects period. Any interest penalty owed the Contractor will be based on this adjusted due date. Adjustments will be made by the designated payment office for errors in calculating interest penalties.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor, Government acceptance shall be deemed to have occurred constructively on the 7th day (unless otherwise specified in this contract) after the Contractor delivered the supplies or performed the services in accordance with the terms and conditions of the contract, unless there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. In the event that actual acceptance occurs within the constructive acceptance period, the determination of an interest penalty shall be based on the actual date of acceptance. The constructive acceptance requirement does not, however, compel Government officials to accept supplies or services, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The following periods of time will not be included in the determination of an interest penalty:

(A) The period taken to notify the Contractor of defects in invoices submitted to the Government, but this may not exceed 7 days (3 days for meat, meat food products, or fish; 5 days for perishable agricultural commodities, dairy products, edible fats or oils, and food products prepared from edible fats or oils).

(B) The period between the defects notice and resubmission of the corrected invoice by the Contractor.

(C) For incorrect electronic funds transfer (EFT) information, in accordance with the EFT clause of this contract.

(iii) Interest penalties will not continue to accrue after the filing of a claim for such penalties under the clause at 52.233-1, Disputes, or for more than 1 year. Interest penalties of less than \$1 need not be paid.

(iv) Interest penalties are not required on payment delays due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance or on amounts temporarily withheld or retained in accordance with the terms of the contract. Claims involving disputes, and any interest that may be payable, will be resolved in accordance with the clause at 52.233-1, Disputes.

(6) Prompt payment discounts. An interest penalty also shall be paid automatically by the designated payment office, without request from the Contractor, if a discount for prompt payment is taken improperly. The interest penalty will be calculated as described in subparagraph (a)(5) of this clause on the amount of discount taken for the period beginning with the first day after the end of the discount period through the date when the Contractor is paid.

(7) Additional interest penalty. (i) A penalty amount, calculated in accordance with subdivision (a)(7)(iii) of this clause, shall be paid in addition to the interest penalty amount if the Contractor—

- (A) Is owed an interest penalty of \$1 or more;
- (B) Is not paid the interest penalty within 10 days after the date the invoice amount is paid; and
- (C) Makes a written demand to the designated payment office for additional penalty payment, in accordance with subdivision (a)(7)(ii) of this clause, postmarked not later than 40 days after the invoice amount is paid.
- (ii)(A) Contractors shall support written demands for additional penalty payments with the following data. No additional data shall be required. Contractors shall—
- (1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;
 - (2) Attach a copy of the invoice on which the unpaid late payment interest was due; and
 - (3) State that payment of the principal has been received, including the date of receipt.
- (B) Demands must be postmarked on or before the 40th day after payment was made, except that—
- (1) If the postmark is illegible or nonexistent, the demand must have been received and annotated with the date of receipt by the designated payment office on or before the 40th day after payment was made; or
 - (2) If the postmark is illegible or nonexistent and the designated payment office fails to make the required annotation, the demand's validity will be determined by the date the Contractor has placed on the demand; provided such date is no later than the 40th day after payment was made.
- (iii)(A) The additional penalty shall be equal to 100 percent of any original late payment interest penalty except—
- (1) The additional penalty shall not exceed \$5,000;
 - (2) The additional penalty shall never be less than \$25; and
 - (3) No additional penalty is owed if the amount of the underlying interest penalty is less than \$1.
- (B) If the interest penalty ceases to accrue in accordance with the limits stated in subdivision (a)(5)(iii) of this clause, the amount of the additional penalty shall be calculated on the amount of interest penalty that would have accrued in the absence of these limits, subject to the overall limits on the additional penalty specified in subdivision (a)(7)(iii)(A) of this clause.
- (C) For determining the maximum and minimum additional penalties, the test shall be the interest penalty due on each separate payment made for each separate contract. The maximum and minimum additional penalty shall not be based upon individual invoices unless the invoices are paid separately. Where payments are consolidated for disbursing purposes, the maximum and minimum additional penalty determination shall be made separately for each contract therein.
- (D) The additional penalty does not apply to payments regulated by other Government regulations (e.g., payments under utility contracts subject to tariffs and regulation).
- (b) Contract financing payments—(1) Due dates for recurring financing payments. If this contract provides for contract financing, requests for payment shall be submitted to the designated billing office as specified in this contract or as directed by the Contracting Officer. Contract financing payments shall be made on the [insert day as prescribed by Agency head; if not prescribed, insert 30th day] day after receipt of a proper contract financing request by the designated billing office. In the event that an audit or other review of a specific financing request is required to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the due date specified.
- (2) Due dates for other contract financing. For advance payments, loans, or other arrangements that do not involve recurring submissions of contract financing requests, payment shall be made in accordance with the corresponding contract terms or as directed by the Contracting Officer.
 - (3) Interest penalty not applicable. Contract financing payments shall not be assessed an interest penalty for payment delays.
- (c) Fast payment procedure due dates. If this contract contains the clause at 52.213-1, Fast Payment Procedure, payments will be made within 15 days after the date of receipt of the invoice.

(1) The Contractor shall submit a personnel security questionnaire (NASA Form 531, Name Check Request, for National Agency Check (NAC) investigations and Standard Form 85P, Questionnaire for Public Trust Positions, for specified sensitive positions) and a Fingerprint Card (FD-258 with NASA overprint in Origin Block) to the installation Security Officer for each Contractor employee who requires access. The required forms may be obtained from the installation security office. Employees may have finger-prints taken at the NASA Contract Badge and Pass Office, located at 1 Langley Boulevard (Building No. 1228), only between the hours of 6:30 a.m. and 4:30 p.m., Monday through Friday, or at any police department.

(i) Several months may be required for completion of complex personnel screening investigations. Background screening may not be required for employees with recent or current Federal Government investigations.

(ii) When employee access is necessary prior to completion of personnel screening, each Contractor employee requiring access may be considered for escorted access. The installation Security Officer will establish the eligibility of proposed escorts.

(2) The Contractor shall ensure that each Contractor employee requiring access executes any user responsibility agreements required by the Government prior to access. The Contractor shall provide signed copies of the agreements to the installation Security Officer for inclusion in the employee's security file. Unauthorized access is a violation of law and punishable under the provisions of 18 U.S.C. 1029, 18 U.S.C. 1030 and other applicable statutes.

(3) The Contractor shall notify the installation AIS Manager no later than the end of the day of the termination for cause of an authorized employee's access. The Contractor shall notify the COTR no later than 10 days after an authorized employee no longer requires access for any other type of termination. Verbal notifications shall be confirmed in writing within 30 days.

(b) The Contractor shall incorporate this clause in all subcontracts where the requirements identified in paragraph (a) of this clause are applicable to performance of the subcontract.

I.24 OMBUDSMAN (NASA 1852.215-84) (OCT 1996)

An ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and Contractors during the preaward and postaward phases of this acquisition. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman is not to diminish the authority of the Contracting Officer, the Source Evaluation Board, or the selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of formal contract disputes. Therefore, before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the Contracting Officer for resolution. If resolution cannot be made by the Contracting Officer, interested parties may contact the installation ombudsman, Belinda Adams, direct inquiries to Sandra S. Ray at (757) 864-2428. Concerns, issues, disagreements, and recommendations which cannot be resolved at the installation may be referred to the NASA ombudsman, the Deputy Administrator for Procurement, Thomas S. Luedtke, at 202-358-2090. Please do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the Contracting Officer or as specified elsewhere in this document.

I.25 AWARD FEE FOR SERVICE CONTRACTS (FAR 1852.216-76) (MARCH 1998)

(a) The contractor can earn award fee from a minimum of zero dollars to the maximum stated in Section B.4, Award Fee.

(b) Beginning 6 months after the effective date of this contract, the Government shall evaluate the Contractor's performance every 6 months to determine the amount of award fee earned by the contractor during the period. The Contractor may submit a self-evaluation of performance for each evaluation period under consideration. These self-evaluations will be considered by the Government in its evaluation. The Government's Fee Determination Official (FDO) will determine the award fee amounts based on the Contractor's performance in accordance with the Performance Evaluation Plan. The plan may be revised unilaterally by the Government prior to the beginning of any rating period to redirect emphasis.

(c) The Government will advise the Contractor in writing of the evaluation results. The Financial Management Division will make payment based on issuance of unilateral modification by Contracting Officer that will recognize the award fee earned.

(d) After 85 percent of the potential award fee has been paid, the Contracting Officer may direct the withholding of further payment of award fee until a reserve is set aside in an amount that the Contracting Officer considers necessary to protect the Government's interest. This reserve shall not exceed 15 percent of the total potential award fee.

(e) The amount of award fee which can be awarded in each evaluation period is limited to the amounts set forth at Section B, Award Fee. Award fee which is not earned in an evaluation period cannot be reallocated to future evaluation periods.

(f) (1) Provisional award fee payments will not be made under this contract pending the determination of the amount of fee earned for an evaluation period. If applicable, provisional award fee payments will be made to the Contractor on a N/A. The total amount of award fee available in an evaluation period that will be provisionally paid is the lesser of 0 or the prior period's evaluation score.

(2) Provisional award fee payments will be superseded by the final award fee evaluation for that period. If provisional payments exceed the final evaluation score, the Contractor will either credit the next payment voucher for the amount of such overpayment or refund the difference to the Government, as directed by the Contracting Officer.

(3) If the Contracting Officer determines that the Contractor will not achieve a level of performance commensurate with the provisional rate, payment of provisional award fee will be discontinued or reduced in such amounts as the Contracting Officer deems appropriate. The Contracting Officer will notify the Contractor in writing if it is determined that such discontinuance or reduction is appropriate. This determination is not subject to the Disputes clause.

(4) Provisional award fee payments will not be made prior to the first award fee determination by the Government.

(g) Award fee determinations made by the Government under this contract are not subject to the Disputes clause.

I.26 OBSERVANCE OF LEGAL HOLIDAYS (NASA 1852.242-72) (AUG 1992) ALTERNATE I (SEP 1989)

(a) The on-site Government personnel observe the following holidays:

New Year's Day
 Labor Day
 Martin Luther King Jr.'s Birthday
 Columbus Day
 President's Day
 Veterans Day
 Memorial Day
 Thanksgiving Day
 Independence Day
 Christmas Day

Any other day designated by Federal statute, Executive Order, or the President's proclamation.

(b) When any holiday falls on a Saturday, the preceding Friday is observed. When any holiday falls on a Sunday, the following Monday is observed. Observance of such days by Government personnel

shall not by itself be cause for an additional period of performance or entitlement of compensation except as set forth within the contract.

(c) On-site personnel assigned to this contract shall not be granted access to the installation during the holidays in paragraph (a) above, except as follows: the Contractor shall provide sufficient on-site personnel to perform Duty Officer and steam plant requirements as defined in the Statement Work and critical IQ work as directed by the Government.

(d) The Contractor shall place identical requirements, including this paragraph, in all subcontracts that require performance of work on-site, unless otherwise instructed by the Contracting Officer.

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS**SECTION J - LIST OF EXHIBITS AND ATTACHMENTS**

Exhibit A	Reserved
Exhibit B	Contract Documentation Requirements
Exhibit C	Small Business Subcontracting Plan
Exhibit D	Register of Wage Determinations and Fringe Benefits
Exhibit E	Collective Bargaining Agreements
Exhibit F	Y2K Guideline and Compliance Verification Form
Exhibit G	Performance Requirements Summary (PRS)
Exhibit H	Example of Contractor Deductions
Exhibit I	Schedule of Deductions
Attachment J-TOC	Table of Contents
Attachment J-2	Acronyms
Attachment J-C1	Inventory of Buildings, Structures, Equipment and/or Systems (All of J-C1 will remain part of the contract except J-C1 - 21B)
Attachment J-C2	Government Furnished Facilities
Attachment J-C3	Government Furnished Property - 5A Tools and Miscellaneous Property - 5B Government Furnished Furniture - 5C Government Installation Accountable Government Property - 5D Government Furnished Vehicles
Attachment J-C4	Government Furnished Material
Attachment J-C6	List of Required Records and Reports
Attachment J-C9	Preventive Maintenance Program
Attachment J-C10	Predictive Testing and Inspection
Attachment J-C14	Roofing Inspection Schedule
Attachment J-C16	HVAC Filter Sizes by Facility
Attachment J-C17	Cooling Tower Systems Chemical Treatment Requirements
Attachment J-C18	Water Treatment
Attachment J-C19-17	Corrosion Control and Coating Services Paint Schedule
Attachment J-C21	Requirements for Removing Snow and Ice
Attachment J-C25	List of Meters to be Read
Attachment J-C27	Energy Management and Control System

Attachment J-C33 Equipment Procurement Clauses and In-Service and Acceptance Criteria
Attachment J-H1 Directives/Reference Manuals/Publications

EXHIBIT B - CONTRACT DOCUMENTATION REQUIREMENTS

I. DOCUMENTATION PREPARATION/SUBMISSION INSTRUCTIONS

A. **Safety and Health Plan**—Within 30 calendar days after the effective date of the contract, the Contractor shall submit a detailed safety and health plan showing how the Contractor intends to protect the life, health, and well being of NASA and Contractor employees as well as property and equipment. This plan, as approved by the Contracting Officer, should contain, as a minimum the following:

1. **Points of Contact and Responsibility**—Organizational flow chart and description of responsibilities of each employee in your organization for safety.

2. **Employee Safety Training, Certification and Programs**—Detailed information on type of training required, parties responsible for certification, and outline of applicable regulations. Detail company programs which emphasize personal safety and motivate employees to be safety conscious.

3. **LaRC Safety Policies/Procedures**—Recognition of applicable LaRC safety policies and procedures such as Langley Handbook 1710.10, LaRC Red Tag System.

4. **Accident Investigation and Reporting**—Procedures for investigating and reporting accidents/incidents including immediate notification to the NASA LaRC Safety Manager of all injuries and damage to equipment or facilities. Procedures for responding to a LaRC notice of safety violation.

5. **Hazardous Operations**—

a. Description of hazardous operations involved in contract performance.

b. Plans for apprising employees of all hazards to which they may be exposed.

c. Proper conditions and precautions for safe use and exposure to hazardous operations. Include recognition of LHB 1710.12, Potentially Hazardous Materials.

6. **People with Disabilities**—In accordance with the Americans with Disabilities Act, the plans should specify that prior to assigning a person with disabilities to this contract, the Contractor shall contact the Disability Program Manager at (804) 864-7718.

7. **Other Safety Considerations**—Any other safety considerations unique to your operation.

B. **Quarterly Equipment Inventory Report**—The Contractor shall submit a Quarterly Government-furnished Equipment Report (See Attachment J-C3) summarizing additions/deletions and maintenance/calibration performed on the equipment. This report shall be submitted within 10 operating days following the end of the reporting period.

C. **Quarterly Accident/Injury Report**—The Contractor shall submit a Quarterly Accident/Injury Report within 10 operating days after the end of each quarter.

D. **Conformable Wage Rate Agreement**—Within 15 operating days after the effective date of the contract, the Contractor shall submit a report confirming conformable wage rate agreement as this subject is addressed in the Section I clause entitled "Service Contract Act of 1965," for those individuals employed by the Contractor who are covered by the Service Contract Act, but are not listed in Exhibit D.

E. **Collective Bargaining Agreements**—The Contractor shall provide the Contracting Officer with copies of any collective bargaining agreements, and amendments thereto, which arise during the course of the contract and which apply to Contractor employees assigned to the contract.

F. **Subcontracting Reports**—The Contractor shall submit Standard Form 294, Subcontracting Report for Individual Contracts, and Standard Form 295, Summary Subcontractor Report, in accordance with the instructions on the reverse of the form.

In addition to the instructions on the reverse of the SF 295, the Contractor is required to comply with Clause 1852.219-75, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Reporting.

G. **Federal Contractor Veterans Employment Report**—In compliance with Clause 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era, the Contractor shall submit the Federal Contractor Veterans Employment Reports (VETS-100) as required by this clause.

H. **Evidence of Insurance**—The Contractor shall submit evidence of the insurance coverage, required by the NASA Clause 1852.228-75 in Section I entitled "Minimum Insurance Coverage" (i.e., a Certificate of Insurance or other confirmation), to the Contracting Officer prior to performing under this contract. In the event the Government exercises its options to extend the term of the contract, the Contractor shall also present such evidence to the Contracting Officer prior to commencement of performance under the extension.

I. **Quality System Documents (ISO 9002)** – The Contractor shall submit the following documents within nine months after the effective date of the contract demonstrating ISO compliance in accordance with H.8:

Quality System Manual - Provide a copy of your Quality System Manual.

Quality System Procedures - Provide a copy of your quality system procedures which address: (1) contract management; (2) customer requirement review and execution; (3) task management, including work order generation and processing; (4) document control; (5) handling of customer supplied product; (6) corrective and preventive action; and (7) training of employees.

J. **Year 2000 Compliance Documentation**—In accordance with the clause in H.12 the Contractor shall provide for the review and approval of the Contracting Officer the documentation that demonstrates Year 2000 compliance.

K. **Small Disadvantaged Business (SDB) Participation Report**—The Contractor shall submit an SDB Participation Report in accordance with the Section I Clause 52.219-25, Small Disadvantaged Business Program—Disadvantaged Status and Reporting. The Contractor shall report on the participation of SDB concerns using either Optional Form 312, Small Disadvantaged Business Participation Report, or the Contractor's own format providing the same information as the Optional Form 312. This report shall be submitted every 12 months during the contract period.

II. DOCUMENT DISTRIBUTION REQUIREMENTS

A. Unless otherwise specified elsewhere in this contract, reports and other documentation shall be submitted F.O.B. destination as specified below, addressed as follows:

National Aeronautics and Space Administration
Langley Research Center
Attn: _____, Mail Stop
Contract NAS1-99000
Hampton, VA 23681-2199

B. The following letter codes designate the recipients of reports and other documentation which are required to be delivered prepaid to Langley Research Center by the Contractor:

A--Contract Specialist, Mail Stop 126

B--Contracting Officer Technical Representative, Mail Stop _____

C--Safety Manager, Mail Stop 429

D--Industry Relations Office, Mail Stop 144

E--Industrial Property Office, Mail Stop 377

F--According to instructions on form

G--Small Business Specialist, Mail Stop 144

H--Management Systems Project Office, Mail Stop 438

C. The following are the distribution requirements for reports and other documentation required with the numeral following the letter code specifying the number of copies to be provided:

<u>DOCUMENT</u>	<u>LETTER CODE AND DISTRIBUTION</u>
Safety and Health Plan	A-1, B-1, C-1
Quarterly Equipment Report	A-1, B-1, E-1
Quarterly Accident/Injury Report	A-1, B-1, C-1
Conformable Wage Rate Agreement	A-1, B-1, D-1
Collective Bargaining Agreement	A-1, B-1, D-1
Subcontracting Report for Individual Contracts (Standard Form 294)	A-1, G-1
Summary Subcontractor Report (Standard Form 295)	F
Federal Contractor Veterans Employment Report (VETS-100)	F
Quality System Documents	A-1, B-1, H-2
Year 2000 Compliance Report	A-1, B-1
SDB Participation Report (Optional Form 312)	A-1, B-1, G-1

D. When the Contract Administrator (A) is not designated above to receive a copy of a report or document, the Contractor shall furnish a copy of the report/document transmittal letter to the Contract Administrator.

III. ADDITIONAL DOCUMENTATION

Additional reporting requirements are detailed in Attachment J-C6.

EXHIBIT C

Small Business Subcontracting Plan

NOTE: This does not apply to Small Business Prime Contractors.

EXHIBIT D

Register of Wage Determinations and Fringe Benefits

- GD No. VA980035
- GD No. VA980018
- WD No. 94-2544

GENERAL DECISION VA990035 07/09/99 VA35
General Decision Number VA990035

Superseded General Decision No. VA980035

State Virginia

Construction Type:
 BUILDING

County(ies):
 HAMPTON*

*INDEPENDENT CITY OF HAMPTON (INCLUDING LANGLEY AIR FORCE BASE
 AND FORT MONROE)

BUILDING CONSTRUCTION PROJECTS (Does not include single family
 homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	03/12/1999
1	05/07/1999
2	05/28/1999
3	07/09/1999

COUNTY(ies):
 HAMPTON*

ELEC1340A 12/01/1998		
ELECTRICIANS	Rates 17.50	Fringes 2.10+11.25%
<hr/>		
ENGI0147D 05/01/1999		
POWER EQUIPMENT OPERATORS: Cranes, Under 90 tons	Rates 18.23	Fringes 4.88
<hr/>		
IRON0079A 05/01/1999		
IRONWORKERS, RIGGING	Rates 17.70	Fringes 4.73+10%
<hr/>		
PLUM0540A 05/01/1999		
PLUMBERS	Rates 20.20	Fringes 5.12
<hr/>		
* SUVA1097A 06/11/1999		
ACOUSTICAL CEILING MECHANICS	Rates 13.13	Fringes
BRICKLAYERS	16.61	
CARPENTERS: Form Work ONLY	12.13	2.15
All Other Work (Excluding		

Drywall Hanging and Acoustical Ceiling Work)	12.90	2.15
CEMENT FINISHERS	11.38	
DRYWALL FINISHERS	12.42	2.15
DRYWALL HANGERS (Including Metal Stud Framing)	13.07	.76
GLAZIERS	16.22	
IRONWORKERS, STRUCTURAL	16.80	4.40
LABORERS:		
Unskilled	7.72	
Mason Tenders, Brick	12.68	
LATHERS	12.00	
PAINTERS, BRUSH AND ROLLER (Excluding Drywall Finishing)	10.94	
PIPEFITTERS (Including HVAC Work)	17.20	4.34
PLASTERERS	13.30	
POWER EQUIPMENT OPERATORS:		
Backhoes	11.58	
Forklifts	8.33	
ROOFERS	11.94	
SHEET METAL PANEL INSTALLERS	10.76	.59
TRUCK DRIVERS, DUMP	8.46	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
 =====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:
 Branch of Construction Wage Determinations

Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

GENERAL DECISION VA990018 07/02/99 VA18
General Decision Number VA990018

Superseded General Decision No. VA980018

State: Virginia

Construction Type:
 HEAVY

County(ies):
 GLOUCESTER NEWPORT NEWS* YORK
 HAMPTON* POQUOSON*
 JAMES CITY WILLIAMSBURG*

*INDEPENDENT CITIES

HEAVY CONSTRUCTION PROJECTS (Excluding Sewer and Water Lines)

Modification Number	Publication Date
0	03/12/1999
1	03/19/1999
2	05/07/1999
3	05/28/1999
4	07/02/1999

COUNTY(ies):
 GLOUCESTER NEWPORT NEWS* YORK
 HAMPTON* POQUOSON*
 JAMES CITY WILLIAMSBURG*

ASBE0085B 05/01/1999

	Rates	Fringes
ASBESTOS WORKERS/INSULATORS: Includes the application of all <i>insulating materials, protective coverings, coatings, and finishes</i> to all types of mechanical systems. Also the application of firestopping material for wall openings and penetrations in walls, floors, ceilings and curtain walls.	16.98	4.44

BOIL0045B 10/01/1998

	Rates	Fringes
BOILERMAKERS	20.27	10.66

* CARP0613C 05/01/1999

	Rates	Fringes
CARPENTERS & PILEDRIVERS	15.74	3.91

ELEC0666G 12/01/1998		
	Rates	Fringes
ELECTRICIANS: James City County	19.55	26%
<hr/>		
ELEC1340A 12/01/1998		
	Rates	Fringes
ELECTRICIANS	17.50	2.10+11.25%
<hr/>		
ELEC1340E 12/01/1998		
	Rates	Fringes
LINEMEN and CABLE SPLICERS:		
From 7812 Warwick Blvd., Newport News, Virginia, to North of Route 460 and South of the Piankatank River, including the boundaries of Newport News and York County, including Fort Eustis, Naval Mine Depot, Naval Mine Warfare School, American Oil Refinery, VEPCO, Yorktown Generating Station, Cheatham Annex, Camp Peary, and Gloucester County	17.50	2.10+11%
Beyond North of Route 460 and South of the Piankatank River.	18.50	2.10+11%
<hr/>		
ENGI0147A 05/01/1999		
	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
Cranes and Mechanics	18.23	4.88
Fork Lift	14.58	4.88
Oilers	11.30	4.88
<hr/>		
ENGI0147K 05/01/1995		
	Rates	Fringes
POWER EQUIPMENT OPERATORS (PIPELINE):		
Backhoes	23.54	5.46
Boring Machine	17.46	4.96
Bulldozers	23.54	5.46
Cranes	23.54	5.46
Oilers	12.07	3.96
Side Boom	23.54	5.46
<hr/>		
IRON0079E 05/01/1999		
	Rates	Fringes
IRONWORKERS: Structural & Reinforcing	17.70	4.73+10%
<hr/>		
PAIN1100C 01/01/1998		

	Rates	Fringes
PAINTERS: Bridges, Heavy Industrial Plants, Mills or any Tanks, Structural Steel, Sandblasting	15.25	.72
<hr/>		
PLAS0229B 05/01/1999		
CEMENT MASONS	15.60	2.55
<hr/>		
PLUM0540D 05/01/1999		
PLUMBERS & PIPEFITTERS	20.20	5.12
<hr/>		
SUVA2030A 06/22/1993		
BRICKLAYERS	15.15	
LABORERS:		
Laborers (Including Mason Tenders, Brick)	7.61	1.08
Landscape Laborers	7.71	
Pipelayers	8.16	1.00
POWER EQUIPMENT OPERATORS:		
Backhoes	11.46	
Bulldozers	11.77	1.82
Excavators	12.65	2.04
Loaders	11.02	2.10
Rollers	9.21	
TRUCK DRIVERS	8.63	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

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- * a conformance (additional classification and rate) ruling

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With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

REGISTER OF WAGE DETERMINATION UNDER
THE SERVICE CONTRACT ACT
By direction of the Secretary of Labor

U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
WAGE AND HOUR DIVISION
WASHINGTON, D.C. 20210
Wage Determination No.: 94-2544
Revision No.: 18
Date of Last Revision: 06/03/1999

Division of
Wage Determinations

State): North Carolina, Virginia

Areas: North Carolina Counties of Camden, Chowan, Currituck, Gates,
Pasquotank, Perquimans
Virginia Counties of Gloucester, Isle of Wight, James City, Mathews,
Southampton, Surry, York, Chesapeake, Hampton, Newport News, Norfolk
Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg

** Fringe Benefits Required For All Occupations Included In
This Wage Determination Follow The Occupational Listing **

OCCUPATION CODE AND TITLE	MINIMUM HOURLY WAGE
Administrative Support and Clerical Occupations:	
01011 Accounting Clerk I	\$ 7.76
01012 Accounting Clerk II	\$ 9.80
01013 Accounting Clerk III	\$ 12.19
01014 Accounting Clerk IV	\$ 13.23
01030 Court Reporter	\$ 12.43
01050 Dispatcher, Motor Vehicle	\$ 10.61
01060 Document Preparation Clerk	\$ 9.38
01070 Messenger (Courier)	\$ 7.62
01090 Duplicating Machine Operator	\$ 9.38
01110 Film/Tape Librarian	\$ 9.28
01115 General Clerk I	\$ 7.51
01116 General Clerk II	\$ 9.24
01117 General Clerk III	\$ 11.49
01118 General Clerk IV	\$ 12.84
01120 Housing Referral Assistant	\$ 13.25
01131 Key Entry Operator I	\$ 8.82
01132 Key Entry Operator II	\$ 11.10
01191 Order Clerk I	\$ 8.50
01192 Order Clerk II	\$ 11.12
01261 Personnel Assistant (Employment) I	\$ 9.49
01262 Personnel Assistant (Employment) II	\$ 10.97
01263 Personnel Assistant (Employment) III	\$ 11.58
01264 Personnel Assistant (Employment) IV	\$ 13.27
01270 Production Control Clerk	\$ 13.78
01290 Rental Clerk	\$ 9.97
01300 Scheduler, Maintenance	\$ 9.97
01311 Secretary I	\$ 9.97
01312 Secretary II	\$ 11.60
01313 Secretary III	\$ 13.25
01314 Secretary IV	\$ 15.53
01315 Secretary V	\$ 16.30
01320 Service Order Dispatcher	\$ 10.67

01341 Stenographer I	\$ 10.10
01342 Stenographer II	\$ 11.34
01400 Supply Technician	\$ 13.23
01420 Survey Worker (Interviewer)	\$ 10.80
01460 Switchboard Operator-Receptionist	\$ 8.08
01510 Test Examiner	\$ 11.60
01520 Test Proctor	\$ 11.60
01531 Travel Clerk I	\$ 7.57
01532 Travel Clerk II	\$ 8.08
01533 Travel Clerk III	\$ 8.62
01611 Word Processor I	\$ 10.00
01612 Word Processor II	\$ 11.27
01613 Word Processor III	\$ 12.62

Automatic Data Processing Occupations:

03010 Computer Data Librarian	\$ 8.26
03041 Computer Operator I	\$ 9.25
03042 Computer Operator II	\$ 10.70
03043 Computer Operator III	\$ 13.25
03044 Computer Operator IV	\$ 15.34
03045 Computer Operator V	\$ 16.31
03071 Computer Programmer I 1/	\$ 15.39
03072 Computer Programmer II 1/	\$ 17.42
03073 Computer Programmer III 1/	\$ 20.76
03074 Computer Programmer IV 1/	\$ 24.75
03101 Computer Systems Analyst I 1/	\$ 19.38
03102 Computer Systems Analyst II 1/	\$ 22.32
03103 Computer Systems Analyst III 1/	\$ 27.48
03160 Peripheral Equipment Operator	\$ 9.50

Automotive Service Occupations:

05005 Automobile Body Repairer, Fiberglass	\$ 16.22
05010 Automotive Glass Installer	\$ 14.79
05040 Automotive Worker	\$ 14.79
05070 Electrician, Automotive	\$ 15.49
05100 Mobile Equipment Servicer	\$ 13.37
05130 Motor Equipment Metal Mechanic	\$ 16.22
05160 Motor Equipment Metal Worker	\$ 14.79
05190 Motor Vehicle Mechanic	\$ 16.22
05220 Motor Vehicle Mechanic Helper	\$ 12.61
05250 Motor Vehicle Upholstery Worker	\$ 14.07
05280 Motor Vehicle Wrecker	\$ 14.79
05310 Painter, Automotive	\$ 15.49
05340 Radiator Repair Specialist	\$ 14.07
05370 Tire Repairer	\$ 13.37
05400 Transmission Repair Specialist	\$ 16.22

Food Preparation and Service Occupations:

07010 Baker	\$ 8.68
07041 Cook I	\$ 7.85
07042 Cook II	\$ 8.68
07070 Dishwasher	\$ 6.96
07100 Food Service Worker (Cafeteria Worker)	\$ 6.30

07130 Meat Cutter	\$ 9.85
07250 Waiter/Waitress	\$ 6.58

Furniture Maintenance and Repair Occupations:

09010 Electrostatic Spray Painter	\$ 17.81
09040 Furniture Handler	\$ 12.89
09070 Furniture Refinisher	\$ 15.49
09100 Furniture Refinisher Helper	\$ 12.61
09110 Furniture Repairer, Minor	\$ 14.07
09130 Upholsterer	\$ 15.49

General Service and Support Occupations:

11030 Cleaner, Vehicles	\$ 6.96
11060 Elevator Operator	\$ 6.05
11090 Gardener	\$ 8.91
11121 Housekeeping Aide I	\$ 6.70
11122 Housekeeping Aide II	\$ 7.46
11150 Janitor	\$ 6.96
11210 Laborer, Grounds Maintenance	\$ 7.57
11240 Maid or Houseman	\$ 6.24
11270 Pest Controller	\$ 8.25
11300 Refuse Collector	\$ 6.96
11330 Tractor Operator	\$ 8.49
11360 Window Cleaner	\$ 7.57

Health Occupations:

12020 Dental Assistant	\$ 10.26
12040 Emergency Medical Technician/Paramedic Ambulance Driver	\$ 10.26
12071 Licensed Practical Nurse I	\$ 9.40
12072 Licensed Practical Nurse II	\$ 10.55
12073 Licensed Practical Nurse III	\$ 11.80
12100 Medical Assistant	\$ 9.46
12130 Medical Laboratory Technician	\$ 10.11
12160 Medical Record Clerk	\$ 10.13
12190 Medical Record Technician	\$ 12.71
12221 Nursing Assistant I	\$ 6.66
12222 Nursing Assistant II	\$ 7.49
12223 Nursing Assistant III	\$ 8.17
12224 Nursing Assistant IV	\$ 9.17
12250 Pharmacy Technician	\$ 11.44
12280 Phlebotomist	\$ 10.55
12311 Registered Nurse I	\$ 14.62
12312 Registered Nurse II	\$ 17.88
12313 Registered Nurse II, Specialist	\$ 17.88
12314 Registered Nurse III	\$ 21.64
12315 Registered Nurse III, Anesthetist	\$ 21.64
12316 Registered Nurse IV	\$ 25.93

Information and Arts Occupations:

13002 Audiovisual Librarian	\$ 13.75
13011 Exhibits Specialist I	\$ 15.02
13012 Exhibits Specialist II	\$ 18.25

13013 Exhibits Specialist III	\$ 20.27
13041 Illustrator I	\$ 15.02
13042 Illustrator II	\$ 18.25
13043 Illustrator III	\$ 20.27
13047 Librarian	\$ 15.81
13050 Library Technician	\$ 11.02
13071 Photographer I	\$ 11.33
13072 Photographer II	\$ 15.02
13073 Photographer III	\$ 18.25
13074 Photographer IV	\$ 20.27
13075 Photographer V	\$ 24.53

Laundry, Drycleaning, Pressing and Related Occupys:

15010 Assembler	\$ 5.83
15030 Counter Attendant	\$ 5.83
15040 Dry Cleaner	\$ 7.18
15070 Finisher, Flatwork, Machine	\$ 5.83
15090 Presser, Hand	\$ 5.83
15100 Presser, Machine, Drycleaning	\$ 5.83
15130 Presser, Machine, Shirts	\$ 5.83
15160 Presser, Machine, Wearing Apparel, Laundry	\$ 5.83
15190 Sewing Machine Operator	\$ 7.66
15220 Tailor	\$ 8.13
15250 Washer, Machine	\$ 6.28

Machine Tool Operation and Repair Occupations:

19010 Machine-Tool Operator (Toolroom)	\$ 15.49
19040 Tool and Die Maker	\$ 17.84

Materials Handling and Packing Occupations:

21010 Fuel Distribution System Operator	\$ 13.37
21020 Material Coordinator	\$ 14.02
21030 Material Expediter	\$ 14.02
21040 Material Handling Laborer	\$ 8.56
21050 Order Filler	\$ 8.46
21071 Forklift Operator	\$ 10.36
21080 Production Line Worker (Food Processing)	\$ 10.54
21100 Shipping/Receiving Clerk	\$ 10.18
21130 Shipping Packer	\$ 10.18
21140 Store Worker I	\$ 8.40
21150 Stock Clerk (Shelf Stocker; Store Worker II)	\$ 10.51
21210 Tools and Parts Attendant	\$ 12.54
21400 Warehouse Specialist	\$ 12.07

Mechanics and Maintenance and Repair Occupations:

23010 Aircraft Mechanic	\$ 17.75
23040 Aircraft Mechanic Helper	\$ 13.80
23050 Aircraft Quality Control Inspector	\$ 18.53
23060 Aircraft Servicer	\$ 15.39
23070 Aircraft Worker	\$ 16.18
23100 Appliance Mechanic	\$ 15.49
23120 Bicycle Repairer	\$ 13.37

23125 Cable Splicer	\$ 16.22
23130 Carpenter, Maintenance	\$ 15.49
23140 Carpet Layer	\$ 17.01
23160 Electrician, Maintenance	\$ 16.22
23181 Electronics Technician, Maintenance I	\$ 14.09
23182 Electronics Technician, Maintenance II	\$ 14.41
23183 Electronics Technician, Maintenance III	\$ 15.44
23260 Fabric Worker	\$ 14.07
23290 Fire Alarm System Mechanic	\$ 16.22
23310 Fire Extinguisher Repairer	\$ 13.37
23340 Fuel Distribution System Mechanic	\$ 16.22
23370 General Maintenance Worker	\$ 14.79
23400 Heating, Refrigeration and Air-Conditioning Mechanic	\$ 16.22
23430 Heavy Equipment Mechanic	\$ 16.22
23440 Heavy Equipment Operator	\$ 16.22
23460 Instrument Mechanic	\$ 16.22
23470 Laborer	\$ 9.68
23500 Locksmith	\$ 15.49
23530 Machinery Maintenance Mechanic	\$ 16.18
23550 Machinist, Maintenance	\$ 16.22
23580 Maintenance Trades Helper	\$ 12.61
23640 Millwright	\$ 18.65
23700 Office Appliance Repairer	\$ 15.49
23740 Painter, Aircraft	\$ 15.49
23760 Painter, Maintenance	\$ 15.49
23790 Pipefitter, Maintenance	\$ 16.22
23800 Plumber, Maintenance	\$ 15.49
23820 Pneudraulic Systems Mechanic	\$ 16.22
23850 Rigger	\$ 16.22
23870 Scale Mechanic	\$ 14.79
23890 Sheet-Metal Worker, Maintenance	\$ 16.22
23910 Small Engine Mechanic	\$ 14.79
23930 Telecommunications Mechanic I	\$ 16.22
23931 Telecommunications Mechanic II	\$ 19.48
23950 Telephone Lineman	\$ 16.22
23960 Welder, Combination, Maintenance	\$ 16.22
23965 Well Driller	\$ 16.22
23970 Woodcraft Worker	\$ 16.22
23980 Woodworker	\$ 13.37

Personal Needs Occupations:

24570 Child Care Attendant	\$ 6.34
24580 Child Care Center Clerk	\$ 9.10
24600 Chore Aide	\$ 5.92
24630 Homemaker	\$ 9.58

Plant and System Operation Occupations:

25010 Boiler Tender	\$ 16.22
25040 Sewage Plant Operator	\$ 17.21
25070 Stationary Engineer	\$ 16.22
25190 Ventilation Equipment Tender	\$ 12.61
25210 Water Treatment Plant Operator	\$ 17.21

Protective Service Occupations:

27004 Alarm Monitor	\$ 8.29
27006 Corrections Officer	\$ 11.91
27010 Court Security Officer	\$ 11.91
27040 Detention Officer	\$ 11.91
27070 Firefighter	\$ 13.19
27101 Guard I	\$ 6.93
27102 Guard II	\$ 8.29
27130 Police Officer	\$ 14.25

Stevedoring/Longshoremen Occupational Services:

28010 Blocker and Bracer	\$ 14.18
28020 Hatch Tender	\$ 12.33
28030 Line Handler	\$ 12.33
28040 Stevedore I	\$ 13.57
28050 Stevedore II	\$ 14.90

Technical Occupations:

29010 Air Traffic Control Specialist, Center 2/	\$ 24.90
29011 Air Traffic Control Specialist, Station 2/	\$ 17.17
29012 Air Traffic Control Specialist, Terminal 2/	\$ 18.91
29023 Archeological Technician I	\$ 11.43
29024 Archeological Technician II	\$ 12.85
29025 Archeological Technician III	\$ 15.87
29030 Cartographic Technician	\$ 15.87
29035 Computer Based Training (CBT) Specialist/Instructor	\$ 20.26
29040 Civil Engineering Technician	\$ 18.25
29061 Drafter I	\$ 10.07
29062 Drafter II	\$ 11.33
29063 Drafter III	\$ 14.24
29064 Drafter IV	\$ 17.30
29081 Engineering Technician I	\$ 12.06
29082 Engineering Technician II	\$ 12.90
29083 Engineering Technician III	\$ 15.89
29084 Engineering Technician IV	\$ 19.25
29085 Engineering Technician V	\$ 22.48
29086 Engineering Technician VI	\$ 27.78
29090 Environmental Technician	\$ 15.87
29100 Flight Simulator/Instructor (Pilot)	\$ 23.32
29150 Graphic Artist	\$ 17.62
29160 Instructor	\$ 17.51
29210 Laboratory Technician	\$ 11.86
29240 Mathematical Technician	\$ 15.87
29361 Paralegal/Legal Assistant I	\$ 10.80
29362 Paralegal/Legal Assistant II	\$ 13.12
29363 Paralegal/Legal Assistant III	\$ 16.05
29364 Paralegal/Legal Assistant IV	\$ 19.42
29390 Photooptics Technician	\$ 18.25
29480 Technical Writer	\$ 15.02
29491 Unexploded Ordnance Technician I	\$ 15.82
29492 Unexploded Ordnance Technician II	\$ 19.15
29493 Unexploded Ordnance Technician III	\$ 22.95
29494 Unexploded Safety Escort	\$ 15.82
29495 Unexploded Sweep Personnel	\$ 15.82

29620 Weather Observer, Senior 3/	\$ 14.72
29621 Weather Observer, Combined Upper Air & Surface Programs 3/	\$ 13.60
29622 Weather Observer, Upper Air 3/	\$ 13.60

Transportation/Mobile Equipment Operation Occupys:

31030 Bus Driver	\$ 9.42
31260 Parking and Lot Attendant	\$ 6.98
31290 Shuttle Bus Driver	\$ 9.01
31300 Taxi Driver	\$ 8.50
31361 Truckdriver, Light Truck	\$ 9.01
31362 Truckdriver, Medium Truck	\$ 9.42
31363 Truckdriver, Heavy Truck	\$ 11.18
31364 Truckdriver, Tractor-Trailer	\$ 11.18

Miscellaneous Occupations:

99020 Animal Caretaker	\$ 7.00
99030 Cashier	\$ 6.23
99041 Carnival Equipment Operator	\$ 8.49
99042 Carnival Equipment Repairer	\$ 8.91
99043 Carnival Worker	\$ 6.05
99050 Desk Clerk	\$ 7.00
99095 Embalmer	\$ 17.63
99300 Lifeguard	\$ 6.16
99310 Mortician	\$ 17.63
99350 Park Attendant (Aide)	\$ 7.74
99400 Photofinishing Worker (Photo Lab Tech., Darkroom Tech)	\$ 6.91
99500 Recreation Specialist	\$ 13.04
99510 Recycling Worker	\$ 8.52
99610 Sales Clerk	\$ 6.16
99620 School Crossing Guard (Crosswalk Attendant)	\$ 6.96
99630 Sports Official	\$ 6.16
99658 Survey Party Chief (Chief of Party)	\$ 9.49
99659 Surveying Technician (Instr. Person/Surveyor Asst./Instr.)	\$ 8.63
99660 Surveying Aide	\$ 5.92
99690 Swimming Pool Operator	\$ 8.68
99720 Vending Machine Attendant	\$ 8.52
99730 Vending Machine Repairer	\$ 9.98
99740 Vending Machine Repairer Helper	\$ 8.52

**** Fringe Benefits Required For All Occupations Included In
This Wage Determination ****

HEALTH & WELFARE: Life, accident, and health insurance plans, sick leave, pension plans, civic and personal leave, severance pay, and savings and thrift plans. Minimum employer contributions costing an average of \$2.56 per hour computed on the basis of all hours worked by service employees employed on the contract.

VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 8 years; 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with predecessor contractors in the performance of similar work at the same Federal facility. (See 29 CFR 4.173)

HOLIDAYS. Minimum of ten paid holidays per year - New Year's Day, Martin Luther King Jr.'s Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. (A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.) (See 29 CFR 4 174)

1. Does not apply to employees employed in a bona fide executive, administrative, or professional capacity as defined and delineated in 29 CFR 541. (See 29 CFR 4.156)
2. APPLICABLE TO AIR TRAFFIC CONTROLLERS ONLY - NIGHT DIFFERENTIAL: An employee is entitled to pay for all work performed between the hours of 6:00 P.M. and 6:00 A.M. at the rate of basic pay plus a night pay differential amounting to 10 percent of the rate of basic pay.
3. WEATHER OBSERVERS - NIGHT PAY & SUNDAY PAY: If you work at night as part of a regular tour of duty, you will earn a night differential and receive an additional 10% of basic pay for any hours worked between 6pm and 6am. If you are a full-time employee (40 hours a week) and Sunday is part of your regularly scheduled workweek, you are paid at your rate of basic pay plus a Sunday premium of 25% of your basic rate for each hour of Sunday work which is not overtime (i.e. occasional work on Sunday outside the normal tour of duty is considered overtime work).

**** UNIFORM ALLOWANCE ****

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance:

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of \$4.25 per week (or \$.85 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

**** NOTES APPLYING TO THIS WAGE DETERMINATION ****

Source of Occupational Titles and Descriptions:

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations," Fourth Edition, January 1993, as amended by the Second Supplement, dated August 1995, unless otherwise indicated. This publication may be obtained from the Superintendent of Documents, at 202-783-3238, or by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Copies of specific job descriptions may also be obtained from the appropriate contracting officer.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE
{Standard Form 1444 (SF 1444)}

Conformance Process

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)} When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

- 1) When preparing the bid, the contractor identifies the need for a conformed occupation) and computes a proposed rate).
- 2) After contract award, the contractor prepares a written report listing in order proposed classification title), a Federal grade equivalency (FGE) for each proposed classification), job description), and rationale for proposed wage rate), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work.
- 3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).
- 4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.
- 5) The contracting officer transmits the Wage and Hour decision to the contractor.
- 6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF1444 or bond paper.

When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination. Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

EXHIBIT E

Collective Bargaining Agreements

- CBA Local Union No. 1340 - EG&G
- CBA District Lodge 74 - DTSV

*Honor one year, then renegotiate.

AGREEMENT BETWEEN
Langley, Inc.
AND
INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS,
LOCAL UNION NO. 1340,
AFL-CIO

August 1, 1997

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Agreement Between**Langley, Inc.****and****International Brotherhood of Electrical Workers, AFL-CIO****Local Union No. 1340****PREAMBLE**

THIS AGREEMENT entered into this 1st day of August 1997 by and between EG&G Langley, Inc (hereinafter referred to as the "Company"), and Local Union No. 1340, of the International Brotherhood of Electrical Workers, AFL-CIO, (hereinafter referred to as the "Union"), for the purpose of all maintenance work assigned to the Company by the National Aeronautics and Space Administration, (hereinafter referred to as "NASA"), under the Facility and Equipment Support Services (FESS) Contract and performed by the employees of the Company covered by this agreement only within the NASA Langley Research Center (Station) site and sites and properties related thereto.

WHEREAS, the Company is engaged in the business of maintenance (as defined in Article V) and this work is of importance to the Union, and it being recognized that there is a difference in the conditions required to perform this type of work, the Union and the Company wish to enter into an agreement for their benefit covering work of this nature.

WHEREAS, the Union has in their membership within the area, members competent and qualified to perform the work of the Company.

WHEREAS, the Company now employs members of the Union on maintenance work recognized by the Union.

WHEREAS, the Company and the Union desire to mutually establish hours of work and working conditions for the workers to the end that satisfactory conditions and harmonious relations will continue to exist for the benefit of both parties to this Agreement.

WHEREAS, the Company and the Union agree that, due to particular nature of the work covered by this Agreement, there shall be no lockouts or strikes during the life of this Agreement, and provisions must be made to achieve this end.

The Union, its members and all of those employees represented by the Union, agree to use its and/or their best endeavors to protect the interest of the Company, to consider the Company's property and to give service and/or work of the highest productive quality.

The Company and the Union have a common sympathetic interest in the maintenance industry. Therefore, a working system and harmonious relations are necessary to improve the relationship between the Company, the Union and the Public. Progress in industry demands a mutuality of confidence between the Company and the Union. All will benefit by continuous peace and by adjusting any differences by rational, common sense methods.

NOW, THEREFORE, in consideration of the mutual promises and agreements herein contained, the parties hereto agree to as follows:

ARTICLE I

TERM OF AGREEMENT

Section 1. This Agreement shall take effect August 1, 1997, and shall remain in effect through July 31, 2000 and shall continue in effect from year to year thereafter, unless changed or terminated.

Section 2. Either party desiring to change or terminate this Agreement must notify the other in writing at least sixty (60) days prior to August 1, 2000. When Notice for changes only is given, the nature of the changes desired must be specified in the Notice and until a satisfactory conclusion is reached in the matter of such changes, the original provision shall remain in full force and effect. Neither party hereto may reopen this Agreement for negotiations on any issue, either economic or non-economic, during this contract period or any extension thereof, except as provided in Section 3 below.

Section 3. This Agreement shall be subject to amendments at any time by mutual consent of the parties hereto. Any such amendment agreed upon shall be reduced to writing and signed by the parties hereto. The Union may submit the amendments to the International Office of the Union, as it relates solely to compliance with State and Federal regulations.

ARTICLE II

RECOGNITION

Section 1. The bargaining unit under this Agreement shall comprise all maintenance employees of the Company now employed or in the future for maintenance work at the NASA Langley Research Center (Station).

Section 2. The Company:

(a) Agrees to recognize the Union as herein duly constituted for the purpose of bargaining collectively and administering this Agreement for the employees.

(b) Agrees to bargain collectively with the Union and to be governed by the terms of this Agreement.

ARTICLE III**MANAGEMENT RIGHTS**

The Union recognizes that the Company retains the sole right to manage its business, as such right existed prior to the execution of this agreement except only as expressly abridged by a specific provision of this Agreement. The Company reserves and retains, solely and exclusively, all of its inherent rights to manage the business including but not limited to, the direction of the working force including the right to hire, assign, suspend or discharge for just cause and to make rules governing the conduct of the working force which will be applied in a reasonable fashion. The Company and Union, by mutual agreement, may change or add to the General Work Rules contained in this Agreement.

The Company has a vital interest in maintaining safe, healthful and efficient working conditions for its employees. Being under the influence of alcohol or drugs (illegal or prescribed) on the job may pose serious safety and health risks not only to the user but to all industrial equipment vehicles and other employees. The possession and use, distribution or sale of an illegal substance or alcohol in the work place shall not be tolerated and may result in termination and prosecution. The Company recognizes that its own health and future are dependent upon the physical and psychological health of its employees. Accordingly, it is the right, obligation, and intent of the Company to maintain a safe, healthful, and efficient working environment for all of its employees and to protect Company/NASA property, equipment, and operations. The Union recognizes and supports the Company's drug testing policy as agreed to on 1 March 1989. The Union has also agreed to as part of this agreement, the memorandum of Random Drug Testing as established August 1, 1994.

ARTICLE IV**UNION SECURITY**

It is agreed that all employees coming under the terms of this Agreement shall be required to make application to joining the Union within thirty (30) days of employment or Agreement, whichever is later, and as a condition of continued employment, must maintain membership for the life of this Agreement and any renewal thereof. In the event the Union requests the contractor to

dismiss an employee to comply with the provisions of this Article, such request shall be complied with by the contractor. The Union will notify all current and new-hire employees of their rights under union security.

ARTICLE V
SCOPE OF WORK

Section 1. This Agreement covers all maintenance work assigned to the Company by NASA under the Facility and Equipment Support Services Contract and performed by the employees of the Company covered by this Agreement only with the NASA, Langley Research Center (Station) site and sites and properties relating thereto.

Section 2. This scope of this Agreement does not cover work required to erect new major facilities. Work performed of this nature shall be done in accordance with any existing agreements between the company and the building construction trades. This provision shall not serve to cause the Company to abrogate its contract with NASA.

ARTICLE VI
DEFINITIONS

Maintenance is defined as any work assigned by the Company which is consistent with the terms of the Company's Facility and Equipment Support Service Contract with NASA for the purpose of preserving NASA's facilities and wind tunnels in suitable working condition. Said work will be consistent with the Company's obligation to perform any such work under the Service Contract Act.

ARTICLE VII
GRIEVANCE PROCEDURE

Section 1. All grievances that may arise will be handled in the following manner. Any written grievance must be filed within five (5) working days of the event given rise to the grievance. In cases involving dismissal or suspension for just cause, the grievance may be instituted at Step III.

STEP I: Prior to processing any written grievance, any employee who believes he has a grievance, must discuss it with his immediate supervisor, with his steward being present. If the employee is dissatisfied with the answer given by his supervisor, or no answer is given within three (3) normal work days, Step II will be followed.

STEP II: The Employee and his steward shall present to the immediate foreman a written grievance form provided by the Company (which has been approved by Company and

Union) stating what the grievance is, and the remedy sought. If the foreman's decision is not satisfactory, or is not given within three (3) normal work days, Step III will be followed.

STEP III: The grievance shall be forwarded by the Union steward to the Industrial Relations Manager or his designated representative within three (3) normal work days after the foreman's unsatisfactory written decision, or failure to give a decision. The Industrial Relations Manager shall meet with the Local Business Manager, or his designated representative, within three (3) days of receipt of grievance. If the Industrial Relations Manager's decision is not satisfactory, or is not given within five (5) normal work days, Step IV will be followed.

STEP IV: The Union may, no later than five (5) working days after receipt of the Company's decision in Step III, submit the matter to arbitration by requesting that the Federal Mediation and Conciliation Service submit a list of five (5) names of arbitrators, from which the Company and the Union shall choose an impartial arbitrator to decide the matter. Following receipt of the list of names of arbitrators, the parties shall then alternately strike the names from the panel and the name remaining shall be the Arbitrator in the case. The determination of which Party is to strike first shall be determined by a coin flip. Striking shall take place within seven (7) days of receipt of the arbitrator list.

Section 2. In arbitration proceedings, the expense of the impartial Arbitrator shall be shared by both parties.

Section 3. The Company shall attempt to provide facilities at Langley Research Center (Station) provided, however, if no facilities are available at the Center, the Union and Company agree to equally share expenses incurred in the hearing room.

Section 4. The findings of the Arbitrator shall be binding on both parties.

Section 5. All time limits stated in this Article shall be treated as jurisdictional in nature, and the failure to follow any of the set time limits shall result in the grievance being void and waived, and the matter shall end without resort to arbitration. A normal work day is defined as any day on which any bargaining unit employee is at work, Monday through Friday, excepting holidays.

Section 6. Except by mutual written agreement to the contrary, only one grievance shall be taken to arbitration at any time before the same Arbitrator.

Section 7. The impartial Arbitrator shall only have jurisdiction and authority to determine the meaning, application of, or compliance with the provisions of this Agreement and shall not have jurisdiction or authority to add or detract from or alter in any way such provisions or any rules of discipline attached hereto.

ARTICLE VIII

UNION REPRESENTATIVES

Section 1. Representatives of the Union shall have access to the job during working hours on Union business. They shall, as regulations on the site permit, obtain specific authorization for each visit from the Company when required.

Section 2. The Union has the right to appoint a Steward at the Company. The Company shall be notified and furnished the name of the Steward in writing. The Company will deal with any such designated Steward until such designated Steward has been revoked in writing by the Union. Such Steward shall be allowed reasonable time during the regular working hours, without loss of pay, to see that the terms and conditions of this Agreement are observed. In no event shall the presence of the Steward disrupt or interfere with the work of the Company. No Steward shall be discriminated against by the Company because of his faithful performance of duties as Steward.

The Steward shall be given preferential seniority provided he/she has been performing the steward duties for six (6) consecutive months and has not less than twelve (12) months seniority.

ARTICLE IX

REFERRAL OF EMPLOYEES

Section 1. When employees are required, the Company shall request from the Local Union that the required number of applicants be referred for employment. The following standards shall apply:

(a) The selection of applicants for referral to jobs shall be on a nondiscriminatory basis and shall not be based on, or in any way affected by Union membership, by-laws, rules, regulations, constitutional provisions, or any other aspect of obligation of Union membership, policy, or requirement. Local Union 1340, International Brotherhood of Electrical Workers, does accept application for referral to the Maintenance Project covered by this Agreement regardless of race, color, sex, handicap, national or ethnic origin. It does not discriminate on the basis of race, color, sex, handicap, national or ethnic origin in the referral of applicants.

(b) The Company shall retain the right to select or reject any applicant referred by the Local Union, and shall have the further right to select any applicant from among those referred by the Union. When the Company requests an applicant or referral from the Union, the Union will refer such applicant within forty-eight (48) hours [two (2) working days] and in the event the Union fails to refer an applicant within

that period of time, the Company is free to utilize other sources to fill its manpower needs.

(c) The Local Union shall post in places where notices to employees and applicants for employment are customarily posted, all provisions relating to the function of its hiring arrangements, including the provisions herein set forth. The Company shall similarly post in places where notices to employees and applicants for employment are customarily posted, all provisions relating to the function and operation of the hiring arrangements including these provisions.

(d) The Union agrees to indemnify and hold the Company harmless against any and all claims, demands, suits, costs and/or any other forms of action and assumes any and all liabilities and expenses that shall arise out of or by reason of the Union's administration of the hiring hall referred to in this Article. It is also expressly understood that those applicants that are referred by the Union will be selected on a nondiscriminatory basis and that the Company shall assume the liabilities that attach for failure to hire an applicant referred by the Union.

(e) The Union agrees to recognize the Company's Affirmative Action Program and will refer qualified job applicants according to established underutilization goals.

Section 2. In addition to the foregoing minimum standards, the Local Union agrees to refer all applicants for employment to this project according to the standards for criteria uniformly applied to any project in the area. All exclusive referral procedures must establish Appeal Boards and the Company and the applicable Local Union agree to be bound by all decisions of the Appeal Board.

Section 3. The Company agrees to be bound by the hiring practices in the local area not inconsistent with the terms of this Agreement, provided that, where the hiring provisions or practices that prevail in a local area are on other than an exclusive basis, such provisions or practices shall be applicable if not in violation of either State or Federal law.

Section 4. The Company and the Union therefore agree that the Local Union will offer its area hiring plan to the Company by letter of transmittal. The Company agrees that upon reviewing said plan, it will offer a letter to the Union in which they acknowledge and accept the hiring plan. This letter will then, by agreement, become part of this Agreement.

Section 5. The designation and determination of the number of foreman and other supervisory personnel is the responsibility of the Company.

Section 6. The above hiring provisions have been entered into in order to comply with the Mountain Pacific doctrine of the National Labor Relations Board. Upon any Board or court decision

or administrative ruling modifying or changing the Mountain Pacific doctrine, either party to this Agreement shall have the right to re-open negotiations pertaining to this Article by giving the other party thirty (30) days written notice.

ARTICLE X

WAGES

Section 1. Wage rates set forth in Appendix "A" attached hereto, and made a part hereof, are to be paid to those employees listed under Appendix "A" for the term of this Agreement.

Section 2. Wages will be paid by-weekly by means of direct deposit or by check to be delivered to the job site. The payroll period to close at midnight on Friday.

Section 3. The Company agrees to make available to all employees United States Savings Bonds through payroll deduction.

Section 4. Working and Basic Dues Checkoff: The Company agrees that it will make Union Working Dues Deductions from the pay of all members working under the terms of this Agreement plus Bi-Weekly Union Dues on the basis of individually signed payroll deduction authorizations on the form set out below in Section 5. The Company will make these deductions bi-weekly as designated in the individually signed payroll deduction authorizations. The Employer will pay the aggregate of such deductions monthly to the Financial Secretary of the Union, who shall be authorized to issue a receipt in the amount of the calendar monthly deductions. The Company shall send a mutually agreed number of copies of a form furnished by the Union which sets forth the employee's name, social security number, the number of clock hours worked, and the employee's gross earnings for the calendar month, and said copies will be executed to cover the aggregate number of bi-weekly payrolls in each calendar month. The check and/or respective monies shall be transmitted not later than fifteen (15) days after the end of the month for which deductions are being made.

Section 5. Deduction Form:

TO: EG&G LANGLEY, INC - (EMPLOYER)

I hereby authorize and direct you to deduct Union working dues bi-weekly from my pay, plus monthly basic Union dues, both amounts of which are to be determined by the Local Union by-laws and the IBEW Constitution and to forward same monthly to the Financial Secretary of the Union in accordance with the Agreement between the Union and the Company. This deduction shall be made from all wages earned by me while working in the jurisdiction of Local Union 1340, IBEW.

This authorization is voluntarily made in order to pay my fair share of the Union's cost of representing me for the purposes of collective bargaining, and this authorization is not conditioned on my present or future membership in the Union.

This authorization and direction shall be irrevocable for a period of one (1) year from the date hereof or until the termination date of present Agreement, whichever is sooner, without regard to whether I am a member of the Union during that period, and I agree that this authorization shall be automatically renewed and irrevocable for successive periods of one year unless revoked by written notice to you and the Union within the ten (10) day period prior to the anniversary of this authorization. I understand that under current law the payments covered by this authorization are not deductible as charitable contributions for federal income tax purposes.

Name (printed) _____ Signature _____

Date: _____ Social Security Number: _____

ARTICLE XI

DAY WORK CONDITIONS

Section 1. Eight (8) hours per day shall constitute a standard work day normally between the hours of 7:00 am and 3:30 p.m. Forty (40) hours per week shall constitute a week's work, Monday through Friday, inclusive.

Section 2. All time worked before and after the established work day of eight (8) hours, Monday through Friday, and all time worked on Saturday shall be paid for at the rate of time and one-half (1 1/2). All time worked on Sundays and the Holidays stated in Article XIV shall be paid for at the rate of time and one-half (1 1/2).

Section 3. By mutual consent of the Company and the Union, the starting and quitting times of any shift, including day work, may be permanently changed.

Section 4. Employees called back to work after the conclusion of their regular shift hours shall be compensated for a minimum of three (3) hours at the appropriate overtime rate regardless of whether the employee is required to work the entire three (3) hours. In addition, any employee called back to work after his regular shift hours shall be promptly excused upon completion of the job which he was called in to perform.

Section 5. In assigned overtime, employees shall perform the overtime work required. Employees actively working the task requiring overtime shall perform the overtime work required. In the event of extenuating circumstances an employee is unable to perform overtime work assigned, the overtime assignment shall be referred to the overtime policy to be established mutually between the Company and the Union.

Section 6. Full time regular Employees terminated by reason of lay-off shall be notified at least two (2) weeks prior to such termination date. Employees who are laid-off or discharged will be paid all monies due by the end of the next pay period, providing all indebtedness and obligations to the Company by the employee are satisfied.

Section 7. Any employee showing up on time for work on a regular scheduled work day Mon-Fri, not having been previously notified to report to work, but to whom no work is provided shall receive two (2) hours of pay for show-up time. Employees may be required to stay on the job for the duration of the show-up period.

Section 8. The Company may elect a 4/10 hr work week in order to meet the customer's needs. The Union and affected employees will be given 3 working days notice prior to the commencement of the shift. The 4/10 shifts will originally be established on a volunteer basis. If there are more volunteers than needed, the employees with the most seniority will be awarded the 4/10's provided they have the necessary skills to perform the job. If there are not enough employees volunteering, the employees with the least seniority will be required to work the 4/10's provided they have the necessary skills to perform the job. The following Day Work Conditions shall apply to any established 4/10 work week:

(a). Ten (10) hours per day shall constitute a standard work day normally between the hours of 6:00 AM and 6:00 PM. The starting time may vary from 6:00 AM to 7:00 AM. Forty hours per week shall constitute a week's work. Initial conflicts in scheduling between A and B shift will be determined by seniority.

CREW A - Monday through Thursday

CREW B - Tuesday through Friday

(b). All time worked before and after the established work day of 10 hours shall be paid for at the rate of time and one half (1 1/2). All time worked on Friday, Saturday and Sunday for **CREW A** shall be paid for at the rate of time and one half (1 1/2). All time worked on Saturday, Sunday and Monday for **CREW B** shall be paid for at time and one half (1 1/2).

3. There shall be a 30 minute **unpaid** lunch period.
4. Pay day for **CREW A** will be on Thursday, but checks will not be cashed until Friday.
5. For the purpose of bereavement and jury duty, a ten hour day shall be reimbursed.
6. Administrative time will be based on a 10 hour day when allowable by NASA.
7. Two and one half (2 1/2) hours will be allowed for employees who are on the 4/10 hour shift and leaving early at the end of the work day to donate blood.

HOLIDAYS

EG&G will observe the holiday schedule stated in the Maintenance Collective Bargaining Agreement.

1. Should a holiday be celebrated on a crews' normal day off, i.e., **CREW A - Friday, CREW B - Monday**, an alternate day will be given to observe the holiday.
 - a. Holiday falls on **Monday - CREW B** will observe **Tuesday**.
 - b. Holiday falls on **Friday - CREW A** will observe **Thursday**.
2. A holiday will be considered an **8** hour day for payroll purposes. To make up the **2** hour difference between this and the newly enacted **10** hour work day, and to establish a 40 hour week, an employee may elect to take **2** hours vacation time. The other alternative would be to take **LWOP VOL**.

GRIEVANCE PROCEDURE

For those employees on four tens filing grievances the term "normal work days" referenced in the Collective Bargaining Agreement shall mean Monday through Friday.

OVERTIME POLICY

When "A" shift employees are performing a job which is continued on Friday by "B" shift employees and unscheduled overtime is necessary on Saturday, the aforementioned employees with the least amount of overtime on the overtime roster shall perform the work.

ARTICLE XII

TEMPORARY SHIFT WORK CONDITIONS

Section 1. When so elected by the Company, multiple shifts consisting of no less than eight (8) hours may be worked. When two (2) or three (3) shifts are worked, the first or day shift shall normally be established on an eight (8) hour basis, 7:00 am to 3:30 p.m.; the second shift shall normally be established on an eight (8) hour basis, 3:15 p.m. to 11:45 p.m.; and the third shift shall normally be established on an eight (8) hour basis, 11:30 p.m. to 8:00 am.

Section 2. The pay for the second shift shall be straight time plus seven and one-half (7 1/2) percent; and the third shift rate of pay shall be straight time plus ten (10) percent.

Section 3. All time worked before and after the established shift hours in any twenty-four (24) hour period, Monday through Friday, inclusive, and all time worked on Saturdays shall be paid at the rate of time and one-half (1 1/2). All time worked on Sundays and Holidays shall be paid at the rate of time and one-half (1 1/2). Employees scheduled to work on a Saturday, Sunday, or Holiday should be guaranteed a minimum of three (3) hours work at the appropriate overtime rate.

Section 4. Night Shift Rotation:

Any second or third shift work shall be on a voluntary basis. The most senior employee that volunteers shall have first priority. If there are no volunteers, the least senior employee shall be put

on the above shift work, which shall be rotated every ninety (90) days. There shall be five (5) working days advance notice given for scheduled night shift work, except in cases of emergency. If employees volunteer for shift work this does not relieve them of their normal scheduled rotation.

(This section does not apply to employees who have permanently volunteered or have been permanently hired for the night shift. Provided this does not restrict the Employer for assigning said employees to a different shift according to the above procedure.)

ARTICLE XIII

PERMANENT SHIFT WORK CONDITIONS

Section 1. A four (4) cycle shift system will be operated only when the work is considered to be of a permanent nature. The names of those men employed on permanent shifts will be published showing shift rotation and the working shift or the day off for each man for a period of at least three (3) months.

Section 2. The permanent shift rate for the afternoon shift will be straight-time plus seven and one-half (7 1/2) percent, and the permanent shift rate premium for the night shift will be straight-time plus ten (10) percent.

Section 3. The standard work day shall be eight (8) hours of continuous employment excluding lunch period. Forty (40) hours per week shall constitute a week's work. All time worked in excess of eight (8) hours per work day and all time worked on either one of the two scheduled off days shall be paid for at the rate of time and one-half (1 1/2). If both of the scheduled days off are worked, the first day shall be paid at the rate of time and one-half (1 1/2) and the second day shall be paid at the rate of time and one-half (1-1/2).

Section 4. Permanent shift workers will have two (2) consecutive days off per week in lieu of Saturday and/or Sunday.

Section 5. When permanent shifts are to be reduced or canceled, the Union shall be given at least three (3) days notice in writing, if possible.

ARTICLE XIV

HOLIDAYS, LEAVES, JURY PAY AND PENSION

Section 1. Holidays:

(a) The following days shall be observed as holidays under this Agreement:

New Year's Day	Labor Day
Martin Luther King Day	Columbus Day
Washington's Birthday	Veteran's Day

Memorial Day
Independence Day

Thanksgiving Day
Christmas Day

*** The above holidays will be observed on the same day NASA observes them.**

(b) In the event the government proclaims a permanent holiday other than those listed in Section 1 above, then the employees shall be granted that holiday. If an employee is scheduled to work on a holiday, but fails to do so, he will receive no holiday pay.

(c) An employee who works on one of the above-listed holidays shall be paid at time and one-half (1 1/2) his straight-time base rate of pay for all hours worked on that holiday, in addition to any holiday pay for which he may be qualified.

(d) Holiday pay shall not be included in computation of weekly overtime.

(e) To be eligible for holiday pay, an employee must work his regularly scheduled day before the holiday and his regularly scheduled day after the holiday unless excused by the Company.

(f) Only permanent shift employees shall be paid holiday, vacation, and sick leave at their applicable shift rate of pay.

Section 2. Administrative Leave:

On days not recognized as holidays under Section 1 above, but where the government, because of special events and occasions substantially reduces the normal activity at the Center because of such social event or occasions, and allows reimbursement to the Company, the following provisions shall apply:

(a) Those employees who are required to work will be paid at their straight-time hourly rate; provided, however, that said employee will receive compensatory time off equal to the time worked and his straight-time base rate of pay for such compensatory time.

(b) Those employees who are not required to work will receive a day's compensation at their regular straight-time hourly rates.

(c) Employees who are out on sick leave or vacation will charge their time to sick leave or vacation and not administrative leave, when notification of base closing is given after the end of the shift that is immediately prior to the administrative leave.

Section 3. Annual Leave:

(a) Employees with less than three (3) years, shall earn one (1) hour Annual Leave per year for every twenty (20) man-hours worked.

- (b) Employees with three (3) years, but less than fifteen (15) years, shall earn one (1) hour Annual Leave per year for every thirteen (13) man-hours worked.
- (c) Employees with more than fifteen (15) years shall earn one (1) hour Annual Leave per year for every ten (10) man-hours worked.
- (d) Employees are permitted to carry only thirty (30) days of Annual Leave from one year to the next, by December 31 each year.
- (e) Length of service includes the whole span of continuous service with the present (successor) contractor, and with the predecessor contractors in the performance of similar work at the same Federal Facility.
- (f) Employees desiring to take Annual Leave must receive permission from the Company by 9:00 am the day before Annual Leave is desired. Effective upon signing this Agreement, each employee will be allowed four (4) unscheduled annual leave absences to be taken at the employee's discretion. The employee will have four (4) opportunities from August 1 to July 31 to take this unscheduled leave. The total number of hours for unscheduled absences can not exceed thirty (30) hours.
- (g) Employees who schedule vacations of one (1) week or more and who submit a written request through Payroll three (3) weeks or more in advance of the vacation starting time, will be paid vacation allowance prior to the end of the work shift on the last work day preceding the vacation schedule.
- (h) In an effort to equitably meet employees requests for Annual Leave and in order to be compatible with efficient operations, all employees, on or before December 1 of each year, must submit their Annual Leave preferences in writing for the following year.

Section 4. Sick Leave:

- (a) Employees will earn one (1) hour of sick leave for every twenty (20) hours worked.
- (b) Employees absent from work because of illness must, upon reasonable request in accordance with the Company's sick leave policy, submit administratively acceptable evidence that they were ill and unable to work.
- (c) Employees may accumulate all unused sick leave from one year to the next.
- (d) Employees absent from work because of illness must inform the Company of the telephone number where they may be reached during such time of illness.
- (e) Employees requesting same day sick leave calling in later than the start of the shift will receive Leave Without Pay (LWOP) for the day.
- (f) Employees will be required to submit a written doctor's

excuse for all hours exceeding twenty-four (24) in any twelve (12) month period. Employees failing to submit the appropriate documentation will be subject to the following disciplinary action:

1. The first offense will be a suspension equal to the amount of hours in excess of twenty-four (24) hours.
2. The second offense will be a three (3) day suspension.
3. The third offense will result in termination.

(g) Employees having 400 hours and above of accrued sick leave may extend their initial twenty-four hour period by submitting doctor's excuses during that period. Employees having less than 400 hours will have all sick leave hours used counted toward the twenty-four hour period.

Section 5. Jury Pay:

(a) Regular full-time employees who are absent on a regularly scheduled day and/or days of work because of jury service shall be paid. Said jury service pay is conditioned upon such employee reporting his jury summons in advance to the Company and such employee proving the amount of compensation received for such jury service. Upon receipt of the employee's pay voucher received from the court, the employee will have the same amount deducted from his/her pay. Because pension contribution is based on gross pay this deduction will affect the original pension contribution. Time off for jury service and/or pay therefor shall not be counted as hours worked for purposes of computing overtime.

(b) Regular full-time employees are allowed time off without loss of pay only when subpoenaed/summoned by the city, county, state, or federal government or the Company on behalf of the government or the Company, in cases where the government or the Company have a principal interest. The employee must provide the company with a copy of the subpoena/summons verifying attendance and verification of monies paid for court services.

Section 6. Bereavement Pay:

(a) In the event of the death in an employee's immediate family of any of the following relatives: Spouse, Child, Mother, Father, Brother, Sister, the employee shall be entitled to be absent from work for a period not to exceed three (3) normal working days to afford him an opportunity to attend the funeral and/or participate in other matters relating to the death of the deceased. This period of time will not exceed three (3) normal work days following the funeral.

During such absence, the employee shall be compensated at his regular straight-time hourly rate for each eight (8) hour work day absent.

- (b) In the event of the death of an employee's Grandparent or an employee's Grandchild, the employee shall be granted two days off to attend the funeral providing the funeral occurs on a normal work day and providing the employee attends the funeral. During such absence the employee shall be compensated at his regular straight-time hourly rate.

Section 7. Retirement Fund:

(a) The Company agrees to contribute on behalf of all employees working under the terms of this Agreement, seven and one-half percent (7.5%) of their gross bi-weekly pay into a Pension Fund on an individual account basis.

(b) The said Pension Fund shall be administered pursuant to an agreement and declaration of trust administered jointly by an equal number of persons representing the Local Union and the Company.

(c) The Trustee shall determine the rules and regulations regarding the Pension Fund and that such rules and regulations conform to all requirements of the law.

(d) The check and/or respective monies shall be transmitted not later than fifteen (15) days after the end of the month for which contributions are being made. Along with the check for the amount of calendar monthly contributions, the Company shall furnish to the Trust Fund a mutually agreeable form setting forth the employee's name, social security number, the number of clock hours worked, and his gross earnings for the calendar month, and said copies will be executed to cover the aggregate number of bi-weekly payrolls in each calendar month.

ARTICLE XV

TRAVEL

During the term of this Agreement subsistence, travel allowance, mileage, per diem, or pay for travel time shall not be paid to any employee covered by the terms of this Agreement unless approved by the Contract Manager.

ARTICLE XVI

SUPERVISION

The Company reserves the right to send into the area of work as many supervisors and engineers as it deems necessary to carry out the work covered by this Agreement, but they shall not perform any manual work, except in cases of emergency, instruction, and on the job training.

ARTICLE XVII**TOOL ROOMS**

The Company and the Union agree that it shall be the Company's prerogative to maintain and operate tool rooms and parts warehouse facilities.

ARTICLE XVIII**FIRST AID AND SAFETY**

Section 1. The employees covered by this Agreement shall, at all times while in the employ of the Company, be bound by the safety rules and regulations as established by the Company. All employees will be issued Company safety manuals.

Section 2. A Joint and Safety Health Committee will be established for the purpose of making constructive recommendations to the Company. The Committee will consist of four (4) members; two (2) appointed by the Company and two (2) bargaining unit employees appointed by the Union. Meetings shall be held once each month and the time spent in attendance by these members shall be compensated for the time at the employee's applicable rate of pay, and minutes shall be recorded and copies furnished to the members of the Committee.

ARTICLE XIX**INTERFACING**

On projects requiring multi-craft support, those crafts may be required to support each other in an effort to complete the task in a more efficient manner. This will require craftsmen to assist other crafts under the direction of the craftsman needing the assistance. In no way is this intended for craftsman to perform the technical tasks of another trade.

ARTICLE XX**GENERAL WORK RULES**

General Work Rules affecting employee conduct are attached hereto and made a part hereof.

It is agreed by the Union that all of the employees covered by this Agreement shall be made aware of these General Work Rules and regulations by the Company at the time of their hire and that they shall be bound by them throughout the duration of their employment.

It is further agreed that violation of these General Work Rules and regulations is direct and just cause for disciplinary action, including immediate discharge subject to Article VII, Grievance Procedure.

ARTICLE XXI**SENIORITY**

Section 1. In the event of reduction of the work force, employees with shortest length of service in their craft, will be laid off first.

Section 2. All new employees shall be on a probationary period for a period of ninety (90) calendar days. Probationary employees shall receive the wages and the fringe benefits, as described in this Agreement. New employees shall have no seniority until the probationary period has been completed. After completion of the probationary period, an employee's seniority shall then be credited from the date of hiring.

Probationary employees shall receive performance reviews on or about thirty (30), sixty (60), and eighty-five (85) days after date of hire. Any decisions by the Company to terminate a probationary employee on the basis of response to supervision, attendance, or ability to perform assigned tasks, shall be final and will not be subject to Article VII (Grievance Procedures) of this Maintenance Agreement. This applies to the termination of probationary employees only.

Section 3. A list of employees arranged in order of length of service with the Company (Predecessor inclusive) and length of service within a craft, shall be prepared by the Company once every six months. One copy shall be sent to the Union, another copy shall be posted in a conspicuous place on the Company's bulletin board.

Section 4. Any controversy of the seniority standing of any employee on the seniority list must be submitted to the Company within fifteen (15) days after the posting of the seniority list or any such protest shall be deemed to be waived.

Section 5. Seniority shall be canceled and terminated upon the happening of any of the following events:

- (a) An employee quits.
- (b) An employee is discharged
- (c) An employee fails to return to work within five (5) days of notice of recall given by the Company by registered or certified mail.
- (d) Settlement has been made for total disability.
- (e) An employee has retired.
- (f) An employee has been in layoff status for more than twelve
(12) months, or is absent because of sickness or injury for twenty four (24) months.

Section 6. Apprentice craft seniority, upon completion of the apprenticeship, shall revert back to the date of indenture.

Section 7. Should an employee accept a position with the Company, whether covered by the Bargaining Agreement or not and he or she or the Company decides, within 90 days against said move the employee shall be reinstated to his or her former position with no loss of seniority or pay as if the move had never occurred.

ARTICLE XXII

PROTECTIVE LEGISLATION

All employees covered by this Agreement shall have the protection of all existing Federal, State, and Local laws applicable to employees in general.

ARTICLE XXIII

PERIODIC CONFERENCE

Periodic conferences shall be held by the parties from time to time for the purposes of discussing matters of mutual interest.

ARTICLE XXIV

GENERAL SAVINGS CLAUSE

Any provisions in this Agreement which are in contravention of any Federal, State, Local or County regulations or laws affecting all or part of the limits covered by this Agreement shall be suspended in operation within the limits to which such law or regulation is in effect. Such suspension shall not affect the operation of any such provisions covered by this Agreement, to which the law or regulation is not applicable. Nor shall it affect the operations of the remainder of the provisions of the Agreement within the limits to which such law or regulation is applicable.

ARTICLE XXV

WORK STOPPAGE

During the term of this Agreement, there shall be no lockout by the Company, and no slowdown, work stoppages, or sympathy strikes by the Union.

ARTICLE XXVI

LANGLEY FEDERAL CREDIT UNION CHECKOFF

The Company agrees to checkoff authorization, if duly signed by the employee, for the Langley Federal Credit Union and said money will be forwarded to the Credit Union, subject to the following:

- (1) All authorizations for Langley Federal Credit Union

checkoffs will be honored by the Company only upon the receipt by the Company of executed forms sent to the Company by the Credit Union.

- (2) All cancellations for Credit Union checkoffs will be honored by the Company only upon the receipt by the Company of properly executed forms sent to the Company by the Credit Union.
- (3) All cancellations of increases or decreases in such checkoffs which are received by the Company a minimum of three (3) working days prior to the close of a pay period, will be processed by the Company effective with that pay period provided, however, at least thirty (30) days have lapsed since processing a change notice for the affected employee. The Union agrees to save the Company harmless from any action or claims growing out of these deductions (checkoff) and commenced by any employee or former employee of the Company. The Company's sole responsibility is to forward the monies deducted to the credit Union bi-weekly. The checkoff period to close midnight on Friday and payment to be mailed on or before the Friday of the following pay week.

ARTICLE XXVII

APPRENTICESHIP AND JOURNEYMEN TRAINING

An Apprenticeship Training Program, as specified by separate agreement, will be offered and maintained during the life of this Agreement and all subsequent Agreements until such time as terminated by mutual agreement by both parties.

ARTICLE XXVIII

HEALTH AND WELFARE

Section 1. Group Medical Insurance

- (a) The Company will continue to sponsor Group Medical for all employees and employee dependents through 31 July 2000.
- (b) Entry into the program is restricted to new hires at the time of hiring or existing employees between July 1, and July 31, of each year.
- (c) Effective 1 August 1997 through 31 July 2000, Employees electing to participate in the Health Fund will have a 12% co-payment. Effective August 1, 1997 the bi-weekly co-payment will be \$7.30 for single coverage, \$16.06 for employee plus one, and \$20.08 for family coverage.

- (e) Annual increases in premium cost, as requested by the Health Fund Trustees, on 1 August 1998, will have a three percent (3%) cap and on 1 August 1999 will have a three percent (3%) cap.
- (f) All employees covered under this agreement shall have the option of enrolling in the group medical plan as described above, or at the individual employee's option, may elect to receive thirty-four (34) cents per hour in lieu of accepting the medical coverage offered.

Section 2. Group Life Accidental Death/Dismemberment and Weekly Accident/Sickness

The Company will continue to sponsor Group Life, Accidental Death/Dismemberment, and Accident/Sickness Disability insurance for all employees. Any increase in Group Life, AD&D or Accident/ Sickness on 1 August 1998 or 1 August 1999 will have a 3% cap and the first 3% is to borne by the company. Any increases in excess of 3% will be borne by the employee.

Section 3. Change of Carriers:

During the term of this Agreement, the Company may, with the concurrence of the Union, change the Carrier or Carriers of any of the insurances described in Section 1.(a) provided that the benefits provided by the plan or plans remain substantially equivalent to those currently provided.

ARTICLE XXIX

DURATION

This Agreement constitutes the entire agreement between the parties and any prior practices inconsistent with this Agreement are not binding on the Company.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement consisting of -45- pages, which has been signed on this -31st day of --JULY--, 1997.

The masculine gender as used herein ("he", "his", "him", "man") shall be deemed to include the feminine gender ("she", "hers", "her", "woman").

FOR THE EMPLOYER:

EG&G LANGLEY, INC.

James R. Carbonneau
General Manager

FOR THE UNION:

**INTERNATIONAL BROTHERHOOD OF
ELECTRICAL WORKERS,
AFL-CIO LOCAL UNION NO. 1340**

Richard Adams
1340 Business Manager

Lester W. Jordan
Manager, Industrial Relations

Raymond Tucker
1340 Chief Steward

Robert E. Caldwell
Manager, Maintenance

Keith Jackson
1340 Bargaining Committee

Steve Nelson
Branch Manager, Pipe/Welding

Larry Minter
1340 Bargaining Committee

APPENDIX "A"
WAGE SCHEDULE

Section 1. The Company agrees to pay the following hourly rate for the classifications listed immediately below:

MINIMUM WAGE RATE PER HOUR

CRAFT/SKILLS	EFFECTIVE 1 AUG 97	EFFECTIVE 1 AUG 98	EFFECTIVE 1 AUG 99
Laborer, Class "B" Maintenance	9.06	9.35	9.65
Laborer, Class "A" Maintenance	9.61	9.92	10.24
Painter, Maintenance	15.34	15.83	16.34
Carpenter, Maintenance	15.73	16.23	16.75
Roofer, Maintenance	15.73	16.23	16.75
Asbestos Worker	15.73	16.23	16.75
Insulator, Pipecover, Maintenance	15.73	16.23	16.75
Mason, Bricklayer, Maintenance	16.22	16.74	17.28
Electrician, Maintenance	16.22	16.74	17.28
Mechanic, Maintenance	16.22	16.74	17.28
Millwright, Maintenance	16.22	16.74	17.28
Water Treatment	16.22	16.74	17.28
Pipefitter, Maintenance	16.22	16.74	17.28
Welder	16.22	16.74	17.28
Mechanic, Ref & A/C Maintenance	16.22	16.74	17.28
Sheet Metal	16.22	16.74	17.28
Rigger, Maintenance	16.22	16.74	17.28
Crane Operator, Maintenance	16.22	16.74	17.28
Machinist, Precision	16.51	17.04	17.59
Precision Machine Repairman	16.51	17.04	17.59
Technician, Ref & A/C Maintenance	16.51	17.04	17.59

Section 2. All permanent employees hired on or after 1 March 1989 shall receive \$.50/hour less than the above rate for 90 days.

Section 3. Temporary hires (not to exceed 120 days) and summer hires shall receive the established rate but shall not be eligible for any fringe benefits in addition to their monthly rate.

Section 4. Anyone assigned to perform work as a lead shall be compensated at the rate of \$.50 per hour. This rate shall be added to his/her base rate and made a part thereof while so assigned.

CBA Between
EG&G Langley Inc. and IBEW Local 1340

August 1, 1997

GENERAL WORK RULES

The "Employee Conduct, Counseling and Disciplinary Action" Policy No. 106-3, dated August 1, 1997, is provided for your information and guidance. These rules are established to define a standard of personal conduct which is expected of every employee while on duty. A violation of any rule that merits disciplinary action will be acted upon by the Company as follows:

PURPOSE

The purpose of this policy is to provide a work environment that produces maximum efficiency, high employee morale and individual recognition. Our experience has shown that almost all employees enjoy working in such an environment.

SCOPE

Having a work environment which is based on the concept of individual dignity requires the establishment of rules and regulations to be used as guidelines for measuring conduct in individual situations.

These work rules place demand on the individual employee as well as the Company. The Company must ensure that the regulations are administered fairly and the employee must understand and abide by the standards.

When employees know and understand the work rules, there is seldom a need to impose compliance. The policy and procedures that follow details the work rules, counseling procedures (often called "Progressive Discipline") and an employee appeal process to ensure fairness.

POLICY

Management is responsible for establishing and communicating to all employees EG&G's work standards, policies, standard practices and ensuring that these standards are administered in a fair and just manner. Each situation involving employee conduct represents an individual problem, therefore, good judgment and thorough knowledge of the facts are essential for timely resolution.

All EG&G employees are responsible for maintaining acceptable conduct while on the job. In the event an employee's conduct falls below acceptable standards, the employee will be counseled and may be subject to disciplinary action.

To maintain an effective policy, investigations must remain objective. When a breach of standards occurs, the manager will thoroughly investigate and review all relevant facts and allow the employee to explain his/her conduct. The eventual decision must be based on a fair investigation, in which the employee has had ample opportunity to be heard. In addition, the decision should be consistent with similar situations that have been resolved in the past. Accurate and complete records of events, conversations and results which occur during this process must be kept.

In the event the employee, the employee's management and Industrial Relations cannot agree on a solution to the concern, the employee may submit the issue to the General Manager or the Manager, Administration for final resolution.

TYPES OF DISCIPLINARY ACTIONS

The type of action is determined by the Severity of the offense. In most cases, the following steps should be used:

Oral Warning. If, after counseling, and employee's conduct warrants an oral warning, the supervisor shall document the warning for his record only. It is the responsibility of the supervisor to make clear to the employee the following:

- The intent to discuss employee breach of standards
- The conduct giving rise to the warning
- Positive steps to be taken by the employee to avoid further management action.

Written Warning

An employee's immediate supervisor shall explain to the employee the conduct giving rise to the written warning and specify whether or not this is a repeat violation. The written warning will be on the Notice of Disciplinary Action, Form EG&G IR-6 (Attachment 1), and may be accompanied by any other written record.

Disciplinary 90-Day Review

When the employee's conduct has violated EG&G Policies, Rules of Conduct or Standard Practices and the employee is placed on a review for a period of ninety (90) days, known as a "90-Day Review," a copy of the Notice of Disciplinary Action form shall be completed. Once every thirty (30) days, the supervisor will meet with the employee and evaluate his performance. All reviews shall be documented.

Suspension

When an employee is suspended from work without pay or ineligible for other compensation, the employee shall be informed verbally and a Notice of Disciplinary Action form will be

completed. The form shall document the suspension action and specify, in detail, the violation which led to the suspension.

Termination

Employees may be terminated for just cause and, when such action occurs, it shall be documented on the Notice of Disciplinary Action form. Termination cannot be implemented until reviewed with Industrial Relations.

Emergency Suspension

This type of suspension may be made pending further investigation when the employee's conduct or action presents a significant danger to the safety and welfare of others, may severely impact the department's operational status or appears to have violated rules of conduct to an extent possible necessitating termination.

CAUSES FOR ACTION

Commission of any of the following infractions will normally be considered grounds for immediate discharge:

- Failure to report Company or Government vehicle accidents promptly and properly.
- Theft, including the unauthorized use or removal of Company, Government or a fellow employee's property.
- Engaging in or fostering espionage, sabotage or other criminal activity.
- Selling, or offering for sale, narcotics or restricted, dangerous drugs.
- Refusing to take blood alcohol and/or alcohol breathalyzer test, or test results that reveal the person is intoxicated as substantiated by Virginia Law.
- Possessing, using, or being under the influence of narcotics or restricted, dangerous drugs on or when trying to enter Government or Company controlled property. This prohibition does not apply when such drugs are prescribed or administered by a licensed physician.
- Possessing, using, or being under the influence of alcohol on or when trying to enter Government or Company controlled property, during normal duty hours.
- Convictions of any felony offense. This rule does not apply when sentencing for the offense specifies adjudication of guilt is withheld.
- Failure to be granted an Unescorted Access Authorization (UAPRP) for ADP work areas when such is required, and/or secret clearance within 180 calendar days from the date of employment.

Any of the following may be grounds for disciplinary action ranging from a warning or reprimand to discharge:

Conduct on the Premises

- Improper conduct on Government or Company controlled property.
- Fighting, practical jokes or horseplay.
- Using threatening, abusive or profane language.
- Gambling.
- Acceptance of anything of monetary value from any supplier, customer or other contractors or prospective contractors, or their representatives.
- Using, disseminating, or permitting the use of any privileged information acquired during employment with the Company or in the work for the Company's customers for personal gain or other improper use.
- Sleeping on the job.
- Insubordination.
- Falsification of operational data, Personnel Security Questionnaire forms or any other Company records.
- Repeated tardiness, unexcused absences, abuse of sick leave privileges, or failure to notify supervision promptly when unable to report to work.
- Leaving the plant or work assignment during working hours without prior supervisory permission.
- Outside employment or other outside activity not compatible with the full and proper discharge of the employee's position with the Company.
- Violation of Company-approved procedures for accomplishing work.

Acts of Discrimination or Sexual Harassment

- Acts of discrimination based upon race, creed, color, religion, sex, age, national origin, or disability.
- Sexual harassment.
- Acts of retaliation against an employee in connection with complaints of discrimination.

Safety Rules and Regulations

- Failure to observe rules and regulations.

- Disobeying safety rules or instructions given in the line of duty by LaRC Safety Officers, civil defense personnel, supervisors, or other proper authorities in emergencies.
- Failure to use provided safety equipment.
- Failure to report on-the-job injuries or accidents, or to follow instructions for treatment of injuries.
- Disobeying nonsmoking or noneating signs; smoking in posted nonsmoking areas.
- Reckless or negligent operation of Government or private vehicles on Government or Company controlled property or while on Company business.

Securing and Safeguards Regulations

- Violation of Security or Safeguards regulations.
- Disclosure of classified matter or information to unauthorized persons.
- Failure to observe the established regulations regarding the protection of such classified matter or information against accidental or deliberate disclosure to unauthorized persons.
- Lending, borrowing or altering a security identification device (badge).
- Unauthorized entry into restricted areas or allowing unauthorized individuals into restricted areas.
- Possessing firearms or other weapons, explosives, cameras, special viewing devices or radio transmitters on Government or Company controlled property without the proper permits.
- Convictions of misdemeanor offenses not compatible with the full and proper discharge of the employee's position with the Company.
- Refusal to permit the search of packages, lunch boxes, briefcases, purses, etc., upon request of authorized individuals.

Misuse and/or Misappropriation of Government Property and Funds

- Misuse or unauthorized use of Government or Company controlled property, material, equipment, funds, or other property including scrap or salvage.
- Misuse, loss, theft, or unauthorized modification of Company or Government computer systems, programs or data bases. This includes hardware, software, communications links and computer time.
- Working on unauthorized projects on Government or Company controlled premises.
- Performing any rework, repair, or modification on any materials or items without the proper authorization.

- Removal of Quality status stamps, tags or documents, and/or the use of any materials or parts that have been rejected by Quality.
- Using Company time for non-Company work.
- Using equipment, tools, stationery, or official vehicles for personal purposes.
- Misusing or abusing telecommunications equipment or services.
- Misappropriating materials, funds, or services by falsifying such documents as timecards, travel invoices, purchase orders, etc., or by any other direct or indirect means.

ABSENCE AND TARDINESS

Paid sick leave is an insurance policy to protect the employee's wages in case of an emergency. Sick leave should be used only for the intended purpose.

Since abuse of absenteeism or tardiness increases costs, creates an undue hardship on fellow employees and limits ability to effectively plan and accomplish goals, the following policies and guidelines have been developed to help reduce absenteeism and tardiness.

Supervision must understand and explain Company policies and procedures to their subordinates. Supervisors at every level will be responsible for maintaining attendance records for employees. Since inconsistency causes problems when counseling or disciplinary action is necessary, Industrial Relations will monitor actions to assure consistency.

In an effort to monitor absenteeism and tardiness, the following guidelines should be adhered to:

- Accurate records of all nonproductive time should be recorded for each employee.
- As soon as an employee returns to work from sick leave or tardiness, the supervisor should take a few minutes to informally speak to the employee.
- Deal with each absence immediately, whether or not the absence was expected.
- When an employee's record indicates that he is having a problem or might be abusing sick leave, it is time for a counseling session. In such circumstances, a written warning may be necessary.
- If disciplinary action is taken, it must be based upon detailed records.
- Absenteeism should be evaluated giving consideration towards the understanding of any sick leave due to unusual circumstances, such as major medical problems.
- If an employee has been out in excess of thirty (30) hours within a six (6) month period or if the employee's record shows a pattern of absence abuse, the employees should be considered for immediate counseling. Absenteeism due to major medical problems should be evaluated on a case-by-case basis.

PROGRESSIVE DISCIPLINE

Counseling

Whenever there is an irregularity in attendance, the supervisor should, prior to progressive discipline, meet with and counsel the employee as to his obligations. Listed below are the items to be discussed:

- The recent absences leading up to the counseling session.
- The Company's concern and willingness to help if there is a problem.
- Positive steps to be taken by the employee to preclude the need for future disciplinary action.
- Convince the employee that they do make a difference in their respective department, in that satisfactory attendance is one of their primary responsibilities.
- Explain to the employee how his absence can affect others when not at work, such as disruptions of work schedules, problems encountered by employee who fills in, etc.

Step 1- Oral Warning

When patterns of absence or tardiness begin to surface or when an employee approaches thirty (30) hours of absenteeism within a six (6) month period, an oral warning should be initiated and documented as a "Memo for Record." The minimum responsibilities of the immediate supervisor are as follows:

- The absenteeism record leading up the counseling. This should be completely up-to-date.
- The Company's concern and willingness to help if there is a bona fide problem.
- Positive steps to be taken by the employee to avoid further disciplinary action.
- Convince the employee that they do make a difference in their department and that satisfactory attendance is one of their primary responsibilities.
- Explain to the employee how his/her absence can affect others when not at work, such as disruptions of work schedules, problems encountered by employee who fills in, etc.

Step 2- Written Warning

When an employee fails to take the necessary action to correct his attendance following an oral warning, it may be necessary to issue a Notice of Disciplinary Action to substantiate formal counseling. Such action is designated as a written warning.

Step 3 - Written Warning with 90-Day Review Period

When an employee continues to be tardy or absent from the job, the employee may be placed on a review for a period of ninety (90) days, known as a "90-Day Review." The following information shall be contained in the Notice of Disciplinary Action form:

- Clear, concise, and explicit information explaining the terms of the 90-day period and the consequences that could result if the employee continues with lost time during this period. At this point, the employee should also be advised that the next step could be termination.
- Once every thirty (30) days, the supervisor will sit with the employee and evaluate his performance. Each evaluation shall be documented, and copies shall be sent to the employee and Industrial Relations (if the involved employee is represented by a bargaining unit) or Industrial Relations (if the involved employee is nonrepresented).

Step 4 - Termination

When an employee fails to correct his/her problem through whatever means necessary, the next step is termination.

NOTICE OF DISCIPLINARY ACTION FORM

The EG&G Notice of Disciplinary Action Form will be used to document all formal disciplinary actions.

Explanation of the form items:

- **Nature of Charge.** Use a short title for the offense, (i.e., excessive tardiness, neglect of duty, possession of intoxicating liquor, etc.).
- **Detailed Description of Offense.** Record the specific facts supporting the charge. Details must be factual, objectively stated, and supportable under scrutiny.
- **Adverse Effect on the Safety or Welfare of Others.** Will be indicated when, for example, fighting or negligent horseplay.
- **Adverse Effect on the Performance of Required Work.** Will be indicated when, for example, there is excessive absenteeism or tardiness.
- **Comments.** May be used to further explain to an employee the effect or severity of the offense.

APPROVAL CYCLE

The initiation of a Notice of Disciplinary Action form is the responsibility of the employee's immediate supervisor. Before disciplinary actions are placed into effect, the manager requesting such action shall communicate with and obtain the concurrence signature of the Manager, Industrial Relations, and the appropriate Branch Manager/Manager or his designee. All terminations or suspensions shall be discussed with the Manager, Industrial Relations, and any notice documenting the termination of any employee will require the signature of the Manager, Industrial Relations.

The highest level for concurrence of written warnings, probation and suspension actions is the appropriate Supervisor and the Administrative Manager or his designee. Once the concurrence cycle has been completed, the parties indicated on the bottom of each form shall receive appropriate copies. All terminations or suspensions shall first discussed with the "Manager, Industrial Relations," or his designee, and any notice documenting the termination of an employee

will require the signature of the Manager, Industrial Relations. Employees being considered for this type of action may be placed on emergency suspension pending approval of planned actions.

Before written warnings, probations, suspensions or terminations are placed into effect, the Supervisor requesting such action shall communicate with the Manager, Industrial Relations, or his designee, to discuss such action prior to implementation.

ADMINISTRATION OF POLICY

A progressive sequence of disciplinary action is to be taken based upon the severity of an offense. The least severe offenses result in oral warnings; the most severe offenses result in terminations.

If and when an employee is placed on a "90-Day Review," his/her conduct or performance becomes critical to continued employment. Any additional violations during this period will result in more serious disciplinary action, regardless of the fact that the additional violation itself may not mandate a suspension or termination. Such judgments are necessary for successful application of the disciplinary policy. It is of the utmost importance that disciplinary actions not only be justified, but also that they are administered in an even-handed fashion, which treats equally all who have committed the same type of offense. Employees on a "90-Day Review" shall have their conduct and performance evaluated by their immediate supervisor not less than once every thirty (30) days during said period.

Each evaluation shall be documented with copies sent to the employee and the Manager, Industrial Relations. Applicable provisions of collective bargaining agreements are not altered by this procedure.

The chart below, although not absolute or exhaustive, shows some causes that may justify disciplinary action. It also indicates the type of counseling and severity of action that could be taken based upon the frequency, facts and severity of the offense. These guidelines should be adhered to as closely as possible.

<u>Incident</u>	<u>Oral Warn</u>	<u>Written 90-Day Warn</u>	<u>Review</u>	<u>Susp.</u>	<u>Term.</u>
Harm to Person or Property					First
Sleeping on the Job					First
Falsifying Information				First	
Theft					First
Drugs & Intoxicants					First
Insubordination					First
Espionage, Sabotage or Criminal Activity					First
Improper Conduct				First	Second
Safety Infractions				First	Second
Security Infraction			First		Second
Excessive Absence/ Tardiness	First	Second	Third		Fourth

MEMORANDUM OF UNDERSTANDING

EG&G Langley, Inc. and IBEW Local 1340 agree to amend the Maintenance Collective Bargaining Agreement (CBA) between the parties to add the following classifications and rates of pay.

Calibration Mechanic A	\$16.22
Calibration Mechanic B	\$15.34

These classifications will receive the benefits as stated in the CBA. These new classifications will be co-located and expected to interface and cross train with the current Relay Calibration Maintenance Electricians.

AGREED TO:

EG&G Langley, Inc.

IBEW Local 1340

Lester W. Jordan, Manager
Industrial Relations

Richard Adams, Business Manager
IBEW Local 1340

DATE: _____

Raymond Tucker, Chief Steward
IBEW Local 1340

MEMORANDUM OF UNDERSTANDING

Between EG&G Langley and IBEW Local 1340

The purpose of this memorandum is to establish a rate of pay for the high voltage, maintenance electrician classification and to set seniority guidelines for the Electrical Job Family.

All of the classifications listed below will be considered one Job Family. The Electrical Job Family will consist of two different job classifications but will continue to have one seniority list. The High Voltage Maintenance Electricians will have their own job classifications due to the specialized skills required in that area. Listed below is a new rate and details for the Electrician, Maintenance High Voltage classification. All other provisions of the collective bargaining agreement will remain in effect and apply to the new classification.

Electrician, Maintenance
Electrician, Maintenance High Voltage *

* Rate = \$1.50 above Electrician, Maintenance

The Electrician, Maintenance High Voltage is expected to be on call at all times for customer and company needs. At least one employee in the department will be expected to carry a pager at all times and respond to any calls they may receive on behalf of the company or customer. Pay for on-call duty is included in to the hourly rate and no further compensation will be made.

Maintenance Electricians shall be used, at the Company's discretion, as standby to work with the current high voltage, maintenance electricians. Upon becoming certified at 115KV or more an electrician working within the classification of high voltage will be compensated at the appropriate rate.

Agreed to:

Lester W. Jordan, Manager
Industrial Relations

Richard Adams, Business Manager
IBEW Local 1340

Date

Raymond Tucker, Chief Steward
IBEW Local 1340

**MEMORANDUM
OF
UNDERSTANDING**

This understanding is established to clarify a previous memorandum dated April 24, 1998 establishing a job classification and wage rate for Calibration Mechanics.

EG&G Langley, Inc. and IBEW Local 1340 agree to amend the Maintenance Collective Bargaining Agreement (CBA) between the parties to add the following classifications and rates of pay.

	5/1/98	8/1/98	8/1/99
Calibration Mechanic A	\$16.22	16.74	17.28
Calibration Mechanic B	\$15.34	15.83	16.34

These classifications will receive the benefits as stated in the CBA. These new classifications will be co-located and expected to interface and cross train with the current Relay Calibration Maintenance Electricians.

AGREED TO:

EG&G Langley, Inc.

IBEW Local 1340

Lester W. Jordan, Manager
Industrial Relations

James Avery, Business Manager
IBEW Local 1340

DATE: _____

Raymond Tucker, Chief Steward
IBEW Local 1340

COLLECTIVE BARGAINING AGREEMENT
BETWEEN
DIVERSIFIED TECHNOLOGY & SERVICES OF VIRGINIA, INC.
AND
DISTRICT LODGE 74
INTERNATIONAL ASSOCIATION OF MACHINISTS
AND AEROSPACE WORKERS
September 1, 1998 to October 31, 2000

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PREAMBLE

This Agreement is made and entered into as of the 1st day of September, 1998, by and between DIVERSIFIED TECHNOLOGY & SERVICES OF VIRGINIA, INC., its successors and assigns, hereinafter referred to as the "Company" or "Employer", and DISTRICT LODGE 74, INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS, AFL-CIO, its successors and assigns, hereinafter referred to as the "Union".

WITNESSETH:

It is the intent and purpose of the parties to this Agreement to promote and improve all industrial and economic relations between the Company and the employees covered by this Agreement, as set forth in the Agreement covering rates of pay, hours of work and conditions of employment to be observed.

ARTICLE I
RECOGNITION

Section 1. The Company recognizes District Lodge 74, International Association of Machinists and Aerospace Workers, AFL-CIO, hereinafter collectively referred to as the "Union", its successors and assigns, as the sole and exclusive collective bargaining representative for all employees covered by this Agreement as certified by the National Labor Relations board in Case No. 5-RCA-8670.

Section 2. This Agreement shall cover all future shops and/or plants in the immediate Hampton or Newport News area (twenty-five mile radius) which the Company may operate during the term of this Agreement, or any existing plant, provided the work is previously performed by employees in the Bargaining Unit. The Union agrees to hold the Company harmless in the event of a jurisdictional dispute between any two or more unions in regard to this Section.

ARTICLE II
EMPLOYEE CONDUCT POLICY/PROGRESSIVE DISCIPLINE

Section 1. Reasons for Discipline. The Company may discipline including suspension, probation and discharge for just cause, including failure of the employee to observe the rules and regulations of the Company or to perform quality work.

Section 2. Progressive Discipline. Ordinarily the Company will utilize the progressive discipline procedure outlined in Section 3 of this Article when it finds it appropriate to discipline an employee. Notwithstanding the fact that the Company prefers to utilize progressive discipline, it reserves the right to impose discipline (including suspension, probation or discharge even for the first offense) if in its reasonable judgment the severity of the offense warrants more severe discipline.

Section 3. Progressive Discipline Procedure. For violation of the Company rules or regulations or for failure to perform quality work the Company may resort to the following procedure:

- (a) First Violation: Oral warning.
- (b) Second Violation: Supervisor prepares a report citing infraction and employee receives copy with original going into Employee personnel file.
- (c) Third Violation: Suspension of work for up to and including five (5) working days.
- (d) Fourth Violation: If an employee receives a combination of three (3) offenses in eighteen (18) months or less he is subject to up to and including discharge and not eligible for rehire.

Any incident of discipline that occurred more than eighteen (18) months before the violation in question will not be considered in the progressive discipline process.

Section 4. Rules and Regulations: The Company shall provide each employee and the Union a copy of all rules and regulations. Any amendments or changes to the rules and regulations will be distributed to the employees and the Union five (5) days in advance of their implementation. The Union may request within ten (10) days of receipt of any proposed changes that the Company meet and discuss the impact of such rules provided that the promise to meet and confer will not be interpreted as the interference with the Company's right to promulgate reasonable rules and regulations so long as such rules and regulations do not conflict with the express provisions of this contract.

ARTICLE III NON-DISCRIMINATION

Section 1. No Discrimination. There shall be no discrimination against any employee because of race, religion, national origin, sex, age, or Union membership by either the Company or the Union. The Company and the Union agree to comply with all laws relating to the non-discrimination of and the accommodation of the disabled and this Agreement shall be so interpreted.

Section 2. Pronouns. Wherever the pronouns he, him, or his appear in this Agreement, it is agreed that any such reference shall have equal application to employees irrespective of sex and in no way represents sexual discrimination.

ARTICLE IV MANAGEMENT RIGHTS

Section 1. The management of the project and the direction of the work force, including the right to plan, direct and control its operation; to determine the means, methods, processes, materials, and schedules of operations; to determine the location of its business; the right to contract and subcontract for materials, supplies, services and equipment; to determine the continuance of its operation; or operating departments; to establish and require employees to observe its rules and regulations; to hire, lay off or relieve employees from duties; and to suspend, demote, discipline and discharge employees for just cause, are the rights solely of the Employer.

The foregoing enumeration of Employer's rights shall not be deemed to exclude other rights of the Employer not specifically set forth. The Employer, therefore, retains all rights not otherwise specifically limited by this Agreement.

Section 2. The Company agrees not to subcontract Bargaining Unit work that will directly cause the termination of Bargaining Unit employees unless directed to do so by its customer, the verification of which will be furnished to the Union on request. The Company agrees that Union has the right to represent the employee on all matters concerning conditions of work, wages and other applicable matters as mentioned in the Agreement.

Section 3. Government Directive/Drug Testing. The Company shall have the right to establish rules, procedures and regulations to comply with any government directive, including but not limited to, establishing a drug free work place and work force. The Company may also implement a program whereby employees would be tested for drugs (including alcohol) and the failure of the employee to take the test shall be grounds for discipline.

ARTICLE V DUES CHECK-OFF

Section 1. The Company agrees, subject to the provision hereof, to deduct Union dues, initiation fees and/or other deductions from the wages of the employees so authorizing the same in writing.

Section 2. The Union shall send a copy to the Company of the writing of those employees who have made such assignments, together with a statement of the initiation fees, dues and other deductions to be deducted from the pay of such member and the Company agrees to deduct in the amount so certified in respect to each such member from the first pay check of each month of such member following the receipt by the Company of such certification or statement monthly and shall make such remittance to the Union in one lump sum within ten (10) days after said deduction is made.

Section 3. The Union agrees to indemnify and hold the Company harmless against any and all claims, demands, suits, costs, and/or other forms of liability and expenses that shall arise out of or because of action taken by the Company for the purpose of complying with any provisions of this Article or in reliance upon any list, notice or assignment furnished by the Union under any such provisions.

Section 4. The Union agrees to furnish the Company a copy of the authorization duly signed by each employee authorizing the deduction and properly witnessed. The check-off authorization shall read as follows:

DUES CHECK-OFF

I hereby voluntarily assign the District Lodge 74, International Association of Machinists and Aerospace Workers, or in lieu thereof, a subordinate Local Lodge designated by District Lodge 74, from any wages earned, or to be earned by me, initiation fees and the amount of my regular monthly membership dues in said Union.

I authorize and direct my employer to deduct said monthly membership dues from my pay each month, and to remit the same to the order of the officer or official designated by the

Union, said authorization and direction to be subject to all the terms and conditions contained in the Collective Bargaining Agreement in existence between my employer and the Union.

This check-off authorization shall remain in effect until revoked by me and shall be irrevocable for a period of one (1) year from the date of execution of such authorization or until the termination of this Agreement between my employer and the Union.

This authorization shall be automatically renewed and irrevocable for one successive period of one (1) year, unless written notice of cancellation is given by me to the Company and the Union, said notice to be forwarded by registered or certified U.S. Mail, not more than seventy-five (75) days and not less than sixty (60) days prior to the expiration of each term of one (1) year, or prior to the termination of the Collective Bargaining Agreement between my employer and the Union, whichever occurs sooner.

This authorization is voluntarily made in order to pay my fair share of the Union's cost of representing me for the purpose of Collective Bargaining and this authorization is not conditioned on my present or future membership in the Union.

ARTICLE VI HOURS OF WORK

Section 1. Except as otherwise provided for in this Agreement, the normal work day shall consist of eight (8) hours per day and the normal work week shall consist of forty (40) hours of work per week, Monday through Friday. This provision shall not be construed as guaranteeing any employee a specific number of hours of work per day or per week.

Section 2. Employees assigned to shift work shall be permitted to eat while in a duty status. Should employees work through the normal lunch period due to work requirements, lunch shall be taken at the first available opportunity (half hour unpaid). Should the company (Supervisor) require employees to work through the normal lunch period, the employees may be excused at the end of this shift early.

Section 3. The hours of work for employees in the Steam Plant assigned solely to the first shift shall normally be 7:00 a.m. to 3:30 p.m. with a thirty (30) minute nonpaid lunch period. Employees who are required to work while eating shall have an eight hour shift.

Section 4. For employees assigned to shift work in the Steam Plant the schedule shall normally be as follows:

(a)	First shift	7:00 a.m. to 3:00 p.m.
(b)	Second shift	3:00 p.m. to 11:00 p.m.
(c)	Third shift	11:00 p.m. to 7:00 a.m.
(d)	Swing shift	3:00 p.m. to 11:00 p.m. 11:00 p.m. to 7:00 a.m. 7:00 a.m. to 3:00 p.m.

Each four (4) weeks employees in the Steam Plant assigned to shift work will be required to rotate.

Section 5. For employees assigned to work in the compressor Stations (east and West Areas) the second shift will be on a voluntary basis. If there are more volunteers than needed,

the assignment will be by seniority. If there are not enough volunteers, the assignment will be made in a fair and impartial manner with the first assignment being made by inverse seniority.

For employees assigned to shift work in the Compressor Stations the schedule shall normally be as follows:

(a)	First shift	7:00 a.m. to 3:00 p.m.
(b)	Second shift	3:00 p.m. to 11:00 p.m.
(c)	Third shift	11:00 p.m. to 7:00 a.m.
(d)	Floating shift	Eight hour shift as research requires

Section 6. It is recognized and agreed that the Company may assign employees to work overtime. The Company shall endeavor to give affected employees as much advance notice as possible of the overtime assignments. Such assignments are to be made in a fair and equitable manner, based upon the employee's classification. Nothing contained herein shall preclude the right of the Company to require a shift worker to work overtime when his relief does not show up. The Company agrees to keep records of all overtime assignments and to make such records available to the Union upon request. It is understood that the Company has the right to manage its work force and individual schedules to minimize overtime.

Section 7. Overtime paid at one and one-half (1.5) times the regular straight-time hourly rate shall be paid for all hours worked by an employee in excess of eight (8) hours per day or forty (40) hours per week. Overtime work performed on the employee's regularly scheduled sixth or seventh day shall be paid for at the rate of one and one-half (1.5) times the regular straight-time hourly rate. Vacation, holiday and sick leave time shall be considered time worked for the purpose of determining overtime.

Section 8. There shall be no duplication or pyramiding of overtime or premium pay under the provisions of this Agreement; any such hours compensable under two or more provisions of this Agreement shall be paid at higher premium rate of the two.

Section 9. In the event it is necessary to call out an employee to work, Employer agrees that such called out employee shall receive a minimum of four (4) hours of work or four (4) hours of pay at one and one-half (1.5) times the regular straight-time hourly rate. In addition, any employee called back to work after his regular shift hours shall be promptly excused upon completion of the job which he was called in to perform.

Section 10. In the event a permanent employee reports for work at his scheduled starting time and no work is available, the employee shall be entitled to receive four (4) hours show up time pay, to be paid at the appropriate hourly rate of pay.

Section 11. In the event NASA mandates a reduced work load or work force, then employees not scheduled to work will not be paid for such days unless the Company is reimbursed by NASA.

Section 12. The Company may request an employee or the employee may request the Company that he be allowed to work more than eight (8) hours in a day without overtime compensation. In lieu of overtime compensation pursuant to this Article VI, Section 7, the employee will be given an equal amount of time off in the pay period. (For example, if an employee works ten (10) hours on Monday, he may work six (6) hours on Thursday.) Agreeing to the requests hereunder is understood to be voluntary on the employee's part and the Company's part.

ARTICLE VII
SENIORITY

Section 1. Seniority shall be defined as the length of continuous service, whether employed by the Company or its predecessor, from the employee's latest date of hire, and shall be recognized on a Bargaining Unit wide basis.

Section 2. The Company shall furnish the Union each six (6) months with an accurate seniority list of all employees in the Bargaining Unit. Such list is to include the name, classification, latest date of hire, wage rate, and home address of record of each employee.

Section 3. All employees shall be considered probationary employees for the first forty-five (45) working days of permanent employment and shall not, during such period, be entitled to any benefits of this Agreement, except paid holidays. Any decision of the Company to terminate or otherwise discipline a probationary employee shall be final and not subject to the Grievance and Arbitration provisions of this Agreement. Upon satisfactory completion of the probationary period, the employee shall become a permanent employee with seniority dating from the date of permanent hire. Relief employees will receive credit for all actual hours worked for the Company at the time the employee is permanently hired. This credit will not apply to leave accrual or any other financial benefit.

Section 4. Classification seniority shall mean the length of accumulated service within a classification.

Section 5. In effecting layoffs and recalls, classification seniority shall control where the relative skill and ability of the employees given the job requirements are the same or relatively equal.

Section 6. Seniority shall be canceled and the employee shall be considered terminated upon the happening of any of the following events:

- (a) An employee quits;
- (b) An employee is discharged;
- (c) An employee fails to return to work within five (5) days of notice of recall given by the Company by registered or certified mail;
- (d) An employee is absent for three (3) days without previously notifying the Company, except in cases of extenuating circumstances;
- (e) An employee overstays a leave of absence without notifying the Company, except in cases of extenuating circumstances;
- (f) An employee engaged in other employment during a leave of absence without obtaining prior permission of the Company;
- (g) An employee gives false reasons for obtaining a leave of absence;
- (h) Settlement has been made for total disability;

(i) An employee has retired:

(j) An employee has been in layoff status or is absent because of sickness or injury or similar cause for more than twelve (12) months.

Section 7. The seniority of employees promoted or assigned to jobs outside of the Bargaining Unit shall be frozen at the level obtained at the time of such transfer or promotion. In the event such employee returns to the Bargaining Unit within one (1) year, he shall be entitled to whatever rights and privileges his accumulated seniority as of the time of promotion or transfer out of the Bargaining Unit would entitle him without prejudice.

Section 8. It is agreed that each employee shall be credited by classification seniority for the period he has been working in that classification with former contractors at NASA Langley. All employees entering a different or new classification after June 1, 1988 shall have their classification seniority started on the date of entry into such classification.

Section 9. The Union expressly recognizes the need for flexibility in the work force and agrees that an employee in one classification shall not be restricted from doing temporarily the work normally done by an employee in another classification. However, all such assignments shall be made in a fair and equitable manner.

In the event an employee temporarily works in a classification for which the normal rate of pay is higher than the rate of pay received by the employee in his normal classification, he shall receive the higher rate of pay. In the event an employee is assigned work temporarily in a classification lower than his normal classification, he shall receive his regular rate of pay.

Section 10. In making assignments to a permanent job vacancy or a new job, the Company shall give first preference to any currently qualified employees who apply for the position. A notice of any such vacancy or new job shall be posted on the bulletin board for a period of three (3) days (during such time vacancy shall be considered temporary). The Company, at the end of such time period shall consider those employees who have submitted a bid notice (the form and content of which the parties shall mutually agree upon) and consistent with the overall requirements of the Company as determined by the Company, shall select and assign the senior employee, if in its opinion the applicant is also qualified and suitable for the job.

Section 11. In the event the Company believes no properly suitable or qualified employee signs such a bid notice for a job opening, it is agreed and understood that the Company may hire a new employee for such job. Any employee who is awarded a job opening is expected to be qualified to perform the tasks of such job following initial break-in instructions and guidance from supervision.

Section 12. Employees assigned or transferred pursuant to this Article shall be given thirty (30) days in which to prove they are capable of performing the duties of the new job in a satisfactory manner. In the event such employees do not satisfactorily meet the requirements of the new job, they shall be returned to their prior position or its equivalent without prejudice. Any employee, upon request, shall be advised in the presence of his Union representative of the specific reasons for not meeting the requirements of the job and any disputes arising therefrom shall be subject to the grievance procedure.

Employees who are accepted on any bid job and are returned to their former job for failing to meet job requirements shall not be permitted to bid on any job for a period of six (6) months.

Section 13. When a reduction of working forces becomes necessary in the Company's judgment, employees shall be retained by the Company in accordance with the principles of Section 5, according to the number of employees the Company determines is necessary within each classification for the reduced operations contemplated by the Company. Recall of employees shall be accomplished by the same procedure in reverse.

Section 14. Any employee within a particular job classification who is affected by a layoff within his classification may bump, based only on Bargaining Unit seniority, any less senior employee in any like or lower rated classification, but only if qualified to perform the work within such classification.

ARTICLE VIII GRIEVANCE AND ARBITRATION

Section 1. It is the intent of this Article to establish means for prompt adjustment of working problems and personal grievances at the job level by a conference between the immediate Foreman and the employee involved, provided a Union representative has been given an opportunity to be present. If not resolved in this informal level, a formal grievance shall be filed and processed in accordance with the steps and time limits and mutually agreed upon extensions specified below. For the purpose of this Article, a formal grievance under this Agreement is defined as a written statement by the Union, company, an individual employee or group of employees (hereinafter called "Grievance") claiming a violation of the terms of this written Agreement. Such grievance, to be valid, must specify the Article and Section of the Agreement believed to be violated.

Section 2. Except for payroll adjustments, no grievance shall be filed or processed based on facts or events or omissions within the employees knowledge, which have occurred more than ten (10) working days before such grievance is filed. Both parties agree to exert an earnest effort to settle such grievances promptly through the following steps:

STEP 1. The employee involved shall first confer with the Project Manager or his designated representative in order to amicably settle the matter, provided a Union representative has been given an opportunity to be present. The Foreman must give his decision within five (5) working days.

STEP 2. Should the grievance not be satisfactorily settled by the discussion outlined in Step 1 above, the Union shall within five (5) working days submit the grievance in writing to the Vice President, Operations or his representative. Within ten (10) working days after receipt of the written grievance, the Vice President, Operations or his representative shall either fully satisfy the grievance or meet with the Shop Steward, Business representative or International Representative of the Union and employee, if applicable. The Vice President, Operations, or his representative will render a written decision within five (5) work days after such contact.

STEP 3. If the parties are still unable to settle the grievance, then either party may, within thirty (30) calendar days after a written decision has been given, request the Federal Mediation and Conciliation Service to submit a list of five (5) impartial arbitrators from which the Company and the Union shall choose one to decide the controversy by the

Company first striking two names, and then the Union striking two (2) names, and the remaining name shall be chosen arbitrator. The arbitrator shall not have the authority to alter, amend or change the terms or provisions of this Agreement, and his decision shall be limited to the particular grievance in question. The arbitrator's decision shall be rendered in thirty (30) days and shall be final and binding on the parties.

Section 3. The Union and the Company shall equally share the fee of the impartial arbitrator, including any mutually agreed upon services relating to the arbitration proceedings. Either party shall be permitted to call employee witnesses at each and every step of the grievance procedure and no employee whose participation is reasonably necessary as a Union Representative or witness shall suffer any loss of earning as a result of so serving. The Company on demand will produce production, payroll, or other records for the purpose of substantiating the contentions or claims of the parties well in advance of the formal proceeding of the grievance procedure.

Section 4. All time limits prescribed herein may be extended by mutual agreement of the parties. Failure of the Company to respond within the time limits shall constitute a basis for escalating the grievance to the next step. Failure of the Union or employees to process the grievance to the next step within the time limits shall render the grievance invalid.

Section 5. In any case involving discharge or discipline imposed by the Company, back wages, if any are awarded, shall be limited to the amount of wages that employee would otherwise have earned less any unemployment compensation or substitute earnings during the period of discharge or suspension.

Section 6. Failure of the Company to implement the award of arbitrators within five (5) working days (if it is reasonably possible for the company to implement) after receipt shall be cause for a recognized work stoppage. No employee participating in such a work stoppage shall be discharged, disciplined, or otherwise subjected to any penalty for participation in such a work stoppage.

ARTICLE IX LEAVES OF ABSENCE

Section 1. When it is necessary for employees to leave their duty for the purpose of attending to their personal business, and provided reasonable notice has been given the Company, employees will be granted leaves of absence without pay, provided the absences do not unduly interfere with the efficient operation of the Company. Such leaves shall not exceed six (6) months but upon written request with Company approval may be extended for additional time. The Company shall be under no obligation to an employee on leave of absence, except to return to work in accordance with the employee's seniority. It is mutually agreed and understood that leaves will not be granted for the purpose of seeking different employment.

Section 2. An employee who is summoned for jury duty, and who actually responds to said summons, will be paid the difference between the amount of money he received for jury duty pay and what he actually would have earned had he worked for the Company during the time he was absent due to jury duty, computed at the employee's regular straight-time rate for either an eight (8) hour day or five days per week. It is understood and agreed that the Company has the right to require satisfactory proof that an employee actually served on the jury panel and the number of days served.

Employees on the first and second shifts will not be required to report for work on the day they are required to serve as a juror or appear as a witness. Third shift employees will not be required to report for work on any night prior to reporting for jury duty or appearing as a witness the following day where the workweek starts on Sunday night and on any night following where the workweek starts on Monday morning.

Section 3. In case of the death of a member of the immediate family of an employee, the employee shall be granted a maximum of three (3) consecutive workdays off with straight-time pay to attend the funeral and to tend to administrative details. It is understood that an employee must attend the funeral in order to qualify for funeral leave with pay. Verification may be required by the Company. Members of the immediate family shall be the spouse, children, step-children, parent, step-parents, father-in-law, mother-in-law, brothers, sisters, half-brothers, half-sisters, brothers-in-law, sisters-in-law, sons-in-law, daughters-in-law, grandparents, grandparents of spouse, grandchildren whether of natural relationship or legally adopted or under legal guardianship, of the employee.

Section 4.

(a) The Company agrees to observe all provisions of present law or laws hereafter enacted relating to its obligations to those of its employees who may hereafter leave the service of the Company to enter the Armed Services of the United States.

(b) Annual military leave, without pay, will be granted employees not to exceed eighteen (18) days.

Section 5. When it is necessary for employees to leave their duty for the purpose of attending to Union business other than organizational activities, and provided that reasonable notice has been given to the Company, employees will be granted leaves of absence without pay. Such leaves shall not exceed thirty (30) days, but may be extended for additional time upon written request to the Company, if such further leave is feasible. In no event will Union business leaves be granted to more than two (2) employees during any one month. The Company shall be under no obligation to an employee on Union business leave except to return to work in accordance with the employee's seniority. All such leave requests are further subject to the Company's ability to adequately replace such employee on a temporary basis.

Section 6. An employee granted unpaid leave of absence shall accrue seniority while absent on such leave. All benefits (sick leave, vacation, paid insurance and hospitalization, etc.) shall be suspended during the period of unpaid leave of absence, unless the employee makes arrangements with the Company to keep these benefits in force at the employee's expense.

Section 7. Where the provisions of this Article are in conflict with the Family Medical Leave Act (FMLA), the provisions of the FMLA will control, but shall not be interpreted to be in addition to other time that might be available under this Article. For example, an employee who is on medical leave pursuant to the FMLA for twelve (12) weeks may extend up to an additional twelve (12) weeks pursuant to Section 1 in accordance with the requirements of Section 1.

ARTICLE X
BULLETIN BOARD

The Company agrees to allow the union to share the Company bulletin board located in the work area where employees normally check in and out for the use of the Union for posting of matters relating to Union meetings and other Union matters of a non-controversial, non-political nature only. All such notices as posted by the Union shall be signed by an authorized Union representative.

ARTICLE XI
SAFETY, HEALTH AND SANITATION

Section 1. Any protective devices or other safety equipment necessary to protect employees from injury will be provided by the Company without cost and shall be worn and/or utilized by the employees in the performance of their job tasks. In this connection, the Company will welcome suggestions from employees, or the Union, regarding the need for additional safety equipment.

Section 2. In the event an employee suffers an injury on the job in the course of his employment and is required to leave work to go to the doctor, he shall be paid for the balance of his shift on the day such injury occurs. If the employee is able to return to work after visiting the doctor, he shall do so and shall be compensated for the time spent at the doctor.

Section 3. The Company and the Union agree and recognize that employees may from time to time have meritorious suggestions for improvement of safety conditions in the Company's operations. Therefore, the Company and the Union encourage employees to reduce any such safety suggestion to writing and submit it to the Company for consideration. It is further recognized and agreed that the Company may from time to time schedule safety meetings and require attendance by employees. Attendance of employees at any such safety meeting which is scheduled with required attendance shall be compensated for the time actually spent incidental to such safety meeting at the employee's applicable rate of pay.

Section 4. Should a walk around safety inspection of the Company's premises be conducted pursuant to the provisions of the OSHA, one (1) representative, designated by the Union, shall have the right to accompany the inspection team during regular duty hours without loss of pay.

ARTICLE XII
HOLIDAYS

Section 1. The following holidays or day(s) observed as such shall be paid holidays under this Agreement.

New Year's Day
President's Day
Memorial Day
Independence Day
Veteran's Day

Thanksgiving Day
Labor Day
Christmas Day
Columbus Day
Martin Luther King's Birthday

It is agreed that the phrase "or day(s) observed as such" means the day(s) on which the Government substantially reduces the normal activities at NASA Langley Research Center, the Center is in a "holiday or weekend mode" and the Government employees at NASA Langley Research Center celebrate the holiday.

On days which are not enumerated in paragraph one above, when because of special events or occasions, i.e., administrative holiday, inclement weather or other acts of God, situations restricting operations for short durations, the Government substantially reduces the normal activities at NASA Langley Research Center because of the special occasion or event, the following provisions apply:

Employees required to work will receive their normal straight-time pay. The number of employees required will be restricted to the number essential to maintain services.

Employees scheduled but not required to work will receive holiday pay for the day.

Section 2. An employee who is on the active payroll of the Company on a holiday recognized herein and who works his assigned schedule during that workweek, except for being absent without a legitimate reason, shall receive holiday pay at his straight-time pay rate. If an employee is scheduled or required to work on a holiday, but fails to do so, he will receive no holiday pay unless he has legitimate reason for not working.

Section 3. An employee who works on one of the above listed holidays shall be paid at one and one-half (1.5) times his straight-time base pay for all hours worked on that holiday, in addition to any holiday pay to which he may be entitled.

ARTICLE XIII ANNUAL LEAVE

Section 1.

(a) Employees with less than three (3) years shall earn one (1) hour Annual Leave for every twenty (20) man hours worked (to a maximum of 104 hours per year).

(b) Employees with three (3) years, but less than fifteen (15) years shall earn one (1) hour Annual Leave per year for every thirteen (13) man hours worked (to a maximum of 160 hours per year).

(c) Employees with more than fifteen (15) years shall earn one (1) hour Annual Leave per every ten (10) man hours worked (to a maximum of 208 hours per Year).

(d) For the purposes of computing Annual Leave, paid absences shall be considered as hours worked. Paid absences to be defined as Annual Leave, sick leave and holidays. During periods of short or long term disabilities or Workmen's Compensation, no accrual of Annual Leave will take place.

(e) Leave will be accrued on a pro-rata basis commencing upon permanent date of hire after there has been a successful completion of the probationary period.

Section 2. An employee's request to take annual leave shall be granted if the employee has enough accrued leave and he has given his Foreman reasonable advance

notice and the employee's absence would not unduly hinder the efficiency of the Company. Requests for Annual Leave for emergency reasons will be considered on an individual basis.

Section 3. Annual Leave may be requested in full hour increments only. Any employee having accrued unused leave at the end of the leave year shall have the privilege of carrying such unused leave forward into the following year. If unused leave is carried forward, a maximum of 120 hours will be permitted. Employees that request leave as set forth in Section 2 hereof and are denied due to workload requirements shall receive pay in lieu of time off if the employee is not permitted to carry over the time requested to the extent leave was denied.

Section 4. Should a holiday fall during the employee's vacation, he shall be entitled to an additional day of vacation, which shall be the next scheduled work day, which will be the employee's holiday.

Section 5. An employee who has Annual Leave to his credit but who leaves the service of the Company shall receive pay for such annual leave. This Section does not apply for an employee who leaves the Company without proper notice, one (1) week, in which event the employee forfeits all rights to receive pay for unused Annual Leave.

Section 6. The Company will keep accurate annual leave records of each employee in the Unit. Upon request such records will be made available to the employee or the Union.

ARTICLE XIV SICK LEAVE

Section 1.

(a) Employees covered by this Agreement shall accumulate sick leave credit on the basis of two (2) hours for each forty (40) man hours of service with the Company with a maximum accrual of 104 hours per year. Sick leave shall be calculated from the permanent date of hire. Sick leave can be accumulated without limit. However, an employee leaving the services of the Company will not be paid for any sick leave which he has accumulated.

(b) For the purposes of computing sick leave, paid absences shall be considered as hours worked. Paid absences to be defined as annual leave, sick leave, and holidays. During periods of short or long term disabilities or Workmen's Compensation, no accrual of sick leave will take place.

(c) Sick leave may be used for the employee's illness or the employee's doctor appointment.

(d) Sick leave may not be taken or used once the employee qualifies for short or long term disability payments.

Section 2. Sick leave records will be kept by the Company for each employee covered by this Agreement. Such records will be made available to each individual employee and for the Union upon request.

Section 3. Except as hereinafter provided, employees shall not be required to furnish a medical certificate to substantiate requests for sick leave, excepting when the illness exceeds

three (3) consecutive scheduled work days. In the case of a communicable disease, and in the interest of protecting other employees, the Company may require medical certification of fitness to return to work. In the event of a period of disability, for any reason (injury or illness), a medical certificate, stating employee is fit for duty, will be required prior to returning to work.

ARTICLE XV
NO STRIKE - NO LOCKOUT

The Union agrees that it will not (during the term of this Agreement) cause, permit, threaten or participate in any strike, including the refusal to cross any other labor organization Is picket lines, walkout, slow-down, boycott, picketing, work stoppage, refusal to work, or any other interference with the operation, management or functions of the Employer. The Employer agrees it will not lock out employees during the term of this Agreement.

Any employee taking part in or assisting or supporting such picketing or interruption of such operations shall be subject to discipline including discharge.

The Union shall not question the unqualified right of the Company to discipline or discharge employees engaging in, participating in or encouraging such action. It is understood that such action on the part of the Company shall be final upon the Union and its members, and shall in no case be construed as a violation by the Company of any provision of this Contract. Only the issue of fact as to whether or not any particular employee has engaged in, participated in or encouraged any such violation, is subject to the grievance procedure and arbitration.

The Company will not be required to deal with representatives of the Union during any period of picketing or interruption of operations by the Union or employees.

ARTICLE XVI
UNION REPRESENTATION

Section 1. The Company will recognize two (2) Shop Stewards and two (2) alternate Shop Stewards designated by the Union to the Company in writing. The Shop Stewards shall be allowed reasonable time during working hours to investigate complaints, process grievances and meetings with the Company, in connection with his collective bargaining responsibility. The alternate Shop Stewards shall assume such duties when the regular Shop Stewards are absent. The Steam Plant and Air Compressor Station will each have a Shop Steward and alternate designated by the Union from among the employees in each area to represent the employees in that respective area.

Section 2. The Company agrees that unit employees who file a complaint or grievance with the Company will not be questioned, in respect thereto, without the presence of a recognized Steward.

Section 3. The Shop Stewards shall be allowed reasonable time during working hours to investigate complaints, process grievances and hold meetings with the Company, in connection with his collective bargaining responsibility so long as the Shop Stewards shall under no circumstances cause any cessation of work or in any way interfere with the operation of the Company. In carrying out the duties of a Shop Steward it is understood the Shop Steward's duties shall not interfere with his being a productive, contributing and working employee of the Company subject to the normal and usual rules and regulations that apply to all other

employees. Shop Stewards desiring to leave their work place must first clear the matter with their immediate supervisor.

Section 4. In the event of a layoff, the Shop Stewards shall be granted preferential seniority and will be retained without regard to seniority, as long as the Company has work which they are qualified to perform. In the event a recognized Union representative is laid off or terminated (for lack of work he is qualified to perform) he shall be the first recalled when work he is qualified to perform becomes available.

Section 5. Nothing in this Article shall be construed as the right to deny the International Representative or Business Agent the privilege of processing a grievance on behalf of a unit employee, or to participate in a grievance meeting conducted in accordance with the Grievance Procedure. It is mutually understood that such Union representative must be able to conduct himself in a professional manner and maintain channels of communications. If the Company believes in good faith that such representative does not meet these requirements it shall so notify and meet with the Directing Business Representative to resolve the situation, if such a meeting fails to resolve the matter within ten days, the Company shall meet with a General Vice President. If the matter is not resolved with the General Vice President in ten days then the Company shall not be obligated to deal with such Union representative. The Union may grieve whether the Company's determination was made in good faith.

Section 6. The Union shall be free to withdraw a grievance at any step of the Grievance Procedure without prejudice.

Section 7. Employees in the Unit will not be suspended or discharged, without first being given the opportunity for a hearing with the Project Manager. Such employee shall be afforded the right to be accompanied and represented by the Union during said hearing.

Section 8. Upon prior notice to the Project Manager or his designated representative, authorized agents of the Union, who are not employees, may, in the sole discretion of the Company if the Union appeals in Section 5 of this Article have been exhausted, have access to the Employer's establishment during working hours for the purpose of adjusting disputes, investigating working conditions and ascertaining that the Agreement is being adhered to. Such notice will include name(s) and title(s) and specific purpose of visit. It is expressly agreed that the Employer is hereby released from any and all liability for any injury to such agent, occurring while he is on the premises of the Employer or at the Government site. It is further understood that the provisions of Section 3 hereof shall also govern the activities of these union representatives at the work site.

ARTICLE XVII

UNIT WORK PROTECTION

Work normally and historically performed by Bargaining Unit-Employees will not be contracted out or assigned to exclude employees where such action would adversely affect unit employees' employment. Adversely affected, as used in the context of the Article, shall be interpreted to mean: layoff, failure to recall, failure to promote, and the temporary assignment of an excluded employee to work within a classification where qualified employees regularly holding the classification are reasonably available to perform the work.

It is recognized by the parties that business reduction situations may occur necessitating a reduction in force. It is not the intent herein to recall employees for temporary increases in

work load which will not support full time employment. Should such situations arise the Company will utilize existing personnel to meet peak load conditions. However, it is agreed that where work load commitments will support recall of employees on layoff, such action will be taken.

ARTICLE XVIII
WAGES AND CLASSIFICATIONS

Section 1. The rates of pay shall be those specified in Appendix "A" which is attached hereto and made a part hereof.

Section 2. The manning needs of any classification covered by this Agreement shall be determined solely by the Company. This Agreement will not constitute a guarantee of any particular job or jobs within any particular classification, nor shall it constitute a guarantee of any particular duties or deleting duties from a classification. The principle of equal pay for substantially equal work shall apply as it shall also apply to all employees within a classification.

Section 3. The Company, at its sole option, may implement new classifications and/or job descriptions in light of changed conditions and the Company shall negotiate a wage rate acceptable to the Union for such classifications/job descriptions.

ARTICLE XIX
INVALIDITY

If any Article or Section of this Agreement should be held invalid by operation of law, or by any legal tribunal of competent jurisdiction, or if compliance with or enforcement of any Article of action should be restrained by such tribunal pending a final determination as to its validity, the remainder of this Agreement shall not be affected thereby and shall continue in full force and effect. Upon request of either party, the parties shall negotiate a satisfactory replacement for such invalid provision.

ARTICLE XX
401(K)

The Company shall establish a 401(k) plan, to be funded by voluntary contributions of the employees. The cost to establish and administer the plan to the extent allowed by law shall be borne by the plan participants. The Company will match employee contributions to the 401(K) plan from September 1, 1996, to August 31, 1997, and from September 1, 1997, to August 31, 1998, in an amount equal to \$260 per year.

ARTICLE XXI
HEALTH & WELFARE BENEFITS

Section 1. For full time employees on the role as of September 1, 1991, who so elect and for full time employees hired after September 1, 1991, the Company shall make the contributions set forth in Section 2 hereof in order to provide the following benefits:

- (a) Life insurance in the amount of \$50,000.00 per employee; (after age 65 there are certain benefit reductions)
- (b) Accidental death & dismemberment policy in the amount of \$50,000-00; (after age 65 there are certain benefit reductions)
- (c) Union Delta Dental Plan A25: (25/75 deductible) and
- (d) Hospitalization and medical insurance (Cigna 10/250 Plan)
- (e) 401(k) Plan

The exact terms of the coverages are those provided pursuant to and as a part of insurance policies.

Should the cost of such benefits exceed the amount contributed by the Company, such excess cost shall be paid by the employee through payroll deductions.

Section 2. The Company shall pay the following amounts per employee per month to provide the coverages set forth in Section 1 hereof:

- (a) From November 1, 1998 - October 31, 1999:

Single coverage - \$317
 Employee + one coverage - \$327
 Family coverage - \$372

- (b) From November 1, 1999 - October 31, 2000:

Single coverage - \$327
 Employee + one coverage - \$337
 Family coverage - \$382

(c) The cost per employee for the dental coverage will be calculated monthly by the Company on a composite basis.

Section 3. For employees on the role as of September 1, 1991, who do not elect to have the hospitalization and medical insurance benefit set forth in Section 1 hereof, the Company shall pay on their behalf the insurance premium for the dental Plan, life, AD&D and pay in lieu of the hospitalization and medical insurance benefit not elected the balance of the Company's contribution of the single coverage rate provided for in Section 2, less whatever the employee directs to the 401(k) plan.

Section 4.

- (a) The Company will provide short term disability insurance as follows:

66-2/3% of basic weekly pay to a maximum of \$300 per week.

Coverage will be from the 8th day of total disability and will extend through the 90th day of such disability.

(b) The Company will provide long term disability insurance as follows:

60% of basic monthly pay to a maximum of \$3,000 per month and in accordance with the insurance company schedule provided.

Coverage will be from the 91st day of total disability through the date you cease to be totally disabled or in accordance with the insurance company schedule in reference to age.

(c) It is recognized by the parties that cost of insurance premiums are subject to increase or decrease based on the experience rating of the carrier. In the event of a change in the premium cost of short and long term disability group insurance coverage the Employer will adjust the amount paid accordingly to insure that the agreed to coverage will be provided for the life of the Agreement at no cost to the employee.

Section 5. It is understood that the Company's contracts with insurance carriers provide the benefits contemplated under this Article. Interpretation and application of such contracts shall ultimately rest with the insurance carrier and any dispute thereunder shall be between the employee and the insurance carrier and not subject to the Grievance Procedure of this Agreement. The Company reserves the right to change insurance carriers so long as the primary benefits are essentially the same.

ARTICLE XXII GENERAL PROVISIONS

Section 1. Employees within the Bargaining Unit shall be assigned and answerable to, the Contract Supervisor, or in lieu thereof, one (1) individual who shall be designated in writing, who shall be responsible for assigning work, approving absences and initiating disciplinary action. No employee shall be subject to discipline for refusing to carry out instructions of other than his designated Foreman.

Section 2. As long as NASA requirements include a provision which requires employees of the Unit to wear uniforms, the Company will pay the cost of furnishing and laundering a change of uniforms per employee per regular working day. In the event NASA requirements in this regard are changed, it is agreed the Company shall have the right to modify the provision of this Section to the extent that NASA shall not be liable to the Company, or the Union, for any cost which is not a requirement of the Contract between NASA and the Company.

The Company further agrees to make available several sets of rain gear in the form of slickers, hats and boots for field service trips during foul weather. This equipment will be kept in a designated area and will be checked out individually as needed. The employee will be responsible for this equipment while he has it signed out.

Section 3. The Union and the Company recognize the need to be flexible in scheduling the hours of shifts and transfers to different shifts in order to accommodate NASA directed work. In the event of changes due to NASA direction, the Company will endeavor to give a minimum of 5 days notice so long as the NASA direction to the Company is at least 5 days. If the Company gets less than 5 days notice, the Company will give whatever notice it gets.

Section 4. The Employer reserves the right to define the content of a job.

Section 5. Regular part-time employees (those employees regularly scheduled to perform less than forty (40) hours work per week who are not classified as a utility person) shall be paid pro rata benefits. Part-time employees who are scheduled on an "as needed" basis shall not be paid benefits. "Benefits," as defined for purposes of this proposal, means annual leave pay, holiday pay, sick leave or health and welfare benefits under Article XXI. To be covered by disability insurance, an employee must work an average of thirty (30) hours per week.

**ARTICLE XXIII
SUPERSEDING EFFECT OF AGREEMENT**

It is expressly agreed and understood that the wages, working conditions and fringe benefits provided in this Agreement are in lieu of any and all working conditions and fringe benefits of any kind previously provided by the Company or its predecessor for employees within the Bargaining Unit.

**ARTICLE XXIV
DURATION**

Section 1. This Agreement shall become effective September 1, 1998, and shall remain in full force and effect until October 31, 2000, and from year to year thereafter unless either party shall, no more than ninety (90) and at least sixty (60) days prior to any anniversary date hereof, notify the other party of a desire to amend or terminate this Agreement. In the event such notice is given, the parties shall communicate not later than fifteen (15) days after receipt of such notice for the purpose of scheduling negotiations of a new Agreement.

Section 2. No Agreement, waiver, alteration, understanding, variation or modification of any terms or conditions contained herein shall be made by any employee, or group of employees, with the Company and in no case shall it be binding upon the parties hereto unless such Agreement is made and executed in writing between the parties hereto, and the same has been ratified by the Union.

Section 3. The waiver of, or any breach of conditions of this Agreement, by either party, shall not constitute a precedent in the future enforcement of all the terms and conditions herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement this 29th day of August, 1996.

DISTRICT LODGE 74
INTERNATIONAL ASSOCIATION OF
MACHINISTS and AeroSpace WORKERS

DIVERSIFIED TECHNOLOGY &
SERVICES OF VIRGINIA, INC.

APPENDIX A

WAGE, SCHEDULE, ENVIRONMENTAL AND DIFFERENTIAL PAY

Section 1. The Company agrees to pay the following hourly rate for the classifications listed below:

<u>Classification</u>	<u>9/1/98</u>	<u>9/1/99</u>	<u>9/1/00</u>
Stationary Steam Engineer	16.86	17.37	17.89
Equipment Service Mechanic	16.86	17.37	17.89
Steamfitter	16.86	17.37	17.89
Water Treatment Analyst	16.86	17.37	17.89
Senior Plant Technician	16.86	17.37	17.89
Plant Technician	16.02	16.50	17.00
Utility Person	6.82	7.02	7.23

Section 2. Shift differential shall be 35 cents per hour for second shift and 45 cents per hour for third shift work.

Section 3. When an employee is assigned to work the majority of a regular shift falling on Sunday, the affected employee will be paid 1.25 times the base rate plus applicable shift differential, if any, for all regular hours worked during the shift.

Section 4. When an employee is assigned to cleaning boilers fireside or waterside, he shall receive 1.5 times his basic rate.

Section 5. Employees hired after October 18, 1994 may be hired at the apprentice rate of \$12 per hour for those assigned to positions other than in the steam plant. The steam plant apprentice rate shall be \$12.50 hour. This rate shall only be applicable until an employee has worked 2080 hours for the Company in the apprentice rate category. (An employee will not get credit for time worked as a utility person.) Any such person in the apprentice rate category who has worked beyond the probationary period as per Article VII, Section 3, and who is on a regular schedule (not on an "as needed" basis), will be entitled to all the same benefits as a full-time or part-time employee, as the case may be.

Section 6. There is established a special classification of Utility Person, who shall earn the following benefits and wages, notwithstanding anything to the contrary in this Agreement:

(a) Benefits: In lieu of all benefits set forth in Article XXI, the Utility Person will receive a payment of \$1.29 per hour worked, which may be applied to the purchase of any benefit under Article XXI (if such benefit is available through the insurance carrier) or paid into the 401(k) plan under Article XX.

(b) Utility Persons will be entitled to a pro-rated vacation benefit based on the number of hours worked in the prior year (no vacation pay will be earned until the completion of each employment year).

(c) Utility Persons will not receive holiday pay, sick pay, shift premiums or Saturday or Sunday pay.

(d) Utility Persons will work regular part time schedules of 16, 24 or 32 hours per week.

#19227

EXHIBIT F

Y2K Guideline and Compliance Verification Form

Contractor Y2K Compliance Verification Form

NASA Langley Research Center

IT Item Name/System: _____ Risk/Complexity Level
(High, Medium, Low): _____

Brief Description:

Facility/Lab (if applicable): _____ Organization: _____

Documentation (check the applicable attachments) (Refer to the "NASA Year 2000 Agency Test and Certification Guidelines and Requirements" and the "NASA LaRC Y2K Guideline for Documentation and Testing Requirements" for guidance.)

- "No Date Dependency" Checklist
- Vendor Documentation for COTS Products (Software, Hardware, Firmware)
Specify: _____
- Y2K Test Plan
- Y2K Test Results
- Y2K Custom Software Compliance Checklist
- Y2K Compliance Checklist
- Other existing documentation indicating compliance, e.g. system documentation

Specify: _____

Comments:

I certify the IT Item/System identified has been assessed for Y2K compliance using the NASA and Langley Research Center Year 2000 test and certification guidelines and requirements as guidance and that the IT Item/System is compliant as reflected in the attachments.

Contractor Company Name: _____

Contractor Official: _____
Typed Name and Signature _____ *Date*

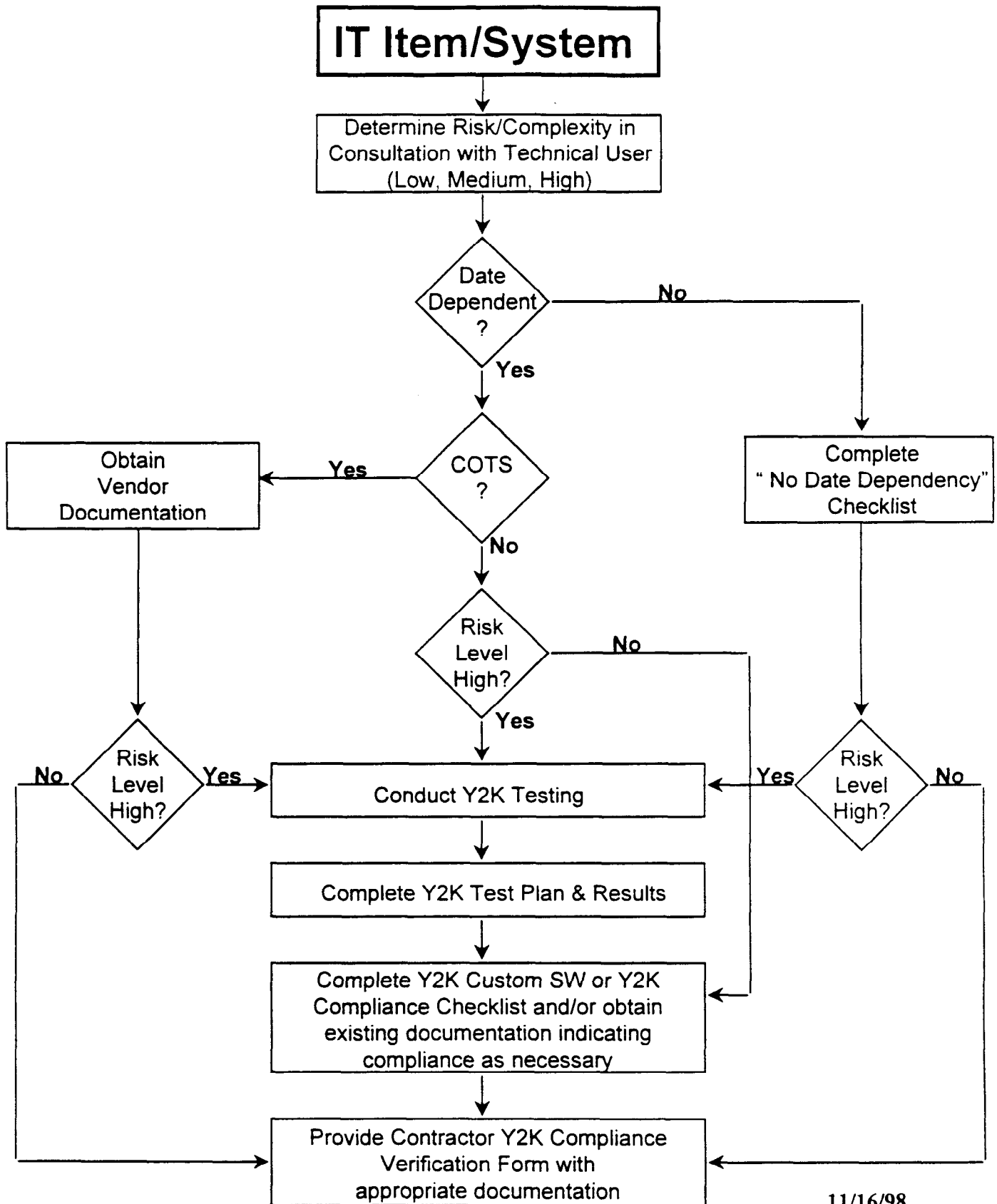
Concurrence:

NASA COTR/Technical Monitor

_____ *Typed Name and Signature* _____ *Date*

NASA LaRC Y2K Guideline for Documentation and Testing Requirements

BASED ON "NASA YEAR 2000 AGENCY TEST AND CERTIFICATION GUIDELINES AND REQUIREMENTS"



11/16/98

EXHIBIT G

Performance Requirements Summary

The Contract Requirements listed in the attached PRS (Column (2)) summarize specific firm fixed price tasks that are to be performed under this contract. The Performance Requirements associated with each Contract Requirement are as shown in the PRS and include:

- A. Work Requirements. A series of subtasks associated with each particular Contract Requirement are listed in column (3) of the PRS. Note that unsatisfactory performance of work requirements in Column (3) marked with an "*" will result in an unsatisfactory rating for the entire contract requirement.
- B. Weight (Wt.). The value of each Work Requirement is specified as a percentage of the Contract Requirement with which it is associated with in column (4) of the PRS. The percentages are based on judgement, taking into account both the costs incurred by the Contractor in carrying out a particular Work Requirement and the detriment to the Government if the Work Requirement is not satisfied. The Weight compared with the accepted line item unit prices provided in Exhibit I, *Schedule of Deductions*, will be the primary basis for deducting for partially performed, unsatisfactorily performed and non-performed work. The Government may withhold total payment of a contract requirement if the Government determines that the workmanship was unsatisfactory in terms of quality.
- C. Maximum Allowable Defect Rate (MADR). The MADR for each Work Requirement is identified in column (4a) of the PRS. The MADR is the defect rate for a monthly population of services which, when exceeded, indicates that the Contractor's quality control is unsatisfactory. The MADR does not represent a threshold for payment deductions. Deductions may be taken for all defects (with appropriate credit for rework) regardless of whether the MADR was exceeded. The MADR is expressed as a percentage of the total population per month or as a number of defects per month.
- D. Maximum Allowable Defect Number (MADN). If a MADR is not appropriate, due to the relatively small annual quantity of a particular service requirement, a Maximum Allowable Defect Number (MADN) has been indicated.
- E. Standard of Performance. The Standard of Performance for each Work Requirement is identified in column (5) of the PRS with a reference to the respective paragraph in Section C that specifies in detail the work to be performed.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO.	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
C8	MANAGEMENT				
C8A	Work Control	Processing*	50	2	- Work is planned, estimated and scheduled to assure work is completed within specified time limits and quality standards and documented daily on the CMMS per C.8.a
		Scheduling	50		- Work is scheduled to cause the least interference with normal NASA business and mission per C.8.a
C8B	Monthly Work Schedule	Timeliness	25	2	- The MWS is submitted and updated monthly on time by the 15 th of each month prior to the month that the work is to take place, and weekly as necessary at a time mutually agreed to per C.8.a.
		Quality*	30		- The MWS and updates are complete and include all information required by the SOW including the intended PM work that satisfies the requirements of the PM program, all IDIQ work, and justifications for MWS deviations per C.8.a.
		Procedures	25		- All work is performed in accordance with the MWS except where deviations are specifically authorized by the SOW or approved by CO per C.8.a.
		Documentation	20		- The MWS and updates are provided on the CMMS and hardcopy in the required detail per C.8.a.
C8C	Annual Work Plan (I and II)	Timeliness	40	2	- Each Phase is delivered on time within 30 days of the end of the contract year (Phase I) and 30 days following the Phase I submission (Phase II) per C.8.a
		Quality*	60		- Each Phase incorporates the RCM strategy and all of the requirements of the SOW including, as appropriate, historical data, inventory, trends, maintenance approach, reliability problems, risks, and recommendations per C.8.a.
C8D	Subcontract Administration	Procedures*	60	2	- Subcontract Administration Services are provided per C.8.b.
		Documentation	40		- Reports, plans, and other documentation are provided complete and on time per C.8.b.
C8E	Data Management	Procedures	50	2	- Data management, including operation and maintenance of the CMMS, is performed in accordance with the SOW per c.8.c.
		Quality	50		- The CMMS is maintained up-to-date at all times and the database reflects all work performed and other data required by the SOW per C.8.c.
C8F	Communications	Communications*	70	5	- Job coordination, feedback and direct contact with customers and Facility Coordinators is sustained per C.8.c.
		Timeliness	30		- Customers, Facility Coordinators and Zone Managers are kept apprised of their job status, problems and changes continuously and within two days after job completion per C.8.c.
C8G	Facility Coordinator		100	5	A Facility Coordinator is assigned to each contractor occupied building and performs duties in accordance with C.8.e.
C8H	Duty Officer	Timeliness	50	2	- Duty Officer is on duty after normal LaRC working hours per C.8.d.
		Quality	50		- Services are provided and problems are resolved after normal LaRC working hours in accordance with LHB 1040.2 per C.8.d.
C8I	Annual Facility Condition Assessment	Timeliness	30	MADN 1/yr	- Assessment is delivered complete not later than March 1 annually per C.8.f.
		Quality	40		- Assessment provides a complete assessment of the condition of all required facilities' interiors, exteriors, and major utility and mechanical systems in the approved format per C.8.f.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
		Documentation	30		-Assessment provides a prioritized list of required repairs and the complete report is submitted to the CO on the CMMS per C 8 f
C11	TROUBLE CALLS				
C11A	Trouble Call Performance	Timeliness	30	5	- For Emergency Trouble Calls during normal working hours, crew is at job site and working within 15 minutes of emergency notification. After normal working hours, emergency responded to within 2 hours of notification. Work is done continuously without interruption until emergency condition is arrested before departing job site per C.11.d. -For Routine Trouble Calls work is completed within specified time (10 days UNODIR, 10 days for lighting or 2 days for quality of life issues) per C 11.d.
		Quality	50		- Emergency condition is stabilized and all TC work is performed as specified in C.11.d.
		Procedures	20		-Specified receipt, processing, and recording is performed and information on the completed TC is entered into the CMMS within 2 days of completing the work per C 11.f.
C12	RECURRING WORK				
C12A	Preventive Maintenance	Incidental Repairs	10	5	-Repairs of defective equipment or system components within established limitations are made during PMs per C.12.a.
		Scheduling	15		-PM tasks performed in a building not available during normal hours are accomplished during 2nd or 3rd shifts or on weekends per C.12.a.
		Timeliness	25		-PM work is performed in accordance with annual shut down schedule and prescribed frequencies in LaRC PM program per C.12.a.
		Quality*	50		Quality PM is assured thru QC program and work is done in accordance with the SOW and PM program requirements per C.12.a.
C12B	PM Documentation	Timeliness	50	5	Data is recorded in the CMMS within 2 weeks of PM completion and maintained current per C.12.b.
		Quality	50		All required data is recorded in the appropriate PM record in the CMMS upon completion of the work per C.12.b.
C12C	PT&I	Timeliness	50	5	PT&I (oil samples) is done on time at the required frequencies per C.12.c.
		Procedures	50		PT&I (oil samples) is done following the required procedures per C.12.c.
C13	NONRECURRING (IQ) WORK				Note – With the exception of item C13A all work requirements and standards of performance associated with IQ work are identified and negotiated, as necessary, with each WSR. Each WSR is similar to a separate contract, not considered complete until all requirements are satisfied.
C.13A	WSR Reporting, Submittal & Documentation	Timeliness	50	5	All WSRs are reported and documented within the specified time limit per C.13.b & C.13.d.
		Procedures	50		Appropriate procedures are followed and documentation is prepared as required to report all WSRs to the CO per C.13.b & C.13.d.
C15	ENERGY MANAGEMENT				
C15A	EMCS Operations and Engineering	Procedures*	60	5	- EMCS Operations and Engineering Services are provided per C.15d. and C.15.f.
		Documentation	40		- Reports, analyses and other documentation are provided complete and on time per C.15.g.
C15B	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.15.g.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.15.g.
C15C	Operation Procedures Plan	Timeliness	45	MADR 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the contract start date and then reviewed, updated and resubmitted quarterly for CO approval per C.15.d.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO.	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.15.d
C16	OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT				
C16A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.16.c
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.16.c
C16B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the contract start date and then reviewed, updated and resubmitted quarterly for CO approval per C.16.d
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.16.d.
C17	CORROSION CONTROL AND COATING SERVICES				
C17A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW per C.17.c
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW per C.17.c
C17B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.17.d
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.17.d.
C17C	Annual Corrosion Control Condition Assessment	Timeliness	30	MADN 1/yr	-Assessment is submitted to the CO on time and complete by March 1 annually per C.17.f.
		Quality*	40		-Assessment contains all required information, including a prioritized list of requirements and recommendations per C.17.f.
		Documentation	30		-Assessment is documented electronically and submitted to the CO in the approved format per C.17.f.
C18	RIGGING AND HAULING SERVICES				
C18A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW per C.18.c
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW per C.18.c
C18B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.18.d
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.18.d.
C19	CALIBRATION, TESTING AND COMPONENT VERIFICATION				
C19A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.19.d
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.19.d
C19B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.19.e

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS, all work is performed in accordance with the Plan per C.19.e
C20	INDUSTRIAL INSTRUMENTATION AND SUPPORT SERVICES				
C20A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW per C.20.c
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW per C.20.c
C20B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the contract start date and then reviewed, updated and resubmitted quarterly for CO approval per C.20.e
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.20.e
C21	BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR				
C21A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.21.c
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.21.c
C21B	Annual Roof Inspection	Timeliness	30	MADN 1/yr	-Inspection report is delivered complete not later than March 1 annually per C.21.h.(2)(c)1.
		Quality	40		-Roof inspection report provides a complete assessment of the condition of all required facilities' roofs and roofing systems, requirements and recommendations in the approved format per C.21.h.(2)(c)1.
		Documentation	30		- Roof inspection report provides a prioritized list of required repairs, identified on roof layout drawings, and the complete report is submitted to the CO on the CMMS per C.21.h.(2)(c)1.
C22	HVAC&R NAINTEANCE AND REPAIR				
C22A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.22.c
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.22.c
C22B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.22.d
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.22.d
C22C	R12 Refrigerant Management	Procedures*	60	5	-The control and distribution of the R12 inventory is managed, R12 unlawful disposal is prevented, and R12 is captured and recycled per C.22.g
		Documentation	20		-Documentation is maintained recording R12 usage and current inventory and an annual R12 usage and inventory report is prepared per C.22.g
		Timeliness	20		-R12 usage and inventory data is maintained up to date and the annual usage and inventory report is submitted on time by 1 October per C.22.g

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO.	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
C22D	Cooling Tower Systems Testing, Treatment, Chemical Control, Inspection and Meter Reading	Timeliness	20	5	-All cooling tower system services, including testing, treatment, control, inspections and meter reading, are completed on time in accordance with the Government approved Treatment Program schedule and as required per C.22.i. -Abnormal Cooling Tower water consumption observations are reported to CO within 1 day of observation per C.22.i.
		Quality*	30		-All Cooling Tower system services, including testing, treatment, control, inspection and equipment requirements, are provided in a manner that satisfy the quality and statutory requirements per C.22.i.
		Procedures	30		-All Cooling Tower system work, including water testing, chemical treatment, facility inspection, and equipment performance, is performed following the Government approved Treatment Program, Standards and the specific requirements per C.22.i. Remedial action is taken if abnormal Cooling Tower water usage is detected per C.22.i.
		Documentation	20		-The Government approved Cooling Tower Treatment program is complete, comprehensive, timely, continuously monitored and modified as necessary per C.22.i. All work, meter reading, inspections and test results are documented, thorough, timely, have the required information and are on the CMMS as required per C.22.i.
C22E	Closed Loop Water Distribution System Chemical Treatment	Timeliness	35	5	-Chemical treatment services, including inspections and required adjustments, are provided on time at 90-day intervals per C.22.j.
		Quality*	35		-pH limits are maintained at 7.0 to 10.0 and nitrate levels at 500 – 1000 ppm per C.22.j.
		Documentation	30		-All inspection checks and treatment are documented, detailed, include the required information, and are provided to CO within 5 days per C.22.j.
C23	HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR				
C23A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.23.c.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.23.c.
C23B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.23.d.
		Quality*	55		-Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.23.d.
C23C	Weekly Battery Bank Maintenance	Timeliness	50	5	-Battery banks are checked and maintained weekly per C.23.f.
		Quality	50		-The weekly checking and maintenance of the battery banks are complete, documented and address all required elements per C.23.f.
C23D	Weekly Transformer Nitrogen System, Cathode Protection, Cable Oil Reservoir, and Generator Checks and Maintenance	Timeliness	50	5	-Transformer nitrogen systems, cathode protection, cable oil reservoir and generators are checked and maintained weekly per C.23.f.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
		Quality	50		-The weekly checking and maintenance of the transformer nitrogen systems, cathode protection, cable oil reservoir and generators are complete, documented and address all required elements per C.23.f
C23E	Monthly Transformer Visual Inspection	Timeliness	50	5	-Visual inspection of transformers is performed monthly (minimum of 25 days between inspections) per C.23.f
		Quality	50		-Visual inspection of transformers is complete and in accordance with the Substation Inspection Record and the PWS per C.23.f
C23F	Rubber Glove, Sleeve, Blanket and Hot Stick Inspection	Timeliness*	50	0	-Gloves, sleeves, blankets and hot sticks are inspected on time at their required frequencies per C.23.f
		Quality	50		-Equipment is inspected and gloves and sleeves are certified by laboratory, rejects are destroyed, replacements are provided, and the inventory is maintained per C.23.f
C23G	Meter Reading	Timeliness	50	5	- All electric meters are read and recorded regularly on the last working day of each month or as otherwise required per C.23.g.
		Documentation	50		- Meter readings are recorded in the CMMS within 2 work days of taking the reading, are in an approved format and contain all of the required data per C.23.g
C24	STEAM GENERATION, DISTRIBUTION AND REMOTE HEATING PLANT OPERATION, MAINTENANCE AND REPAIR				
C24A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.24.c.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.24.c.
C24B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.24.d.
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.24.d.
C24C	Plant Operations	Quality*	30	5	-Steam plant, distribution systems, other utility operations and remote heating plants operate within their required parameters and efficiency standards per C.24.g, C.24.j, and C.24.i.
		Timeliness	20		-All services identified as formal action items are completed in accordance with the Government-approved schedule or as otherwise required per C.24.g., C.24.j., and C.24.i.
		Procedures*	30		-All work is performed following the procedures specified in the most up-to-date Government-approved Operations Plan, including Standard Operating Procedures (SOPs) and checklists, as appropriate per C.24.d., C.24.g., and C.24.i.
		Documentation	20		-All work, including Plant Operations Logs, and other required reports, such as for fuel usage, energy consumption, boiler performance report and boiler water test results, are documented on the CMMS on time and such that they can easily and promptly be retrieved by Government personnel as required per C.24.c and C.24.g.
C24D	Boiler Certification	Timeliness	35	5	-Boilers are certified and evaluated as required and as scheduled in the approved Operation Procedures Plan or as otherwise required per C.24.i.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO.	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
		Procedures*	35		-Certification and support work are performed by qualified personnel in accordance with manufacturer's recommendations, ASME Code, and SPECSINTACT, as applicable, per C.24.i
		Documentation	30		-All certification documents are submitted to the CO on time per C.24.i.
C24E	Boiler Water Testing and Treatment	Timeliness	40	5	-Samples are collected and tested daily and test results are provided to the Government on time per C.24.g. -Chemical evaluation and analysis of the boiler water is performed annually per C.24.g.
		Quality*	40		-Boiler water is maintained above the required limits for hardness, phosphate, sulfite, causticity, pH, conductivity, and other dissolved solids per C.24.g. The proper mix of chemicals is determined per C.24.k.
		Documentation	20		-Test results are made available on the CMMS within 2 days of taking the samples and a monthly analysis report is forwarded to the CO on time per C.24.g.
C24F	Fuel Monitoring and Deliveries	Quality	70	5	-All LaRC No.2 fuel tanks are monitored and maintained at 90% capacity or greater; "before" and "after" tank soundings are taken and recorded; fuel deliveries are made as required per C.24.m.
		Documentation	30		-All fuel deliveries are documented on the CMMS on time and in the approved format such that they can easily and promptly be retrieved by Government personnel as required; a monthly fuel delivery summary is submitted complete and on time; per C.24.m.
C25	FIRE PROTECTION AND LIFE SAFETY SYSTEM MAINTENANCE AND REPAIR				
C25A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.25.c.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.25.c.
C25B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.25.d.
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.25.d.
C26	ELEVATOR MAINTENANCE AND REPAIR				
C26A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.26.c.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.26.c.
C26B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.26.d.
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.26.d.
C27	ROADS AND OTHER SURFACED AREAS MAINTENANCE AND REPAIR				
C27A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.27.d.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.27.d.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
C27B	Condition Inspection and Assessment	Timeliness	30	MADN 1/yr	-A detailed inspection is performed annually (April) and reported to the CO within 7 days of the inspection per C.27e
		Quality	40		-Inspection and assessment accurately report the conditions of the facilities listed and the degree of remedial urgency required per C.27.e
		Documentation	30		-The condition and degree of remedial urgency of the inspected areas are reported in writing on the CMMS to the CO per C.27.e.
C27C	Storm Drainage Outfall and Skimming Basin Monitoring	Timeliness	50	5	- The storm drainage outfalls and skimming basins are monitored weekly and cleaned as needed per C.27.g.
		Quality	50		- Outfalls and skimming basins are maintained in a clean condition so that they operate properly and to their full capacity as designed per C.27.g.
C27D	Snow Removal Plan of Operations	Timeliness	45	MADN 1/yr	- Draft Initial Plan is submitted to CO within 90 days of contract start date, reviewed and updated each November and January, and modified, detailed and submitted to the CO at least 4 hours prior to a forecasted snow or ice-storm per C.27.i.
		Quality	55		- Initial Plan and Plan Updates are complete, comprehensive and contain all of the data and information required per C.27.i.
C28	CRANE MAINTENANCE AND REPAIR				
C28A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.28.c.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.28.c.
C28B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.28.d.
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.28.d.
C29	POTABLE WATER DISTRIBUTION SYSTEM MAINTENANCE AND REPAIR				
C29A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW per C.29.d.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW per C.29.d.
C29B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.29.e.
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.29.e.
C30	SANITARY SEWER SYSTEM MAINTENANCE AND REPAIR				
C30A	Records and Reports	Documentation	50	5	-Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.30.d.
		Timeliness	50		-Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.30.d.
C30B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	-Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.30.e.

Contractor REQUIREMENTS		PERFORMANCE REQUIREMENTS			
(1) ITEM NO.	(2) CONTRACT REQUIREMENT	(3) WORK REQUIREMENT	(4) WT. (%)	(4a) MADR %	(5) STANDARD OF PERFORMANCE
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.30.e
C30C	System Inspections	Timeliness	35	5	- Pumping stations are inspected on time at the required frequencies and the results documented on the CMMS in the required format within one work day per C.30.h
		Procedures	65		- Inspection procedures follow the prescribed checklist per C.30.h
C31	RESEARCH FACILITY MECHANICAL, ELECTRICAL AND FLUID SYSTEMS MAINTENANCE AND REPAIR				
C31A	Records and Reports	Documentation	50	5	- Documentation is prepared and contains all information and data required by the SOW and Attachment J-C6 per C.31.c.
		Timeliness	50		- Records and reports are provided to the CO on time as required by the SOW and Attachment J-C6 per C.31.c.
C31B	Operation Procedures Plan	Timeliness	45	MADN 1/yr	- Draft Initial Plan is submitted to the CO within 90 days of the Contract Start Date and then reviewed, updated and resubmitted quarterly for CO approval per C.31.d.
		Quality*	55		- Initial Plan and Plan Updates are complete, incorporate applicable procedures, and contain all of the data and information required by the PWS; all work is performed in accordance with the Plan per C.31.d.

EXHIBIT H

EXAMPLE CALCULATION FOR DEDUCTION TAKEN FROM CONTRACTOR'S MONTHLY INVOICE

FROM THE SCHEDULE OF DEDUCTIONS

SECTION C/J REFERENCE	PRS	DESCRIPTION OF SERVICES	EST. ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C12/J-C9	C12A	Perform PM tasks	12	MO	\$150,000	\$1,800,000
C11	C11A	Trouble Calls	12	MO	\$200,000	\$2,400,000
C13	N/A	IQ Task to Repair Pump in Bldg 1146	N/A	N/A	\$5,000	\$5,000

FROM THE PRS:

PRS	CONTRACT REQUIREMENTS	WORK REQ.	WEIGHT	MADR
C12A	Perform PM tasks	1. Incidental Repairs	10%	5%
		2. Scheduling	15%	5%
		3. Timeliness	25%	5%
		3. Quality	50%	5%
C11A	Perform Trouble Calls	1. Timeliness	30%	3%
		2. Quality	50%	1%
		3. Procedures	20%	4%
C13	IQ Task to Repair pump	1. Timeliness	10%	3%
		2. Coordination	5%	1%

Example 1 - Perform PM tasks in accordance with C12 and J-C9: Assume the Contractor was required to perform 1000 PM tasks in a given month and the QAE observed that the timeliness requirements were not met in 200 of the PM tasks. The deduction to the Contractor's invoice will be based on the price per unit proposed for the work, the weight assigned in the PRS, and the Contractor's failure rate (failure rate=200/1000 = 20%) or:

$$\text{Price per unit} \times \text{weight} \times \text{Contractor's failure rate} = \text{Total deduction for this requirement:}$$

$$*\$150,000 \times 0.25 \times 0.20 = \$7,500$$

Example 2 - Trouble Calls in accordance with C11: Assume Contractor received 1000 Trouble Calls in a given month and the QAE observed that the quality level was unacceptable on 30 of the Trouble Calls. The deduction to the Contractor's invoice will be based on its price per unit proposed for the work, the weight assigned in the PRS, and the Contractor's failure rate (failure rate=30/1000 = 3%) or:

$$\text{Price per unit} \times \text{weight} \times \text{Contractor's failure rate} = \text{Total deduction for this requirement}$$

$$*\$200,000 \times 0.50 \times 0.03 = \$3,000$$

Example 3 - Perform IQ task in accordance with C13: Assume Contractor performed an IQ task and the QAE determined that the required task completion date was not met. The deduction will be based on the IQ task price and the weight for timeliness from Section E.3:

$$\text{Price of IQ Task} \times \text{weight} = \text{Total deduction for this IQ Task}$$

$$*\$5,000 \times 0.10 = \$500$$

*These values are given for example purposes only, and have no correlation with the Government estimate for the work.

EXHIBIT I
Schedule of Deductions

SCHEDULE OF DEDUCTIONS 1: Base Period - December 1, 1999 through November 30, 2000

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	PRICE	TOTAL PRICE
C1	NOT USED: GENERAL INTENTION				
C2	NOT USED: SCOPE OF WORK				
C3	NOT USED: LIMITATIONS				
C4	NOT USED: DEFINITIONS - TECHNICAL				
C5	NOT USED: GOVERNMENT FURNISHED PROPERTY AND SERVICES				
C6	NOT USED: CONTRACTOR FURNISHED ITEMS				
C7	NOT USED: GENERAL REQUIREMENTS AND PROCEDURES				
C8	MANAGEMENT				
C8A	Work Control	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8B	Monthly Work Schedule	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8C	Annual Work Plan, Phase One and Two	1 EA	\$	[REDACTED]	\$ [REDACTED]
C8D	Subcontract Administration	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8E	Data Management	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8F	Customer Liaison	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8G	Facility Coordinators	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8H	Duty Officer	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8I	Annual Facility Condition Assessment	1 EA	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C8				\$ [REDACTED]
C9	NOT USED: WORK OUTSIDE REGULAR WORKING HOURS				
C10	CONTINUITY OF SERVICES				
C10A	Backlogged Trouble Calls	1 LOT	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C10				\$ [REDACTED]
C11	TROUBLE CALLS				
C11A	11,000 Trouble Calls per Year	12 MO	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C11				\$ [REDACTED]
C12	GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING WORK				
C12A	Preventive Maintenance	12 MO	\$	[REDACTED]	\$ [REDACTED]
C12B	PM Documentation	12 MO	\$	[REDACTED]	\$ [REDACTED]
C12C	PT&I	12 MO	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C12				\$ [REDACTED]
C13	GENERAL REQUIREMENTS AND PROCEDURES FOR NON RECURRING (INDEFINITE QUANTITY) WORK				
C13A	WSR Reporting, Submittal & Documentation	12 MO	\$	[REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 1: Base Period - December 1, 1999 through November 30, 2000

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	PRICE	TOTAL PRICE
	Total Price for PRS Line Item C13				\$ [REDACTED]
C14	NOT USED				
C15	ENERGY MANAGEMENT				
C15A	EMCS Operations and Engineering	12 MO		\$ [REDACTED]	\$ [REDACTED]
C15B	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C15C	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C15				\$ [REDACTED]
C16	OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT				
C16A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C16B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C16				\$ [REDACTED]
C17	CORROSION CONTROL SERVICES				
C17A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C17B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C17C	Annual Corrosion Control Condition Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C17				\$ [REDACTED]
C18	RIGGING AND HAULING SERVICES				
C18A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C18B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C18				\$ [REDACTED]
C19	CALIBRATION, TESTING AND COMPONENT VERIFICATION				
C19A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C19B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C19				\$ [REDACTED]
C20	INDUSTRIAL INSTRUMENTATION SUPPORT SERVICES				
C20A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C20B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C20				\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 1: Base Period - December 1, 1999 through November 30, 2000

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C21	BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR				
C21A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C21B	Annual Roof Inspection	1	EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C21				\$ [REDACTED]
C22	HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION MAINTENANCE AND REPAIR				
C22A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C22B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
C22C	R12 Refrigerant Management	12	MO	\$ [REDACTED]	\$ [REDACTED]
C22D	Cooling Tower Systems Testing, Treatment, Chemical Control, Inspection and Meter Reading	12	MO	\$ [REDACTED]	\$ [REDACTED]
C22E	Closed Loop Water Distribution System Chemical Treatment	12	MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C22				\$ [REDACTED]
C23	HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR				
C23A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C23B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
C23C	Weekly Battery Bank Maintenance	52	WK	\$ [REDACTED]	\$ [REDACTED]
C23D	Weekly Transformer Nitrogen System, Cathode Protection, Cable Oil Reservoir, and Generator Checks and Maintenance	52	WK	\$ [REDACTED]	\$ [REDACTED]
C23E	Monthly Transformer Visual Inspection	12	MO	\$ [REDACTED]	\$ [REDACTED]
C23F	Rubber Glove, Sleeve, Blanket and Hot Stick Inspection	12	MO	\$ [REDACTED]	\$ [REDACTED]
C23G	Meter Reading	12	MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C23				\$ [REDACTED]
C24	STEAM GENERATING PLANT AND DISTRIBUTION SYSTEM OPERATION, MAINTENANCE AND REPAIR				
C24A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
C24C	Plant Operations	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24D	Boiler Certification	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24E	Boiler Water Testing and Treatment	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24F	Fuel Monitoring and Deliveries	12	MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C24				\$ [REDACTED]
C25	FIRE PROTECTION SYSTEM MAINTENANCE AND REPAIR				

SCHEDULE OF DEDUCTIONS 1: Base Period - December 1, 1999 through November 30, 2000

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C25A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C25B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C25					\$ [REDACTED]
C26	ELEVATOR MAINTENANCE AND REPAIR				
C26A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C26B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C26					\$ [REDACTED]
C27	ROADS, SURFACED AREAS AND SIGNAGE MAINTENANCE AND REPAIR				
C27A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C27B	Condition Inspection and Assessment	1 EA	\$	[REDACTED]	\$ [REDACTED]
C27C	Storm Drainage Outfall and Skimming Basin Monitoring	12 MO	\$	[REDACTED]	\$ [REDACTED]
C27D	Snow Removal Plan of Operations	12 MO	\$	[REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C27					\$ [REDACTED]
C28	BUILT-IN CRANES AND LIFTING DEVICES MAINTENANCE AND REPAIR				
C28A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C28B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C28					\$ [REDACTED]
C29	POTABLE WATER SYSTEM MAINTENANCE AND REPAIR				
C29A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C29B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C29					\$ [REDACTED]
C30	WASTEWATER SYSTEM MAINTENANCE AND REPAIR				
C30A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C30B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
C30C	System Inspections	12 MO	\$	[REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C30					\$ [REDACTED]
C31	RESEARCH FACILITIES MECHANICAL, ELECTRICAL, AND FLUID SYSTEMS MAINTENANCE AND REPAIR				
C31A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 1: Base Period - December 1, 1999 through November 30, 2000

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C31B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C31				\$ [REDACTED]
	TOTAL PRICE - BASE PERIOD YEAR 1				\$ 6,600.121

SCHEDULE OF DEDUCTIONS 2: Base Period - December 1, 2000 through November 30, 2001

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT PRICE	TOTAL PRICE
C1	NOT USED: GENERAL INTENTION			
C2	NOT USED: SCOPE OF WORK			
C3	NOT USED: LIMITATIONS			
C4	NOT USED: DEFINITIONS - TECHNICAL			
C5	NOT USED: GOVERNMENT FURNISHED PROPERTY AND SERVICES			
C6	NOT USED: CONTRACTOR FURNISHED ITEMS			
C7	NOT USED: GENERAL REQUIREMENTS AND PROCEDURES			
C8	MANAGEMENT			
C8A	Work Control	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8B	Monthly Work Schedule	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8C	Annual Work Plan, Phase One and Two	1 EA	\$ [REDACTED]	\$ [REDACTED]
C8D	Subcontract Administration	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8E	Data Management	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8F	Customer Liaison	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8G	Facility Coordinators	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8H	Duty Officer	12 MO	\$ [REDACTED]	\$ [REDACTED]
C8I	Annual Facility Condition Assessment	1 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C8			\$ [REDACTED]
C9	NOT USED: WORK OUTSIDE REGULAR WORKING HOURS			
C10	CONTINUITY OF SERVICES			
C10A	Backlogged Trouble Calls	1 LOT	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C10			\$ [REDACTED]
C11	TROUBLE CALLS			
C11A	11,000 Trouble Calls per Year	12 MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C11			\$ [REDACTED]
C12	GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING WORK			
C12A	Preventive Maintenance	12 MO	\$ [REDACTED]	\$ [REDACTED]
C12B	PM Documentation	12 MO	\$ [REDACTED]	\$ [REDACTED]
C12C	PT&I	12 MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C12			\$ [REDACTED]
C13	GENERAL REQUIREMENTS AND PROCEDURES FOR NON RECURRING (INDEFINITE QUANTITY) WORK			
C13A	WSR Reporting, Submittal & Documentation	12 MO	\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 2: Base Period - December 1, 2000 through November 30, 2001

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT PRICE	TOTAL PRICE
	Total Price for PRS Line Item C13			\$ [REDACTED]
C14	NOT USED			
C15	ENERGY MANAGEMENT			
C15A	EMCS Operations and Engineering	12 MO	\$ [REDACTED]	\$ [REDACTED]
C15B	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C15C	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C15			\$ [REDACTED]
C16	OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT			
C16A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C16B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C16			\$ [REDACTED]
C17	CORROSION CONTROL SERVICES			
C17A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C17B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
C17C	Annual Corrosion Control Condition Assessment	1 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C17			\$ [REDACTED]
C18	RIGGING AND HAULING SERVICES			
C18A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C18B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C18			\$ [REDACTED]
C19	CALIBRATION, TESTING AND COMPONENT VARIFICATION			
C19A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C19B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C19			\$ [REDACTED]
C20	INDUSTRIAL INSTRUMENTATION SUPPORT SERVICES			
C20A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C20B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C20			\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 2: Base Period - December 1, 2000 through November 30, 2001

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT PRICE	TOTAL PRICE
C21	BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR			
C21A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C21B	Annual Roof Inspection	1 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C21			\$ [REDACTED]
C22	HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION MAINTENANCE AND REPAIR			
C22A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C22B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
C22C	R12 Refrigerant Management	12 MO	\$ [REDACTED]	\$ [REDACTED]
C22D	Cooling Tower Systems Testing, Treatment, Chemical Control, Inspection and Meter Reading	12 MO	\$ [REDACTED]	\$ [REDACTED]
C22E	Closed Loop Water Distribution System Chemical Treatment	12 MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C22			\$ [REDACTED]
C23	HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR			
C23A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C23B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
C23C	Weekly Battery Bank Maintenance	52 WK	\$ [REDACTED]	\$ [REDACTED]
C23D	Weekly Transformer Nitrogen System, Cathode Protection, Cable Oil Reservoir, and Generator Checks and Maintenance	52 WK	\$ [REDACTED]	\$ [REDACTED]
C23E	Monthly Transformer Visual Inspection	12 MO	\$ [REDACTED]	\$ [REDACTED]
C23F	Rubber Glove, Sleeve, Blanket and Hot Stick Inspection	12 MO	\$ [REDACTED]	\$ [REDACTED]
C23G	Meter Reading	12 MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C23			\$ [REDACTED]
C24	STEAM GENERATING PLANT AND DISTRIBUTION SYSTEM OPERATION, MAINTENANCE AND REPAIR			
C24A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C24B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
C24C	Plant Operations	12 MO	\$ [REDACTED]	\$ [REDACTED]
C24D	Boiler Certification	12 MO	\$ [REDACTED]	\$ [REDACTED]
C24E	Boiler Water Testing and Treatment	12 MO	\$ [REDACTED]	\$ [REDACTED]
C24F	Fuel Monitoring and Deliveries	12 MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C24			\$ [REDACTED]
C25	FIRE PROTECTION SYSTEM MAINTENANCE AND REPAIR			

SCHEDULE OF DEDUCTIONS 2: Base Period - December 1, 2000 through November 30, 2001

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL UNIT QUANTITY	UNIT PRICE	TOTAL PRICE
C25A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C25B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C25				\$ [REDACTED]
C26	ELEVATOR MAINTENANCE AND REPAIR			
C26A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C26B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C26				\$ [REDACTED]
C27	ROADS, SURFACED AREAS AND SIGNAGE MAINTENANCE AND REPAIR			
C27A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C27B	Condition Inspection and Assessment	1 EA	\$ [REDACTED]	\$ [REDACTED]
C27C	Storm Drainage Outfall and Skimming Basin Monitoring	12 MO	\$ [REDACTED]	\$ [REDACTED]
C27D	Snow Removal Plan of Operations	12 MO	\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C27				\$ [REDACTED]
C28	BUILT-IN CRANES AND LIFTING DEVICES MAINTENANCE AND REPAIR			
C28A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C28B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C28				\$ [REDACTED]
C29	POTABLE WATER SYSTEM MAINTENANCE AND REPAIR			
C29A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C29B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C29				\$ [REDACTED]
C30	WASTEWATER SYSTEM MAINTENANCE AND REPAIR			
C30A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C30B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
C30C	System Inspections	12 MO	\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C30				\$ [REDACTED]
C31	RESEARCH FACILITIES MECHANICAL, ELECTRICAL, AND FLUID SYSTEMS MAINTENANCE AND REPAIR			
C31A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 2: Base Period - December 1, 2000 through November 30, 2001

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT PRICE	TOTAL PRICE
C31B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C31			\$ [REDACTED]
	TOTAL PRICE - BASE PERIOD YEAR 2			\$ 6,398,910

SCHEDULE OF DEDUCTIONS 3: Option Period 1 - December 1, 2001 through November 30, 2002

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C1	NOT USED: GENERAL INTENTION				
C2	NOT USED: SCOPE OF WORK				
C3	NOT USED: LIMITATIONS				
C4	NOT USED: DEFINITIONS - TECHNICAL				
C5	NOT USED: GOVERNMENT FURNISHED PROPERTY AND SERVICES				
C6	NOT USED: CONTRACTOR FURNISHED ITEMS				
C7	NOT USED: GENERAL REQUIREMENTS AND PROCEDURES				
C8	MANAGEMENT				
C8A	Work Control	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8B	Monthly Work Schedule	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8C	Annual Work Plan, Phase One and Two	1 EA		\$ [REDACTED]	\$ [REDACTED]
C8D	Subcontract Administration	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8E	Data Management	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8F	Customer Liaison	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8G	Facility Coordinators	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8H	Duty Officer	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8I	Annual Facility Condition Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C8				\$ [REDACTED]
C9	NOT USED: WORK OUTSIDE REGULAR WORKING HOURS				
C10	CONTINUITY OF SERVICES				
C10A	Backlogged Trouble Calls	1 LOT		\$ -	\$ -
	Total Price for PRS Line Item C10				\$ -
C11	TROUBLE CALLS				
C11A	11,000 Trouble Calls per Year	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C11				\$ [REDACTED]
C12	GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING WORK				
C12A	Preventive Maintenance	12 MO		\$ [REDACTED]	\$ [REDACTED]
C12B	PM Documentation	12 MO		\$ [REDACTED]	\$ [REDACTED]
C12C	PT&I	12 MO		\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 3: Option Period 1 - December 1, 2001 through November 30, 2002

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
	Total Price for PRS Line Item C12				\$ [REDACTED]
C13	GENERAL REQUIREMENTS AND PROCEDURES FOR NON RECURRING (INDEFINITE QUANTITY) WORK				
C13A	WSR Reporting, Submittal & Documentation	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C13				\$ [REDACTED]
C14	NOT USED				
C15	ENERGY MANAGEMENT				
C15A	EMCS Operations and Engineering	12 MO		\$ [REDACTED]	\$ [REDACTED]
C15B	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C15C	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C15				\$ [REDACTED]
C16	OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT				
C16A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C16B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C16				\$ [REDACTED]
C17	CORROSION CONTROL SERVICES				
C17A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C17B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C17C	Annual Corrosion Control Condition Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C17				\$ [REDACTED]
C18	RIGGING AND HAULING SERVICES				
C18A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C18B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C18				\$ [REDACTED]
C19	CALIBRATION, TESTING AND COMPONENT VARIFICATION				
C19A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C19B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C19				\$ [REDACTED]
C20	INDUSTRIAL INSTRUMENTATION SUPPORT SERVICES				
C20A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C20B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C20				\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 3: Option Period 1 - December 1, 2001 through November 30, 2002

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C21	BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR				
C21A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C21B	Annual Roof Inspection	1	EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C21				\$ [REDACTED]
C22	HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION MAINTENANCE AND REPAIR				
C22A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C22B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
C22C	R12 Refrigerant Management	12	MO	\$ [REDACTED]	\$ [REDACTED]
C22D	Cooling Tower Systems Testing, Treatment, Chemical Control, Inspection and Meter Reading	12	MO	\$ [REDACTED]	\$ [REDACTED]
C22E	Closed Loop Water Distribution System Chemical Treatment	12	MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C22				\$ [REDACTED]
C23	HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR				
C23A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C23B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
C23C	Weekly Battery Bank Maintenance	52	WK	\$ [REDACTED]	\$ [REDACTED]
C23D	Weekly Transformer Nitrogen System, Cathode Protection, Cable Oil Reservoir, and Generator Checks and Maintenance	52	WK	\$ [REDACTED]	\$ [REDACTED]
C23E	Monthly Transformer Visual Inspection	12	MO	\$ [REDACTED]	\$ [REDACTED]
C23F	Rubber Glove, Sleeve, Blanket and Hot Stick Inspection	12	MO	\$ [REDACTED]	\$ [REDACTED]
C23G	Meter Reading	12	MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C23				\$ [REDACTED]
C24	STEAM GENERATING PLANT AND DISTRIBUTION SYSTEM OPERATION, MAINTENANCE AND REPAIR				
C24A	Records and Reports	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
C24C	Plant Operations	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24D	Boiler Certification	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24E	Boiler Water Testing and Treatment	12	MO	\$ [REDACTED]	\$ [REDACTED]
C24F	Fuel Monitoring and Deliveries	12	MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C24				\$ [REDACTED]
C25	FIRE PROTECTION SYSTEM MAINTENANCE AND REPAIR				

SCHEDULE OF DEDUCTIONS 3: Option Period 1 - December 1, 2001 through November 30, 2002

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C25A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C25B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C25				\$ [REDACTED]
C26	ELEVATOR MAINTENANCE AND REPAIR				
C26A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C26B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C26				\$ [REDACTED]
C27	ROADS, SURFACED AREAS AND SIGNAGE MAINTENANCE AND REPAIR				
C27A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C27B	Condition Inspection and Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
C27C	Storm Drainage Outfall and Skimming Basin Monitoring	12 MO		\$ [REDACTED]	\$ [REDACTED]
C27D	Snow Removal Plan of Operations	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C27				\$ [REDACTED]
C28	BUILT-IN CRANES AND LIFTING DEVICES MAINTENANCE AND REPAIR				
C28A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C28B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C28				\$ [REDACTED]
C29	POTABLE WATER SYSTEM MAINTENANCE AND REPAIR				
C29A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C29B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C29				\$ [REDACTED]
C30	WASTEWATER SYSTEM MAINTENANCE AND REPAIR				
C30A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C30B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C30C	System Inspections	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C30				\$ [REDACTED]
C31	RESEARCH FACILITIES MECHANICAL, ELECTRICAL, AND FLUID SYSTEMS MAINTENANCE AND REPAIR				
C31A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 3: Option Period 1 - December 1, 2001 through November 30, 2002

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C31B	Operation Procedures Plan	4	EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C31				\$ [REDACTED]
	TOTAL PRICE - OPTION PERIOD YEAR 1				\$ 6,444,333

SCHEDULE OF DEDUCTIONS 4: Option Period 2 - December 1, 2002 through November 30, 2003

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	PRICE	TOTAL PRICE
C1	NOT USED: GENERAL INTENTION				
C2	NOT USED: SCOPE OF WORK				
C3	NOT USED: LIMITATIONS				
C4	NOT USED: DEFINITIONS - TECHNICAL				
C5	NOT USED: GOVERNMENT FURNISHED PROPERTY AND SERVICES				
C6	NOT USED: CONTRACTOR FURNISHED ITEMS				
C7	NOT USED: GENERAL REQUIREMENTS AND PROCEDURES				
C8	MANAGEMENT				
C8A	Work Control	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8B	Monthly Work Schedule	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8C	Annual Work Plan, Phase One and Two	1 EA	\$	[REDACTED]	\$ [REDACTED]
C8D	Subcontract Administration	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8E	Data Management	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8F	Customer Liaison	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8G	Facility Coordinators	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8H	Duty Officer	12 MO	\$	[REDACTED]	\$ [REDACTED]
C8I	Annual Facility Condition Assessment	1 EA	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C8				\$ [REDACTED]
C9	NOT USED: WORK OUTSIDE REGULAR WORKING HOURS				
C10	CONTINUITY OF SERVICES				
C10A	Backlogged Trouble Calls	1 LOT	\$	-	\$ -
	Total Price for PRS Line Item C10				\$ -
C11	TROUBLE CALLS				
C11A	11,000 Trouble Calls per Year	12 MO	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C11				\$ [REDACTED]
C12	GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING WORK				
C12A	Preventive Maintenance	12 MO	\$	[REDACTED]	\$ [REDACTED]
C12B	PM Documentation	12 MO	\$	[REDACTED]	\$ [REDACTED]
C12C	PT&I	12 MO	\$	[REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 4: Option Period 2 - December 1, 2002 through November 30, 2003

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT PRICE	TOTAL PRICE
	Total Price for PRS Line Item C12			\$ [REDACTED]
C13	GENERAL REQUIREMENTS AND PROCEDURES FOR NON RECURRING (INDEFINITE QUANTITY) WORK			
C13A	WSR Reporting, Submittal & Documentation	12 MO	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C13			\$ [REDACTED]
C14	NOT USED			
C15	ENERGY MANAGEMENT			
C15A	EMCS Operations and Engineering	12 MO	\$ [REDACTED]	\$ [REDACTED]
C15B	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C15C	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C15			\$ [REDACTED]
C16	OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT			
C16A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C16B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C16			\$ [REDACTED]
C17	CORROSION CONTROL SERVICES			
C17A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C17B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
C17C	Annual Corrosion Control Condition Assessment	1 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C17			\$ [REDACTED]
C18	RIGGING AND HAULING SERVICES			
C18A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C18B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C18			\$ [REDACTED]
C19	CALIBRATION, TESTING AND COMPONENT VARIFICATION			
C19A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C19B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C19			\$ [REDACTED]
C20	INDUSTRIAL INSTRUMENTATION SUPPORT SERVICES			
C20A	Records and Reports	12 MO	\$ [REDACTED]	\$ [REDACTED]
C20B	Operation Procedures Plan	4 EA	\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C20			\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 4: Option Period 2 - December 1, 2002 through November 30, 2003

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C21	BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR				
C21A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C21B	Annual Roof Inspection	1 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C21				\$ [REDACTED]
C22	HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION MAINTENANCE AND REPAIR				
C22A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C22B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C22C	R12 Refrigerant Management	12 MO		\$ [REDACTED]	\$ [REDACTED]
C22D	Cooling Tower Systems Testing, Treatment, Chemical Control, Inspection and Meter Reading	12 MO		\$ [REDACTED]	\$ [REDACTED]
C22E	Closed Loop Water Distribution System Chemical Treatment	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C22				\$ [REDACTED]
C23	HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR				
C23A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C23B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C23C	Weekly Battery Bank Maintenance	52 WK		\$ [REDACTED]	\$ [REDACTED]
C23D	Weekly Transformer Nitrogen System, Cathode Protection, Cable Oil Reservoir, and Generator Checks and Maintenance	52 WK		\$ [REDACTED]	\$ [REDACTED]
C23E	Monthly Transformer Visual Inspection	12 MO		\$ [REDACTED]	\$ [REDACTED]
C23F	Rubber Glove, Sleeve, Blanket and Hot Stick Inspection	12 MO		\$ [REDACTED]	\$ [REDACTED]
C23G	Meter Reading	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C23				\$ [REDACTED]
C24	STEAM GENERATING PLANT AND DISTRIBUTION SYSTEM OPERATION, MAINTENANCE AND REPAIR				
C24A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C24B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C24C	Plant Operations	12 MO		\$ [REDACTED]	\$ [REDACTED]
C24D	Boiler Certification	12 MO		\$ [REDACTED]	\$ [REDACTED]
C24E	Boiler Water Testing and Treatment	12 MO		\$ [REDACTED]	\$ [REDACTED]
C24F	Fuel Monitoring and Deliveries	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C24				\$ [REDACTED]
C25	FIRE PROTECTION SYSTEM MAINTENANCE AND REPAIR				

SCHEDULE OF DEDUCTIONS 4: Option Period 2 - December 1, 2002 through November 30, 2003

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C25A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C25B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C25					\$ [REDACTED]
C26	ELEVATOR MAINTENANCE AND REPAIR				
C26A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C26B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C26					\$ [REDACTED]
C27	ROADS, SURFACED AREAS AND SIGNAGE MAINTENANCE AND REPAIR				
C27A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C27B	Condition Inspection and Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
C27C	Storm Drainage Outfall and Skimming Basin Monitoring			\$ [REDACTED]	\$ [REDACTED]
C27D	Snow Removal Plan of Operations	12 MO		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C27					\$ [REDACTED]
C28	BUILT-IN CRANES AND LIFTING DEVICES MAINTENANCE AND REPAIR				
C28A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C28B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C28					\$ [REDACTED]
C29	POTABLE WATER SYSTEM MAINTENANCE AND REPAIR				
C29A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C29B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C29					\$ [REDACTED]
C30	WASTEWATER SYSTEM MAINTENANCE AND REPAIR				
C30A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C30B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C30C	System Inspections	12 MO		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C30					\$ [REDACTED]
C31	RESEARCH FACILITIES MECHANICAL, ELECTRICAL, AND FLUID SYSTEMS MAINTENANCE AND REPAIR				
C31A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 4: Option Period 2 - December 1, 2002 through November 30, 2003

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C31B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C31				\$ [REDACTED]
	TOTAL PRICE - Option Period 2				\$ 6.498.967

SCHEDULE OF DEDUCTIONS 5: Option Period 3 - December 1, 2003 through November 30, 2004

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C1	NOT USED: GENERAL INTENTION				
C2	NOT USED: SCOPE OF WORK				
C3	NOT USED: LIMITATIONS				
C4	NOT USED: DEFINITIONS - TECHNICAL				
C5	NOT USED: GOVERNMENT FURNISHED PROPERTY AND SERVICES				
C6	NOT USED: CONTRACTOR FURNISHED ITEMS				
C7	NOT USED: GENERAL REQUIREMENTS AND PROCEDURES				
C8	MANAGEMENT				
C8A	Work Control	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8B	Monthly Work Schedule	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8C	Annual Work Plan, Phase One and Two	1 EA		\$ [REDACTED]	\$ [REDACTED]
C8D	Subcontract Administration	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8E	Data Management	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8F	Customer Liaison	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8G	Facility Coordinators	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8H	Duty Officer	12 MO		\$ [REDACTED]	\$ [REDACTED]
C8I	Annual Facility Condition Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C8				\$ [REDACTED]
C9	NOT USED: WORK OUTSIDE REGULAR WORKING HOURS				
C10	CONTINUITY OF SERVICES				
C10A	Backlogged Trouble Calls	1 LOT		\$ -	\$ -
	Total Price for PRS Line Item C10				\$ -
C11	TROUBLE CALLS				
C11A	11,000 Trouble Calls per Year	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C11				\$ [REDACTED]
C12	GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING WORK				
C12A	Preventive Maintenance	12 MO		\$ [REDACTED]	\$ [REDACTED]
C12B	PM Documentation	12 MO		\$ [REDACTED]	\$ [REDACTED]
C12C	PT&I	12 MO		\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 5: Option Period 3 - December 1, 2003 through November 30, 2004

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
	Total Price for PRS Line Item C12				\$ [REDACTED]
C13	GENERAL REQUIREMENTS AND PROCEDURES FOR NON RECURRING (INDEFINITE QUANTITY) WORK				
C13A	WSR Reporting, Submittal & Documentation	12 MO		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C13				\$ [REDACTED]
C14	NOT USED				
C15	ENERGY MANAGEMENT				
C15A	EMCS Operations and Engineering	12 MO		\$ [REDACTED]	\$ [REDACTED]
C15B	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C15C	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C15				\$ [REDACTED]
C16	OXYGEN AND ULTRASONIC CLEANING AND REFURBISHMENT				
C16A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C16B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C16				\$ [REDACTED]
C17	CORROSION CONTROL SERVICES				
C17A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C17B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C17C	Annual Corrosion Control Condition Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C17				\$ [REDACTED]
C18	RIGGING AND HAULING SERVICES				
C18A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C18B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C18				\$ [REDACTED]
C19	CALIBRATION, TESTING AND COMPONENT VARIFICATION				
C19A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C19B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C19				\$ [REDACTED]
C20	INDUSTRIAL INSTRUMENTATION SUPPORT SERVICES				

SCHEDULE OF DEDUCTIONS 5: Option Period 3 - December 1, 2003 through November 30, 2004

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	PRICE	TOTAL PRICE
C20A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C20B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C20				\$ [REDACTED]
C21	BUILDINGS AND STRUCTURES MAINTENANCE AND REPAIR				
C21A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C21B	Annual Roof Inspection	1 EA	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C21				\$ [REDACTED]
C22	HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION MAINTENANCE AND REPAIR				
C22A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C22B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
C22C	R12 Refrigerant Management	12 MO	\$	[REDACTED]	\$ [REDACTED]
C22D	Cooling Tower Systems Testing, Treatment, Chemical Control, Inspection and Meter Reading	12 MO	\$	[REDACTED]	\$ [REDACTED]
C22E	Closed Loop Water Distribution System Chemical Treatment	12 MO	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C22				\$ [REDACTED]
C23	HIGH AND LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS MAINTENANCE AND REPAIR				
C23A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C23B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
C23C	Weekly Battery Bank Maintenance	52 WK	\$	[REDACTED]	\$ [REDACTED]
C23D	Weekly Transformer Nitrogen System, Cathode Protection, Cable Oil Reservoir, and Generator Checks and Maintenance	52 WK	\$	[REDACTED]	\$ [REDACTED]
C23E	Monthly Transformer Visual Inspection	12 MO	\$	[REDACTED]	\$ [REDACTED]
C23F	Rubber Glove, Sleeve, Blanket and Hot Stick Inspection	12 MO	\$	[REDACTED]	\$ [REDACTED]
C23G	Meter Reading	12 MO	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C23				\$ [REDACTED]
C24	STEAM GENERATING PLANT AND DISTRIBUTION SYSTEM OPERATION, MAINTENANCE AND REPAIR				
C24A	Records and Reports	12 MO	\$	[REDACTED]	\$ [REDACTED]
C24B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
C24C	Plant Operations	12 MO	\$	[REDACTED]	\$ [REDACTED]
C24D	Boiler Certification	12 MO	\$	[REDACTED]	\$ [REDACTED]
C24E	Boiler Water Testing and Treatment	12 MO	\$	[REDACTED]	\$ [REDACTED]
C24F	Fuel Monitoring and Deliveries	12 MO	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C24				\$ [REDACTED]
C25	FIRE PROTECTION SYSTEM MAINTENANCE AND REPAIR				

SCHEDULE OF DEDUCTIONS 5: Option Period 3 - December 1, 2003 through November 30, 2004

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C25A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C25B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C25					\$ [REDACTED]
C26	ELEVATOR MAINTENANCE AND REPAIR				
C26A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C26B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C26					\$ [REDACTED]
C27	ROADS, SURFACED AREAS AND SIGNAGE MAINTENANCE AND REPAIR				
C27A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C27B	Condition Inspection and Assessment	1 EA		\$ [REDACTED]	\$ [REDACTED]
C27C	Storm Drainage Outfall and Skimming Basin Monitoring			\$ [REDACTED]	\$ [REDACTED]
C27D	Snow Removal Plan of Operations	12 MO		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C27					\$ [REDACTED]
C28	BUILT-IN CRANES AND LIFTING DEVICES MAINTENANCE AND REPAIR				
C28A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C28B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C28					\$ [REDACTED]
C29	POTABLE WATER SYSTEM MAINTENANCE AND REPAIR				
C29A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C29B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C29					\$ [REDACTED]
C30	WASTEWATER SYSTEM MAINTENANCE AND REPAIR				
C30A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]
C30B	Operation Procedures Plan	4 EA		\$ [REDACTED]	\$ [REDACTED]
C30C	System Inspections	12 MO		\$ [REDACTED]	\$ [REDACTED]
Total Price for PRS Line Item C30					\$ [REDACTED]
C31	RESEARCH FACILITIES MECHANICAL, ELECTRICAL, AND FLUID SYSTEMS MAINTENANCE AND REPAIR				
C31A	Records and Reports	12 MO		\$ [REDACTED]	\$ [REDACTED]

SCHEDULE OF DEDUCTIONS 5: Option Period 3 - December 1, 2003 through November 30, 2004

PRS ITEM NUMBER	DESCRIPTION OF SERVICES/SUPPLIES	ANNUAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
C31B	Operation Procedures Plan	4 EA	\$	[REDACTED]	\$ [REDACTED]
	Total Price for PRS Line Item C31				\$ [REDACTED]
	TOTAL PRICE - OPTION PERIOD 3				\$ 6,551.491