NAVAL HOSPITAL
CAMP LEJUENE, NORTH CAROLINA 28542-5008

13
14 Nov 86

#4900

From: Head, Facilities Management Department, Naval Hospital, CLNC
To: Public Works Electrical Design Division, MCB (Atten: Andy Young)

Subj: EMERGENCY POWER EQUIPMENT SERVICE CONTRACT

Encl: (1) Drawing of Emergency Power Equipment Layout
(2) Riser/Line Diagram for Emergency Power Equipment
(3) Equipment List/Data for Substations/Boards A, B, C, and D
(4) Manufacturer's Data on Circuit Breakers Testing Equipment

1. Enclosure (1) through (4) are forwarded for your use in developing the contract for service of our emergency power equipment.

2. Upon completion of your review, I would appreciate you letting me know the impact of the actual service upon our daily operations. (I.E. Approximate length of contract, approximate time length that the Hospital will be without emergency power capability, etc.)

3. Upon receipt of the above information, I will be able to give you a time frame that I would like the work performed in.

4. Thank you.

R. NEAL GRAHAM

EACH SUBSTATION
1) DEENERGIZED TO TORQUE JOINTS - EACH - 8 HRS

LOW VOLTAGE CIRCUIT BREAKERS
NEED FOR PRIMARY INJECTION - WHERE IS REQUIRED POWER ?.

SECONDARY INJECTION - RECOMMENDED.

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Sub Stations

Sub Station "A" - Russelectric Frame

1 each - 100 H-3 Breaker (MAIN)
3 poles
600 volts
Relay 4000 amps
Control 120 volts

2 each - 30 HL-2 Breakers
3 pole
600 volts
400 Amps

6 each - 30 HL-2 Breakers
3 pole
600 volts
600 Amps

6 each Ammeters 0 - 600 Amp
9 each Ammeter phase Switchs
1 each Ammeter 0 - 4000 Amp
1 each Voltmeter 0 - 600 volts
1 each Voltmeter switch L1-L2, L2-L3, L1-L3
L1-G, L2-G, L3-G

1 each Class-1 Ground Relay, Type GLR-T
600 VAC 50 KA MAX. Gnd. Cur.
Contact Rating 10 A 125/250 VDC
½ Amp 125 VDC, ¼ Amp 250 VDC

ENCLOSURE (3)

Sub STATION "B"

1 each - 100 H-3 Breaker (MAIN)
3 poles
600 volts
Relay 4000 Amps
Control 120 volts

8 each - 30 HL-2 Breakers
3 pole
600 volts
600 Amps

8 each Ammeters 0-600 Amp
9 each Ammeter Phase Switchs
1 each Ammeter 0-4000
1 each Voltmeter 0-600 volts
1 each Voltmeter Switch L1-L2, L2-L3, L1-L3
L1-G, L2-G, L3-G
2 each Class-1 Ground Relays, Type GLR-T
600 VAC 50 KA max. GND. cur.
Contact Rating 10A 125/250 VDC
1/2 AMP 125 VDC, 1/4 Amp 250 VDC

Sub Station "C"

1 each - 100 H-3 Breaker (MAIN)
3 pole
600 VOLT
Relay 4000 AMPS
Control 120 VOLTS

4 each - 30 HL-2 Breakers
3 pole
600 VOLTS
600 AMP

1 each - 30 HL-2 Breaker
3 pole
600 VOLTS
400 AMPS

1 each - 50 HL-2
3 pole
600 VOLTS
Fr Size 1600
5KA
1000 AMPS

6 each AMMeters 0-600 AMP
1 each AMMeter 0-1000 AMP
1 each AMMeter 0-4000 AMP
1 each Voltmeter 0-600 VOLTS
1 each Voltmeter L1-L2, L2-L3, L1-L3
L1-G, L2-G, L3-G
9 each AMMeter phase switches

2 each CLASS-1 Ground Relay, Type GLR-T
600VAC 50KA MAX. GND. CUR.
CONTACT RATING 10A 125/250 VDC
½ AMP 125VDC, ¼ AMP 250VDC

Sub STATION "D"

1 EACH - 100 H-3 Breaker (MAIN)
3 pole
600 VOLTS
Relay 4000 AMPS
CONTROL 120 VOLTS

4 EACH - 30 HL-2 Breakers
3 pole
600 VOLTS
600 AMPS

3 EACH - 50 HL-2
3 pole
600 VOLTS
Fr. Size 1600
~ 50 KA
1000 AMPS

5 EACH AMMeters 0 - 600 AMPS
2 EACH AMMeter 0 - 1000 AMPS
1 EACH AMMeter 0 - 4000 AMPS
1 EACH VOLTmeter 0 - 600 VOLTS
9 EACH AMMeter PHASE SWITCHS
1 EACH VOLTmeter SWITCH L1-L2, L2-L3, L1-L3
L1-G, L2-G, L3-G

1 EACH CLASS-1 Ground Relays, Type GLR-T
600VAC 50 KA MAX. GND. CUR.
CONTACT RATING 10A 125/250 VAC
1/2 AMP 125VDC, 1/4 AMP 250 VDC

Note* Add To Emergency Generator Switchgear

3 each - Cubicle For Generator Controls ON the BACK side

STATIC VOLTAGE Regulator AND ELectromAgnetic INterference Filter
Ser # 3934S Regulator
Ser # 1432 Filter
INPUT Sensing 480 VAC 1 ϕ
Power 120V VAC 840
Output 62.5V VDC 7

EXCITATION Support System
Model SB0272
INPUT 416/480 VOLTS
Ouput 240 VOLTS 3.5 AMPS

FPE (FEDERAL PACIFIC)

AC OVERCURRENT RELAY TEST SET

TYPE DDT-SD

ENCLOSURE (4)

[EMERGENCY SWITCH BOARD]

Russelectric Low-Voltage Emergency
480 Volt, 3 Phase, 4 wire, 60 HZ
Generator Control Switchgear

TO PM, Check, AND Adjust AS Needed

(1) EACH - MASTER Control Cubicle
- (1) each Frequency Meter
- (1) each Synchroscope
- (1) each AC voltmeter 0-600 volts
- (1) each AC AMMeters
- (1) each MASTER Selector
- (1) each Switch, Voltmeter Transfer, Nameplate Marked: 3-1, 2-3, 1-2, Off, 1, 2, 3
- (1) each Relay, Time Delay, Single Head Agastat Time Delay 0.1-1.0 Seconds set At 0.5 120VAC coil (MSTDR
- (3) each Relay, Time Delay, Single Head Agastat Time Delay 1-300seconds set AT 180 Sec. 24VDC
- (1) each VOLTAGE-Frequency Sensor
- (1) each MANUAL SYNCHRONIZING Check Relay
- (2) each MASTER CONTRol Battery Selector
- (8) each, Relay, PLASTIC ENCLOSED 12 PIN TYPE 24VDC COIL
- (2) each Relay, PLASTIC ENCLOSED, 14 PIN TYPE 24VDC COIL
- (1) each Relay, PLASTIC ENCLOSED 12PIN TYPE 120VAC COIL
- (3) each Relay, PLASTIC ENCLOSED, 14PIN TYPE 24VDC COIL

⊗ 3-EACH - Generator Control Cubicle For #1 Generator

(1) each AC VOLTMeter 0-600 VOLTS
(1) each AC WATTMETER
(1) each AC AMMETER
(1) each VOLTMETER TRANSFER, NAMEPLATE MARKED 3-1, 2-3, 1-2, OFF, 1, 2, 3
(1) each ENGINE SEL SWITCH
(1) each FREQ METER SWITCH
(1) each SYNCHROSCOPE SWITCH
(1) each BREAKER CONTROL SWITCH
(4) each REVERSE POWER RELAYS
TYPE IQW VOLTS 120 SAMPS, 60HZ, SINGLEPHASE
(1) each VOLTAGE ADJUST RHEOSTAT
(1) each SPEED ADJUST RHEOSTAT
CRINTDR (1) each RELAY, TIME DELAY, DOUBLE-HEAD AGASTAT TIME DELAY 2-20 SECONDS SET AT 10"/10" 24VDC
OCRTDR (1) each RELAY, TIMEDELAY, SINGLE-HEAD AGASTAT TIMEDELAY 1-300 SEC. SET AT 70 24VDC
IDLETDR (1) each TIME RELAY, SINGLE HEAD AGASTAT TIME DELAY 3-30 MIN SET AT 5 24VDC
LOPTDR (1) each TIME RELAY, TIMEDELAY, SINGLE HEAD AGASTAT TIMEDELAY 1.5-15 SECONDS SET AT 5 24VDC
ALOPTDR (1) each RELAY TIMEDELAY, PLASTIC ENCLOSED TYPE TIME DELAY 1-10 SECONDS 24VDC (DPDT)
(1) each ELECTRONIC GOVERNOR
(1) each AUTOMATIC SYNCHRONIZER
(1) each 12-CHANNEL ANNUNCIATOR RING (ED 5-14)
(7) each RELAY, PLASTIC ENCLOSED 12 PIN 24VDC
(2) each RELAY, 3-POLE (3N/O - 3N/C) 24VDC
(6) each RELAY PLASTIC ENCLOSED 11 PIN TYPE 24VDC
(2) each RELAY 4-POLE (4N/O - 4N/C) 24VDC

[EMERGENCY SW BD]

(1) EACH CIRCUIT BREAKER 65HL-2
DRAWOUT TYPE 2000A FRAME, 2000A
TRIP WITH LONG-SHORT AND INSTANTANEOUS
TRIPPING CHARACTERISTICS. ELECTRICALLY OPERATED
(120VAC 60HZ CLOSE, 24VDC OPEN) WITH
COMBINATION OVERCURRENT ALARM SWITCH
AND LOCKOUT, DEFEATER FOR MANUAL CLOSE
BUTTON, CELL SWITCH, CIRCUIT TO EFFECT
SPRING CHARGING ON BOTH OPENING & CLOSING
AND 4 ADDITIONAL AUXILIARY CONTACTS.
BREAKER TO HAVE 2000 AMPERE CLF.
(1) EACH DRAWOUT CRADLE
(1) EACH CURRENT TRANSFORMER, TYPE 140
RATIO: 6000/5

~~1- GENERATOR CONTROL CUBICLE FOR # 2 GENERATOR~~
~~SAME AS FOR GENERATOR # 1~~

~~1- GENERATOR CONTROL CUBICLE FOR # 3 GENERATOR~~
~~SAME AS FOR GENERATOR # 1~~

Auto Transfer Swotchs (ATS) Russelectric

8 each Model RMT-6003CE
Serial 7154-46 Amp 600
Voltage 480 3ϕ 3 wire HZ60
Top unit

(1 set) Aircraft Ball joints
(1 set) Normal Lugs
(1 set) Emergency Lugs
(2 each) Control Power Transformers
(1 each) Electrical Interlock
(1 each) Relay, 3 second time delay
(1 each) Relay transfer Control
(3 each) Solid State Undervoltage Sensors
(1 each) Relay, Lockout
(1 each) Relay, Agastat Time 0-300 second
for Engine overrun
(1 each) Relay, Time Delay 0-30 min.
(1 each) Mechanical Interlock
(1 each) Aux. Contacts 25 Amp/120 Volt
(1 each) Synchronizing Relay, Permissive

ATS

6 each Model RMT-6004CE
Serial 7154-5D AMPS 600
Voltage 277/480 3ϕ 4wire HZ60
TOP UNIT

(1 set) Aircraft Ball joints
(1 set) Normal Lugs
(1 set) Emergency Lugs
(2 Each) Control Power Transformers
(1 each) Electrical Interlock
(1 each) Relay, 3 second Time delay
(1 each) Relay Transfer Control
(3 each) Solid state undervoltage Sensors
(1 each) Relay, Lockout
(1 each) Relay, Agastat Time 0-300 Second
for Engine overrun
(1 each) Relay, Time Delay Relay 0-30min
(1 each) Mechanical Interlock
(1 each) Aux. Contacts 25 AMPS/120 volts
(1 each) Synchronizing Relay, Permissive

8 each - Model RBT - 600 NE 3E
Serial 7154-4H AMPS 600
Voltage 480 3ϕ 3wire HZ60
Bottom UNIT

(1 each) Isolating NORMAL TO Emergency
(1 each) By PASS Handle Normal TO Emergency
Check the Solenoid Interlocks

6 each - Model RBT - 600 NE 4E
Serial 7154-5H AMPS 600
Voltage 277/480 3ϕ 4wire HZ60
Bottom UNIT

(1 each) Isolating NORMAL TO Emergency
(1 each) By PASS Handle Normal TO Emergency
Check the Solenoid Interlocks

FEDERAL PACIFIC

EMERGENCY SWDD

6 each-Distribution Circuit Breaker Cubicles They are NOT Numbered, there are (3) Breakers per cubicle

(8) each ckt Breakers, 25 HL-2, Drawout Type 600 A. Frame, 600 A. Trip, with Long, Short, Instantaneous, and Ground Fault Trip. Units for 3-wire Feeder ckt, Electrically Operated (120 VAC Close and 24 VDC Trip), ckt to effect Spring Charge on opening & Closing, and 2 additional Auxiliary Contacts, Lock-out Relay with manual Reset, Breaker to have 600 A CLF.

(5) each ckt Breakers same as above except for 4-wire Feeder (Provided Ground Fault C.T.)

(2) each ckt Breakers same as above except Trip rating to be 350 amps All Breakers are Federal Pacific Electric

(16) each AC Ammeters 5 amp scale 0-2000

(25) each Relays Plastic enclosed 12 pin Type 24 VDC

(10) each Relays plastic enclosed 14 pin Type 24 VDC

Tel.: (617) 749-6000
Telex: 94-0328

Russelectric Inc.

SO. SHORE INDUSTRIAL PARK
HINGHAM, MASS. 02043

INSTALLATION AND SERVICE
ENGINEERING DEPARTMENT
PREVENTIVE MAINTENANCE
SERVICE AGREEMENT

PLEASE EXECUTE THIS FORM AND RETURN TO THE ABOVE ADDRESS

Camp Leguene
Camp Leguene, NC 285425008

Attn: Mr. Cecil Wells
Facility Management

QUOTATION NO. 7/85/7154
CONTRACT NO. 7154
DATE July 22, 1985

NOTICE: This quotation is void unless accepted within 30 days from date hereon and is subject to change upon notice.

1. **WORK DESCRIPTION**

Russelectric Inc. agrees to provide Preventive Maintenance Service on the following equipment:

EQUIPMENT DESCRIPTION: Russelectric Automatic Transfer Switches & Switchgear
EQUIPMENT LOCATION: Camp Leguene - Camp Leguene, NC
INSTALLATION DATE: 1979

The service shall consist of a complete inspection, check, and electrical test as outlined in Maintenance Procedure Schedule/s EDS-43A & EDS43B attached. The work will be performed by a competent factory-based service engineer during normal working hours on a date mutually agreed.

Repairs and/or replacement of equipment not expressly noted in the Maintenance Procedure Schedule are not included in the cost of the service. Should repairs or replacement of components be necessary, they will be quoted as separate items and billed accordingly. Upon completion of this maintenance service visit, the service engineer will offer a quotation on an extended maintenance contract for evaluation.

2. **WORK COST**

The inspection and test program as outlined will be performed at a cost of $ 8,399.60, which includes all labor, travel, and living expenses.

This agreement, when signed and accepted by purchaser together with Terms and Conditions printed on the back hereof, which are expressly made part of this agreement, shall constitute exclusively the contract between the parties. Any representations or agreements, written or oral, not specifically incorporated herein are not included in this contract.

3. **WORK PERIOD**

Work shall start on or about to be set in 1985, and shall finish within a reasonable time, depending upon the amount of work, the conditions at the Purchaser's premises, and the delays over which the Company has no reasonable control.

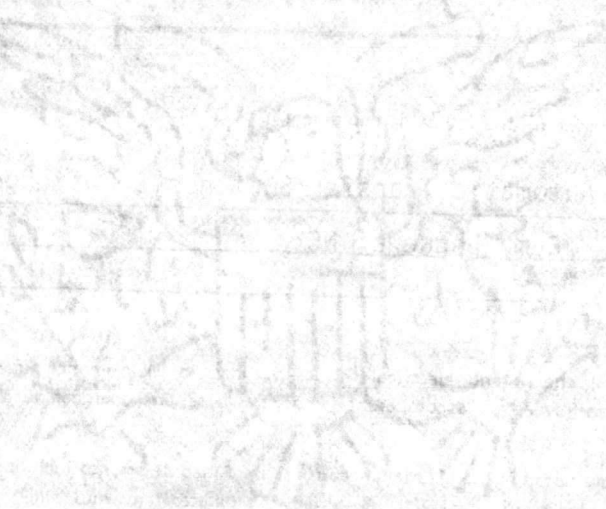
4. **PAYMENT**

Payment in full will be due upon receipt of an invoice prepared the month following the work portion completed.

RUSSELECTRIC INC.
BY Richard W. Doyle
TITLE Field Service Manager
ADDRESS Hingham, MA

ACCEPTED _____ 19____
(Purchaser)
BY _____

Subject to conditions for service on the reverse side.



PREVENTIVE MAINTENANCE PROCEDURE SCHEDULE NO. EDS-43A
GENERATOR CONTROL & DISTRIBUTION EQUIPMENT

1. Check equipment service records for previous problems.

2. Interior Wiring and Components

   a. Visual inspection of all wiring and connections for signs of tracking, overheating, and insulation deterioration.

   b. Check and tighten, where necessary, all control circuit wiring terminals.

   c. Inspect metering and control transformers.

   d. Check manual switches for free movement and contact continuity.

   e. Check all time delay settings.

   f. Check, clean, and adjust where necessary, relay finger contacts.

   g. Check all common and ground wires. Measure and record resistance to ground readings.

   h. Remove all failure and alarm circuit plug-in relays. Check pick-up, drop-out, contact continuity in energized and de-energized state. Replace defective units.

   i. Check bus connections, splice bolts, and mounting insulator bolts. Tighten where necessary.

   j. Wipe down bus and bus insulators. Megger test for ground or leakage.

3. Generator Paralleling and Distribution Circuit Breakers

   a. Remove drawout breakers.

   b. Clean and lubricate drawout mechanism.

   c. Check all interlocks and auxiliary contacts.

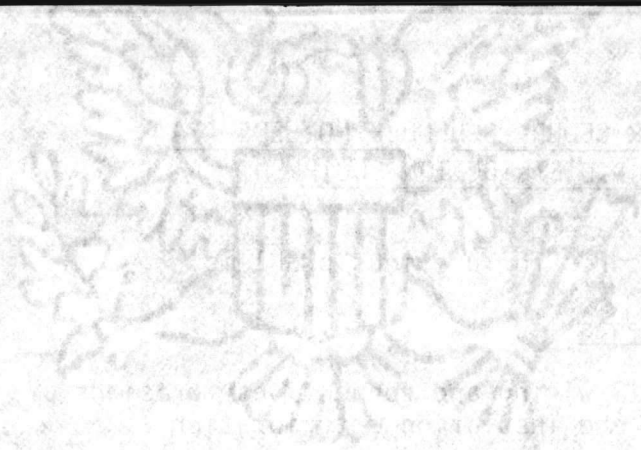
   d. Check condition of main and arcing contacts.

   e. Clean and lubricate operating mechanism.

   f. Check breaker overcurrent trip setting for correct values.

   g. Clean interior of breaker cubicle.

   h. Replace breakers and check electrical and manual close and trip operation.



PREVENTIVE MAINTENANCE PROCEDURE SCHEDULE NO. EDS-43B
AUTOMATIC TRANSFER SWITCH EQUIPMENT

1. Check equipment service records for previous problems.

2. Interior Wiring and Components

   a. Visual inspection of all wiring and connections for signs of tracking, overheating, and insulation deterioration.

   b. Check and tighten, where necessary, all control circuit wiring terminals.

   c. Check manual switches for free movement and contact continuity.

   d. Check all time delay settings.

   e. Check, clean, and adjust where necessary, relay finger contacts.

   f. Check condition of main and arcing contacts and auxiliary contacts.

   g. Check all common and ground wires. Measure and record resistance to ground readings.

   h. Check lug connections and mounting insulator bolts.

   i. Megger test for grounds or leakage.

   j. Check for proper transfer operation and sequencing of time control relays.

3. Enclosure

   ~~a. Wipe down and touch up minor exterior scratches.~~

   b. Clean interior of enclosure and remove accumulated dust and/or dirt.

   c. Check door closure, locking bars, and mechanism for proper operation.

4. Miscellaneous

   a. Record findings of the inspection. Note corrective action taken.

   b. Report unsafe conditions.

   c. Report recommendations for replacement of major components.

Russelectric

PREVENTIVE MAINTENANCE PROCEDURE SCHEDULE NO. EDS-43A (cont.)

3. i. Check distribution breakers. Inspect trip settings, connections, and wiring. Test each device as above.

4. Indicators and Instruments

   a. Check all pilot indicating lights. Replace lamps and lenses where necessary.

   b. Check audio annunciator signaling device.

   c. Check accuracy of instruments. Readjust if necessary.

   d. Clean and adjust reverse power relay and check trip calibration.

5. System Testing

   a. Bring all engines on line and balance load. Check for proper operation of governor and voltage regulator systems.

   b. Check manual engine synchronizing system.

   c. Check for complete automatic operation of the control system including all special circuitry, both with and without load.

   d. Review operation of generator control system with maintenance personnel.

6. Enclosure

   ~~a. Wipe down and touch up minor exterior scratches.~~

   b. Clean interior of switchboard and remove accumulated dust and/or dirt.

   c. Check door closure, locking bars, and mechanism for proper operation.

7. Miscellaneous

   a. Record findings of the inspection. Note corrective action taken.

   b. Report unsafe conditions.

   c. Report recommendations for replacement of major components.