

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		CONTRACT ID CODE	PAGE OF PAGES 1 9
2. AMENDMENT/MODIFICATION NO. P00001	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REC. NO. See Schedule	5. PROJECT NO. (if applicable)
6. ISSUED BY U.S. Dept. of Homeland Security Office of Procurement Operations S&T Acquisition Division 245 Murray Lane, SW Building 410 Washington DC 20528	CODE DHS/OPQ/S&T/MSSNS	7. ADMINISTERED BY (if other than item 6)	CODE DHS/OPQ/S&T/MSSNS
8. NAME AND ADDRESS OF CONTRACTOR (fbo, street, county, state and ZIP code): BOEING COMPANY THE ATTN MS CAROL J. FARMER BOEING RESEARCH AND TECHNOLOGY 3P AND A CONTRACTS MAILCODE S366-4150 ST LOUIS MO 63166-0316		(4) 9A. AMENDMENT OF SOLICITATION NO.	9B. DATED (SEE ITEM 17)
CODE #223908190006 FACILITY CODE		X 10A. MODIFICATION OF CONTRACT/ORDER NO. HSHQDC-08-C-00335	10B. DATED (SEE ITEM 13) 04/15/2008

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers  is extended.  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as stipulated, by one of the following methods: (a) By completing items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required):  
See Schedule Net Increase: \$486,103.00

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation code, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(c).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 52.243-2 Changes - Cost - Reimbursement (Aug 1987)
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor  is not.  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible):  
DUNS Number: 6223908190006  
The purpose of Modification P00001 is to:  
a. Provide additional funding to further develop the Restora Vapor Inspection System (RVIS) for Tasks 1, 3, and 4 of revised Statement of Work (SOW).  
b. Provide funding for additional work and due to cost growth contract costs for Tasks 3 and 6 of revised SOW.  
c. The total obligated contract cost of the contract is hereby increased by \$658,809.00 from \$2,591,911.00 to \$3,250,720.00.  
d. The total fixed fee of the contract is hereby increased by \$17,294.00 from \$218,141.00 to \$235,435.00.  
e. The total obligated amount of the contract is hereby increased by \$486,103.00 from  
Continued ...

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as hereinafter changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Carol Farmer, Contracts Admin.	15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) SUSAN D. EICHER
15B. CONTRACTING OFFICER Carol J. Farmer <i>(Signature of person authorized to sign)</i>	15C. DATE SIGNED 18 Dec 09
15D. UNITED STATES OF AMERICA Susan D. Eicher <i>(Signature of Contracting Officer)</i>	15C. DATE SIGNED 21 Dec 2009

NAME OF OFFEROR OR CONTRACTOR  
BOEING COMPANY THE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>\$2,810,052.00 to \$3,296,155.00 (CPFF - Completion).</p> <p>f. The end date of the contract period of performance (POP) is extended from 04/14/2010 to 06/30/2010 in order to complete testing at TSL and ensure all reporting data is completed. NOTE: Boeing shall be able to support testing no earlier than 05/01/2110 but no later than 05/30/2010. Costs and fees are provided for the POP through 06/30/2010.</p> <p>Total Contract Cost is: \$3,060,720.00 Total Fixed Fee is: \$235,435.00. Total CPFF is: \$3,296,155.00.</p> <p>CONTRACTOR'S STATEMENT OF RELEASE: In accordance with Federal Acquisition Regulation (FAR) 43.204(c)(2) and in mutual consideration of this Modification (P00001) as complete and equitable adjustment for all proposals submitted as of the execution date of this modification (P00001), the Parties mutually release each other from any and all liability related to the charges described in this Modification, whether such changes involve requests for equitable adjustments (REAs) and/or claims for direct or indirect costs and fees, and/or involve cumulative impact, delay or disruption (if any) resulting from any of these changes as described in the revised Statement of Work.</p> <p>Discount Terms: Net 30</p> <p>Delivery Location Code: DHS Department of Homeland Security 245 Murray Lane Bldg. 410 Washington DC 20528</p> <p>FOB: Destination Period of Performance: 04/15/2008 to 06/30/2010</p> <p>Add Item 0002 as follows:</p> <p>0002 Additional funding to further develop the Remote Vapor Inspection System (RVIS) for Tasks 1, 3, and 4 of revised Statement of Work (SOW).</p> <p>Estimated Cost: (b)(4) Fixed Fee: (b)(4) Total CPFF: (b)(4) Continued ...</p>				(b)(4)

NAME OF OFFEROR OR CONTRACTOR  
BOEING COMPANY THE

ITEM NO (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0003	<p>Obligated Amount: (b)(4)</p> <p>Product/Service Code: R425</p> <p>Product/Service Description: ENGINEERING &amp; TECHNICAL SERVICES</p> <p>Requisition No: RSIN-09-00056, RSIN-09-00079</p> <p>Delivery: 06/30/2010</p> <p>Accounting Info: NONE000-000-9X-36-02-01-004-01-00-0000-00-00-00-00 -GE-OE-25-50-000000</p> <p>Funded: (b)(4)</p> <p>Accounting Info: NONE000-000-8X-36-02-01-004-01-00-0000-00-00-00-00 -GE-OE-25-50-000000</p> <p>Funded: (b)(4)</p> <p>Accounting Info: NONE000-000-9X-36-02-01-004-01-00-0000-00-00-00-00 -GE-OE-25-50-000000</p> <p>Funded: (b)(4)</p> <p>Add Item 0003 as follows:</p> <p>Funding is for cost growth and additional work contract costs for Tasks 5 and 6 of revised SOW.</p> <p>Estimated Cost: (b)(4)</p> <p>Obligated Amount: (b)(4)</p> <p>Product/Service Code: R425</p> <p>Product/Service Description: ENGINEERING &amp; TECHNICAL SERVICES</p> <p>Requisition No: RSIN-10-00017</p> <p>Delivery: 05/31/2010</p> <p>Accounting Info: NONE000-000-9X-36-02-01-004-01-00-0000-00-00-00-00 -GE-OE-25-50-000000</p> <p>Funded: (b)(4)</p>				(b)(4)

**Modification to the Statement of Work for  
the Development of the Remote Vapor Inspection System  
to Detect Chemical, Biological and High Explosive Threats**

**Directorate of Science and Technology  
U.S. Department of Homeland Security  
Director of Innovation**

Revised 12/17/2009

**I. Background**

The Boeing Company is developing the Remote Vapor Inspection System (RVIS) in support of the SAFE Container (SAFECON) program. RVIS is proposed to rapidly detect the presence of weapons of mass destruction (WMD), explosives, contraband, or human cargo in maritime shipping containers. This statement of work (SOW) modifies the original SOW awarded under contract no. HSHQDC-08-C-00035.

**II. Scope of Work Modification**

The modified scope of work will allow The Boeing Company to further develop the RVIS system to increase its probability of detection and reduce false alarm rates. Studies completed subsequent to the award of this contract have indicated higher than anticipated levels of interferents and lower than expected concentrations of threat materials. Therefore, additional efforts are required to improve the performance of the RVIS system. This modified SOW also requires the Boeing Company to perform a developmental test at the Transportation Security Laboratory (TSL) in Atlantic City, NJ.

**Task 1 and 4:** Design, build, and integrate concentrator for the RVIS.

a) **Sample Holding Cell Design:** The contractor shall design and build a Sample Holding Cell (SHC) to hold the vapor sample during testing at the TSL. Even though the sample may be concentrated in the SHC due to an increase in pressure and/or temperature, the primary purpose of the SHC is to temporarily hold the vapor sample, not to improve its concentration. The SHC shall have the following requirements:

1. The SHC shall be designed with appropriate optical properties to operate as a component with the RVIS.
2. The SHC shall be designed to only allow light to enter and exit through windows at each end.
3. The overall length of the SHC shall be no longer than 6 feet.

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4. The SHC shall be able to withstand pressurization of two (2) atmospheres.
5. The SHC shall receive the vapor sample from a sample collection system provided by DHS S&T.
6. The SHC shall mechanically mount to a container spreader bar through an adaptive structure provided by the manufacturer.

b) **Sample Holding Cell Hardware:** The contractor shall purchase all mechanical hardware required to implement the Sample Holding Cell design.

c) **Test Planning and Development Testing at the TSL:** The contractor shall develop a test plan for development testing at the TSL SAFECON test bed. A list of materials to be tested will be negotiated with and provided to the contractor by DHS S&T COTR prior to the development of the test plan.

**Task 2:** Deleted.

**Task 3:** Perform testing at the SAFECON demonstration facility located at the Transportation Security Laboratory (TSL), Atlantic City, NJ *no earlier than 05/01/2010 but no later than 05/30/2010*.

The contractor shall perform developmental testing at the TSL.

- a) The purpose of the developmental testing at TSL will be to characterize the capability and limitations of the RVIS at the SAFECON test bed.
- b) The contractor shall be responsible for transporting (i.e. packing, shipping, and unpacking) the RVIS to TSL.
- c) It is assumed that three days will be required prior to testing for the RVIS to be unpacked and setup. Furthermore, it is assumed that three days will be required at the conclusion of testing for the RVIS to be dismantled and packed.
- d) The RVIS will be available for testing for a period of two weeks which will include system re-alignment and re-calibration required after shipping.
- e) The RVIS unit tested at TSL will be the RVIS Demonstration Unit (the same unit developed and build for testing at the Boeing-Santa Susanna Field Lab), which will have the following capability:

1. Methods: MWIR DAIL, MWIR CARS, LWIR DIAL
2. Tuning Range
  - i) (b) (4)

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- ii) (b) (4)
3. Spectral Precision: <0.25 cm-1
  4. Wavelength switching speed: 0.25 sec between any two wavelengths within tuning range.
  5. Standoff Distance (distance between sensor rack and retro-reflective array): less than 20 feet.

**Task 5: Support SAFECON Technical Interchange Meeting:** The contractor shall support a technical interchange meeting at Boston, MA to present a summary of the Phase I accomplishments and the Phase II plan. The contractor shall also prepare and present a competitive analysis of sensors and sensor systems similar to the RVIS.

**Support SAFECON DHS S&T Mid Year Review:** The contractor shall support the DHS S&T mid year review in Washington, D.C. to present a summary of the Phase I accomplishments and the Phase II plan.

**Task 6. Additional efforts to make RVIS more relevant based on recent studies. These efforts include:**

**Detection of Non-Explosive Materials Study:** The contractor shall perform preliminary studies regarding the ability of the RVIS prototype system to detect non-explosive materials. As a minimum, the materials evaluated should be illicit drugs such as cocaine and marijuana.

**Ability to Overcome Background Clutter Study:** The contractor shall review the study performed by the Massachusetts Institute of Technology (MIT) Lincoln Labs (LL) regarding anticipated background clutter at seaports and within maritime containers. After reviewing the study, the contractor shall determine the extent to which the RVIS prototype system will be able to overcome this background clutter as it attempts to detect the explosive material TATP.

**Purification Study:** The contractor shall perform a preliminary investigation of methods to purify or concentrate the sample extracted from the maritime containers.

**Ability to Detect Explosive Vapors in Maritime Containers Study:** The contractor shall review the study performed by the Massachusetts Institute of Technology (MIT) Lincoln Labs (LL) regarding anticipated concentration levels of explosives in maritime containers. After reviewing the study, the contractor shall determine the extent to which the RVIS prototype system will be able to detect the levels of explosive materials presented in the study.

**Preliminary Design of Holding Cell:** The contractor shall prepare a preliminary design for a vapor holding cell to be mounted on a crane's spreader bar. The cell design shall allow for the passage of a laser beam for interrogation of the vapor contained within the cell.

**Preliminary Test Planning for Testing at the Transportation Safety Lab (TSL):** The contractor shall develop and evaluate possible configurations for testing the RVIS prototype system at the TSL in Atlantic City, NJ.

	<b>Task Description</b>	<b>Key Milestones and Deliverables</b>
<b>Task 1 and 4</b>	Design, build, and integrate concentrator for the Remote Vapor Inspection System (RVIS).	<i>Report with data and information discussing the expected improvement in system performance expected at the completion of the task.</i>  <i>Update status in monthly progress reports.</i>
<b>Task 2</b>	Deleted	
<b>Task 3</b>	Perform testing at the at the SAFECON demonstration facility located at the Transportation Security Laboratory (TSL), Atlantic City, NJ <i>no earlier than 05/01/2010 but no later than 05/30/2010.</i>	<i>Incorporate into test plan.</i>  <i>Update status in monthly progress reports.</i>
<b>Task 4</b>	(Activities associated with Task 4 have been combined with Task 1)	
<b>Task 5</b>	Support program review meetings.	<i>Update status in monthly progress reports.</i>
<b>Task 6</b>	Additional efforts to make RVIS more relevant based on recent studies.	<i>Report with data and information discussing the expected improvement in system performance expected at the completion of the task.</i>  <i>Update status in monthly progress reports.</i>

**Deliverables**

No change except as noted in this revised statement of work.

**III. Other Contract Details**

1. **Period of Performance.** 4/15/2008 – 6/30/2010.
2. **Travel.** Additional travel between Boeing facilities and the Transportation Security Lab (TSL) is expected. International travel will not be required in performance of these duties.
3. **DHS-Furnished Information.** No change.

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4. **DHS-Furnished Facilities, Supplies, and Services.** No change.
5. **Place of Performance.** No change with the exception that testing will be performed at the SAFECON demonstration facility located at the Transportation Security Laboratory (TSL), Atlantic City, NJ.
6. **DHS-Furnished Property.** No change.
7. **Deliverables.** All deliverables identified in this SOW directly to the DHS S&T Technical Representative with a copy of the transmittal letter to the DHS S&T Contracting Officer.
8. **Program Status Report.** No change.
9. **Security Requirements.** No change.

**IV. Points of Contact**

The Boeing Company Points of Contact (POCs) are as follows:

- Technical POC(s) – (b) (4)  
Boeing Research & Technology (BR&T)  
The Boeing Company  
Huntsville, AL 35824  
Phone: (b) (6)  
Email: (b) (6)
- Financial POC(s) – Ms. Carol J. Farmer  
Boeing Research & Technology  
SP&A Contracts  
Mailcode S306-4150  
St. Louis, MO 63166-0516  
Phone: (b) (6)  
Mobile: (b) (6)  
Fax: (b) (6)  
Email: (b) (6)

The Boeing Company may change the individual designated as a POC upon notice to DHS S&T of such change.

The DHS POCs are as follows:

- Contracting Officer – David Carnell Gale, Department of Homeland Security, Science and Technology Directorate, Washington, DC 20528, [david.gale@hq.dhs.gov](mailto:david.gale@hq.dhs.gov), phone: (b) (6)



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- Technical Representative – David Masters, Department of Homeland Security, Science and Technology Directorate, Washington, DC 20528, (b) (6), phone: (b) (6)
- Resource Manager – Gregory Lyttle, Department of Homeland Security, Science and Technology Directorate, Washington, DC 20528, (b) (6), phone: (b) (6)

DHS S&T may change the individual designated as a POC upon notice to The Boeing Company of such change.

<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	RATING	PAGE OF PAGES 1 36
2. CONTRACT (Proc. Inst. Ident.) NO. HSHQDC-08-C-00035		3. EFFECTIVE DATE See Block 20C	4. REQUISITION/PURCHASE REQUEST/PROJECT NO. RSIN-07-00009	
5. ISSUED BY U.S. Dept. of Homeland Security Office of Procurement Operations S&T Acquisition Division 245 Murray Lane, SW Building 410 Washington DC 20528	CODE DHS/CPO/S&T/MSSNSPR	6. ADMINISTERED BY (If other than Item 5) U.S. Dept. of Homeland Security Office of Procurement Operations S&T Acquisition Division 245 Murray Lane, SW Building 410 Washington DC 20528		CODE DHS/OPO/S&T/MSSN

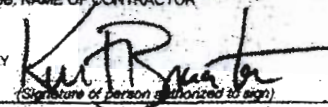
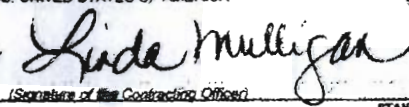
7. NAME AND ADDRESS OF CONTRACTOR (No., Street, City, Country, State and ZIP Code)  BOEING COMPANY THE ATTN MR KURT BRAATEN 5301 BOLSA AVE MC H012-B225 HUNTINGTON BEACH CA 926472048		8. DELIVERY FOB ORIGIN <input type="checkbox"/> OTHER (See below) <input checked="" type="checkbox"/>
		9. DISCOUNT FOR PROMPT PAYMENT
CODE 6223908180000 FACILITY CODE		10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN

11. SHIP TO/MARK FOR Department of Homeland Security 245 Murray Lane Bldg. 410 Washington DC 20528	CODE DHS	12. PAYMENT WILL BE MADE BY Department of Homeland Security Science and Technology Directorate 245 Murray Lane Building 410 Attn: ST.Invoicing@dhs.gov Washington DC 20528	CODE DHS S&T
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13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: 10 U.S.C. 2304 (c) ( ) 41 U.S.C. 253 (c) ( )		14. ACCOUNTING AND APPROPRIATION DATA See Schedule			
15A. ITEM NO	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
Continued					
15G. TOTAL AMOUNT OF CONTRACT					\$2,810,052.00

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X	C	DESCRIPTION/SPECS./WORK STATEMENT	4	J	LIST OF ATTACHMENTS		
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**CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE**

17. x. CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 1 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise above and on any continuation sheets for the consideration stated herein. The rights obligations of the parties to this contract shall be subject to and governed by the 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 therein.)	18. 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 condition 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.
19A. NAME AND TITLE OF SIGNER (Type or print) <b>KURT BRAATEN, CONTRACTS MGMT.</b>	20A. NAME OF CONTRACTING OFFICER Linda Mulligan
19B. NAME OF CONTRACTOR	20B. UNITED STATES OF AMERICA
19C. DATE SIGNED 15 APR 2008	20C. DATE SIGNED 15 APR 2008
BY  (Signature of person authorized to sign)	BY  (Signature of the Contracting Officer)

**CONTINUATION SHEET**

REFERENCE NO. OF DOCUMENT BEING CONTINUED  
HSHQDC-08-C-00035

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NAME OF OFFEROR OR CONTRACTOR  
BOEING COMPANY THE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001	<p>DUNS Number: 622390818+0000 Accounting Info: NONE000-000-7X-36-02-01-004-01-00-0000-00-00-00-00 -GE-DL-25-50-000000 FOB: Destination Period of Performance: 04/15/2008 to 04/14/2010</p> <p>The contractor shall provide R&amp;D support in accordance with the statement of work "Remote Vapor Inspection System (RVIS) for Maritime Shipping Containers", SAFE Container (SAFECON) Program provided in Section C of the contract. Obligated Amount: \$2,810,052.00 Product/Service Code: R499 Product/Service Description: OTHER PROFESSIONAL SERVICES</p> <p>The total amount of award: \$2,810,052.00. The obligation for this award is shown in box 15G.</p>				2,810,052.00

**B.0 SUPPLIES/SERVICES AND PRICES/COSTS**

**B.1 CONTRACT TYPE AND SCHEDULE OF ITEMS**

The purpose of this Cost-Plus Fixed Fee (CPFF) contract is to develop a solution for inspecting maritime shipping containers by use of a Remote Vapor Inspection System (RVIS) for the Department of Homeland Security for the SAFE Container (SAFECON) Program.

**B.2 CONTRACT LINE ITEMS**

1. The Contractor shall provide research and development support for the SAFE Container (SAFECON) Program in accordance with the below Statement of Work (SOW). The total estimated value of this CPFF contract, **\$2,810,052**, which consists of (b) (4) in Estimated Cost and (b) (4) in Fixed Fee.

Period of Performance: April 15, 2008 – April 14, 2010

CL IN	Description	Qty	Unit	Cost
0001	Contractor shall provide R&D support to develop a solution for inspecting maritime shipping containers by use of a Remote Vapor Inspection System (RVIS) for the SAFE Container (SAFECON) Program in accordance with (IAW) Section C of this contract.	1	Lot	\$2,810,052
0002	Data IAW SOW	1	Lot	NSP
<b>Total Estimated CPFF</b>				<b>\$2,810,052</b>

2. It is the intent of the Government that this contract be considered a "completion" cost effort. That is, the contractor is obliged to perform through to phase completion. The Contractor is obligated to notify the Contracting Officer upon exhaustion of 75% of funding. All decisions regarding additional funding will be subject to the availability of funds.

## **C.0 DESCRIPTION/SPECIFICATION/WORK STATEMENT**

### **C.1 SECURITY REQUIREMENTS**

All work performed under this contract is unclassified unless otherwise specified by DHS. If classified work is required under this contract, DHS will provide specific guidance to the Contractor as to which work will be conducted in a classified manner and at which classification level.

### **C.2 STATEMENT OF WORK**

#### **C.2.1 BACKGROUND**

The contractor shall develop a solution for inspecting maritime shipping containers by use of a Remote Vapor Inspection System (RVIS). Mounted on existing container traffic infrastructure (e.g. saddle carriers, gantry cranes) at port terminals, the RVIS will detect and identify the contents of containers by interrogating internal and/or emitted vapors. The interrogation is performed by projecting a laser beam through the vapor at appropriate wavelengths to calculate vapor spectral signatures. Once the vapor signatures are determined, they are compared to a database of material vapor signatures in order to identify the container's contents. If the contents are considered dangerous, an alert is generated to tag the container as "suspicious" and to identify to port authorities the likely contents of the container.

#### **Operational Utility**

The primary measure of the utility of the RVIS is its ability to remotely detect the presence of a broad range of threatening substances within shipping containers, which is quantified by the measures of probability of detection and false alarm rate. The unique requirements of the system will necessitate proof of concept laboratory testing during Phase I to estimate probability of detection and false alarm rate by using the optical sensor to detect and identify several substances of interest at a range of approximately three feet. Higher fidelity assessments of probability of detection and false alarm rate will be obtained during Phase II by building a system prototype and conducting field testing under typical conditions at a range of approximately 30 feet. Also critical to the operational utility of the RVIS is the minimization of its impact or disruption to port operations. The RVIS approach achieves this goal inherently by being integrated onto the carriers that move containers, by operating autonomously, by not requiring the containers to be opened at any point, and by performing the detection as the container is being moved through its normal flow of operations. However, it is also necessary for the system to perform the detection in a limited amount of time while the

container is being moved by the carrier. The speed with which the system can interrogate a container, identify suspicious substances, and notify an operator will be assessed during the Phase II field testing. The impact of the RVIS on port operations can also be affected by the frequency of and down-time required for system maintenance. Although the RVIS design will address operation in the environments of maritime and inter-modal transportation, including the shock, vibration, temperature extremes, corrosion, and handling impacts, the reliability of the system will be analyzed and quantified as an assessment of operational availability. The operational utility of the RVIS is also affected by the cost of operating the system, expressed on a per-container basis. The RVIS will minimize this cost by minimizing the training required for an operator (objective: <12 hours), minimizing the cost of consumables (objective: <5% of unit cost per year), minimizing factory maintenance costs (objective: <10% of unit cost per three years), and requiring no specialized equipment for field calibration.

## **C.2.2 CONCEPT OF OPERATIONS**

### **How RVIS Operates**

A laser source within the main unit generates laser beams at various frequencies. These beams are transmitted from the sensor head towards the target vapor. Information about the target vapor is detected and processed as it is reflected and scattered back to the sensor head. From this information, spectral "signatures" are calculated using two techniques: multi-line differential absorption LIDAR (Light-Imaging Detection and Ranging) also known as DIAL, which is based on optical absorption, and CARS (Coherent Anti-Stokes Raman), which is based on nonlinear optical scattering. The DIAL and CARS signatures are then compared to a database of the spectra of dangerous materials. With RVIS networked to a visual indicator in the operator area and also the port terminal's computer network, a positive match to a dangerous material will instantaneously alert a variety of responsible individuals.

The DIAL and CARS techniques are used in two special spectral regions. In one of these two regions, many explosives and explosive related compounds have very unique signatures. In the other region, a variety of hazardous hydrocarbon compounds have very unique signatures. Using laser beams at the required power, the RVIS can detect and identify trace concentrations of hazardous chemicals down to the parts-per-billion level.

### **How RVIS Interrogates Containers**

RVIS is directed at the container vent to not only interrogate vapor emitting from the container, but to interrogate the container vapors still inside the container. Vapors within the container will have the highest concentrations and, thus, will be

easier to detect and identify. Therefore, a fundamental requirement of the RVIS architecture will be the ability to reliably access **vapors** internal to the container. As a countermeasure to container tampering (e.g., **vent** blocking), a small, but easily detectable "verification" material will be **included** in each container. The lack of detection of this verification material will also trigger an alert.

### **How RVIS Impacts the Supply Chain**

One of the key advantages of the proposed system is its negligible impact to the existing maritime industry's current processes. After RVIS is installed, all existing processes used by supply chain participants are expected to require no change. For the areas in which RVIS is used the only procedural changes expected are how to handle an alert from RVIS when identification of a dangerous substance has been made.

## **C.2.3 TECHNICAL APPROACH**

### **C.2.3.1 System Architecture**

RVIS consists of a main unit and at least one sensor head. Depending on the structure onto which the system is mounted, the main unit could be housed in two, or perhaps three, separate enclosures. If necessary, the RVIS will have the flexibility to utilize several sensor heads at various locations. The laser source generates the laser beams at the proper frequencies and power required to perform the material diagnostics. The sensor head has two functions: direct the laser beams **and collect** the return signals. The main unit will have a computing system that will process the signal, perform the vapor diagnostics, run the algorithms that compare the vapor signature detected to the database of suspicious materials. When a suspicious material is identified, the networking card within the main unit will be used to distribute the alert.

### **C.2.3.2 Sensor Technology**

The RVIS sensor package generates a long wavelength infrared (LWIR) laser beam and a mid-wavelength infrared (MWIR) laser beam. These beams are directed by the sensor head at the vapor being interrogated. The return signal is captured by the sensor head and transmitted to the main unit for processing. RVIS uses two diagnostic techniques to identify the vapor and significantly reduce the overall error rate.

RVIS will interrogate vapors external to the maritime container, emitted from the container, and, where possible, within the container. For internal interrogation, two geometries for inspection are possible, each with relative advantages. In the first transmission geometry the laser beam passes entirely through the container

and is detected by a low noise detector at the far end of its path. Power measurements are acquired at each pulse, directed to onboard data processing and the calculation of material concentrations and the resultant detection and identification functions performed in real time. This transmission geometry maximizes the fraction of the laser light reaching the detector and allows for the most sensitive concentration measurements, down to the parts-per-billion level, in the shortest time. However, should the open path through the container not be available, an alternative reflective backscatter mode is also effective. In this mode the laser light passes through a single entry port into the container, through any atmosphere therein and reflects and scatters off the far wall. Some fraction of this backscattered light passes again through the container atmosphere and back through the entry port to a detector now mounted near the original source. Depending on the container geometry and surface characteristics from 1% to 0.01% of the laser light will return to the detector in this mode. While not as sensitive as the first transmission geometry, this backscatter mode can still produce useful concentration information at the parts-per-million level in a 1 second scan time.

#### **DIAL Sensor**

The heart of the SAFECON system is a pulsed laser source capable of being tuned over both the (b) (4) spectral regions. The LWIR spectral region corresponds to strong optical absorption lines in a wide variety of hazardous materials (in particular, many explosives and explosive related compounds) while the MWIR portion of the spectrum corresponds to absorptions of a variety of hazardous hydrocarbon compounds. This set of LWIR and MWIR absorption lines is distinct for each material and constitutes a unique "spectral fingerprint" with the use of both spectral regions allowing for the detection of a broad variety of materials. By passing the RVIS laser source through a region of interest, tuning it to the wavelengths corresponding to these spectral fingerprints, and measuring the fraction of the laser beam absorbed, trace concentrations of hazardous chemicals can be detected and identified down to the parts-per-billion (ppb) level. The specific spectroscopic technique used to perform this vapor analysis is multi-line differential absorption LIDAR (DIAL). The DIAL approach requires that the laser source passing through a sample volume be tuned first to the wavelength corresponding to a strong absorption in one of the materials being sought. The laser source is then tuned to an adjacent wavelength with much lower absorption. The laser power at each of these two wavelengths measured after passage through the sample volume will depend on various parameters related to the propagation of laser light including the absorption of the sample. However, for closely spaced wavelengths all of these propagation properties will be equivalent for the two wavelengths – except for the sharply differing absorption. By taking the ratio of these two powers – ON the absorption line and OFF -- a very sensitive and accurate measurement can be



obtained of the absorption only. While the single wavelength DIAL method described above will provide for detection and identification of a single isolated compound, in practice multiple threats will be sought and multiple absorption wavelengths will be scanned. In general, the resulting multi-line DIAL approach will be able to identify and detect a suite of potential hazardous materials.

### **CARS Sensor**

Another key feature of the SAFECON laser source is its ability to probe the Raman spectrum in these spectral regions via the Coherent Anti-Stokes Raman (CARS) technique. All vapor molecules have many vibrational frequencies, each potentially corresponding to an absorption wavelength that can be used for detection and identification. As a result of spectroscopic selection rules and the underlying symmetry of the molecules, however, only some of these frequencies will correspond to observable absorption. These same molecular symmetries and selection rules also mean that a different set of these vibration frequencies can be observed through Raman scattering, where light probing the material increases or decreases by a frequency equal to that of the molecular vibration. Rather than probe directly at the vibrational frequency, as is the case with the absorption spectroscopy used in the DIAL mode of the SAFECON sensor, the CARS process probes the vapor using two laser wavelengths which differ in frequency by this amount. This interaction of two wavelengths with the vapor to produce a 3<sup>rd</sup> shorter wavelength is the CARS process. Apart from probing different spectral features than the DIAL sensor, the CARS sensor differs in several other key respects. First, because the CARS signal returns at a wavelength different from the laser output, use of filters allows the minimization of background noise and very sensitive detection. This benefit is offset somewhat by the fact that, as a nonlinear response, the CARS signal is generally several orders of magnitude weaker than that in the DIAL sensor mode. To optimize the effectiveness of the CARS sensor, steps will be taken to maximize the signal return in this mode. The most effective means of doing so is to maximize the peak power of the laser source by using laser pulses of short duration. For the vapor interrogation of SAFECON, this is achieved by 200-300 ps duration pulses. While shorter pulses would increase the peak power, at the same time they would reduce the spectral resolution of the system and would, thus, be inappropriate for the RVIS sensor. In the initial phase of the SAFECON program a CARS/DIAL sensor will be produced using commercially available laser sources – limiting the system to a somewhat longer pulse duration of 20-30 ns, with a corresponding reduction in CARS signal strength. Following successful proof-of-concept using this commercial laser source, RVIS will be demonstrated in field tests using a custom laser source with the optimized shorter pulse duration. Under these circumstances it is expected that the CARS component of the RVIS sensor will be effective for vapor concentrations down to 10 ppm. The effectiveness of the CARS technique has been demonstrated previously in vapor sensing, but its utility must still be

established for the specific hazardous compounds of interest in the SAFECON program. This optimization of the CARS sensor over this target suite of vapors will be a key task early in the SAFECON program.

### **Integrated SAFECON Sensor**

A key characteristic of the SAFECON laser sensor, differentiating it from other approaches, is that the laser output necessary for interrogating the CARS response of a given vapor volume is generated simultaneously with that needed for the DIAL absorption measurement. Whenever the RVIS laser source produces a beam in the (b) (4) bands necessary for the DIAL technique, it intrinsically also produces a pair of laser beams at shorter wavelengths whose frequency difference can be used for the CARS technique. RVIS thus provides dual sensing modes in dual spectral bands using a single pump laser source. This will provide a substantial savings in system volume and sensing capability compared to other laser spectroscopic sensing systems. This multi-wavelength laser source is also very simply integrated into a sensing system. In practice, the RVIS will search for multiple hazardous materials with CARS and DIAL spectral features in both the MWIR and LWIR spectral regions. The optimal choice for these DIAL and CARS probe wavelengths will depend on exactly which target vapors are chosen. A key result to be obtained early in the SAFECON program will be the determination of these optimal wavelength sets for a variety of target vapor suites of interest.

It can be seen that, while these two processes (DIAL and CARS) have signatures in the same regions of the infrared spectrum, in general these spectral signatures are entirely distinct from one another. Thus, by probing a vapor volume using both absorption and Raman techniques we dramatically increase the likelihood of finding multiple spectral features corresponding to the hazardous vapors of interest, and as a result commensurately increase the likelihood of detection of these materials and decrease the likelihood of false positives in our detection scheme.

#### **C.2.3.3 Data Networking, Security and Encryption**

Upon detection of a suspicious container, the RVIS alerts the port operator visually and audibly via a flashing red light and siren that are connected directly to the RVIS. Additional information can be accessed at the RVIS LAN port using a portable computer. As a minimum, the information will include: the crane ID, time and date of the alert, suspected material, indication of the strength of the detection, and whether or not the alert has been acknowledged by the operator. Neither the discrete alert signals nor the data available at the RVIS LAN port are intended to be secure or encrypted. However, if encryption arises as an operational requirement, it can be accomplished via a secure sockets layer (SSL) protocol or transport layer security (TLS). In the case that the port facility is

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equipped with an existing IEEE 802.3 wired or 802.11 wireless LAN, the RVIS can additionally send a network alert providing the same additional information. In this case the data security and encryption would be defined by the existing network.

#### **C.2.3.4 Interfaces**

RVIS will have mechanical, electrical, and data interfaces. All interfaces will be based on commonly used standards and widely available equipment. In doing so, it is anticipated that a negligible amount of modification to existing infrastructure will be required. Mechanical interfaces will be through direct mounting or simple adapter plates to the container mover and will be required for the main unit, each sensor head, and the alert panel at the operator station. The only electrical interface required will be a standard 120 VAC, 60 Hz receptacle. And finally, a LAN port will be available on the RVIS for data retrieval, software upgrades, and signature database additions.

#### **C.2.3.5 Physical Design and Installation**

All main unit components will be COTS parts and will be purchased with existing enclosures and interfaces. These components will be integrated into an environmentally protective enclosure similar to a standard 19 inch, half-rack. This rack enclosure will be a custom design in order to meet the main unit's weight goal of 100 lb. The sensor head will also be COTS parts with specification for severe environments. A simple beam transfer apparatus will be used to direct the laser beam emitted from the laser source to the sensor heads. The components associated with the alert system will also be COTS parts consisting of an audio and visual warning. The RVIS main unit will be mounted on the primary structure of the container mover. Once installed the weight of the main unit will have a negligible affect on the mover. The sensor heads will be mounted to the frame of the container mover and the alert system will be mounted at the operator's station. A goal of the RVIS design is to be able to install the complete system in less than 24 hours.

All components of the RVIS will be housed in environmentally-protective enclosures suitable for crane-mounted components. In addition, the RVIS will be required to pass standard environmental tests for crane-mounted components. The laser interrogation geometry for this program will employ co-linear propagation through a turbulent atmosphere. The CARS pump and Stokes beams from the lasers will be focused by a common optic and the anti-Stokes beam will be generated in the forward direction parallel to the input beams. With this geometry the alignment of the scattering volume is largely immune to jitter, vibration, and atmospheric distortion.

#### C.2.3.6 Power Systems

The RVIS contains all equipment necessary to convert standard U.S. 120 VAC, 60 Hz power to other power forms required within the system, and therefore is dependent upon access to a powered NEMA 5-15R receptacle on the platform. However, it is possible to make provisions to operate from other standard IEC power forms or interface to other NEMA or IEC standard receptacles. RVIS will require no batteries for operation.

#### C.2.3.7 Options to Improve Access to Container Vapor

There is a risk that the results of the demonstration tests will indicate a need to achieve better access to the internal container vapors. To mitigate this risk, various options to the RVIS design have already been investigated. With this information, a suitable interrogation method will be chosen.

#### C.2.3.8 Technology Development Plan

The fundamental technology within RVIS will be at TRL 3 at the time of the SAFECON kick-off meeting. By performing proof-of-concept tests the RVIS technology will be at TRL 4. Additional efforts will allow TRL 5 to be obtained.

A demonstration test will consist of an RVIS prototype unit detecting and identifying an explosive material within an otherwise empty 20 foot ISO container. Even though the primary goal of this test will be to demonstrate the ability of technology to detect the explosive material, it will also show that the laboratory components can be packaged into a product that can be transported and used in the field.

### C.2.4 PERFORMANCE

The RVIS performance goals are provided in the following table. The goal and threshold values are for the RVIS production unit except where noted.

**RVIS Performance Goals and Thresholds**

<u>Performance Parameter</u>	<u>Goal</u>	<u>Threshold</u>
Threat Detected (Note 1)		Explosives
Level of Detection	320 ppb	240 ppb
Probability of Detection	0.999	0.99
False Alarm Rate	10 <sup>-6</sup>	10 <sup>-4</sup>
System Weight (Note 2)	100 lb	150 lb

System Cost	(b) (4)	(b) (4)
Expected System Lifetime (Note 3)	5 years	7 years

**Notes:**

- (1) The Proof-of-Concept Test will use TATP (Triacetotriperoxid). The Demonstration Test will use TATP (Triacetotriperoxid) and TNT (Trinitrotoluene).
- (2) The prototype unit used in the demonstration test will exceed the threshold value of 150 lb because the RVIS components will be mounted to a generic half-rack frame. An enclosure will be designed specifically for the RVIS equipment for the production units which should significantly decrease the system's overall weight.
- (3) The expected lifetime includes maintenance every two years for crystal replacement.
- (4) The values in the table assume a minimum detectable quantity (MDQ) of 2 ppb \*meter and a minimum optical path length through the target vapor of 5 cm.

**False alarm rates**

The contractor's SAFECON sensor system will provide extremely sensitive and rapid detection of hazardous vapors at parts-per-billion (ppb) concentration levels. Such small detection limits will permit the detection of low vapor pressure explosive compounds in addition to the more volatile organic compounds probed by prior less sensitive vapor sensors. While the sensor may be used in this mode as a first pass "cueing" sensor, the SAFECON sensor can also be set to a higher detection threshold for much more reliable hazard detection. The relationship between detection threshold and reliability is derived from the more conventional Receiver Operating Characteristic (ROC) curve in which probability of detection is plotted against false alarm rate. Here the probability of detection is plotted against the detection threshold (in multiples of the MDQ) for various false alarm rates. It can be seen that while detection at a low concentration of twice the MDQ can be achieved with a 70% detection probability and 10% false alarm rate, much greater reliability is achieved with a modest increase in the threshold. In particular, it can be seen that if the detection threshold is increased to 8 times the MDQ, still below 20 ppb\*meter in the worst-case model calculation of the previous paragraph, a detection probability of 0.999 and a probability of false alarm of 10<sup>-5</sup> are obtained. The SAFECON laser sensor can, thus, provide extremely high levels of both sensitivity and reliability.

### C.2.5 SCOPE

The focus of Phase I is to develop the required documentation products and prove the capability of the vapor inspection sensor in a laboratory environment. The focus of Phase II is to design and build a prototype unit and then demonstrate the ability of the prototype unit to detect and identify an explosive material within a 20 foot ISO container.

#### Tasks

##### a. Program Management

**Status Reports & Review Packages:** The contractor will coordinate with suppliers and customers, support monthly progress reporting, develop final review documentation for each phase, oversee development of system requirements, and perform risk management for the project. Output of task: Status reports and Review material.

##### b. Systems Engineering

1. **Configuration Management:** The contractor will provide Configuration Management activities for all documents and design drawings associated with this project. Output of task: Document and Design Drawing configuration database
2. **Quality Assurance:** The contractor will provide Quality Assurance activities for all design drawings and hardware associated with this project. Output of task: None
3. **Prototype Test Planning:** The contractor will develop test plans for all prototype and demonstration tests. Output of task: Test Plans.

##### c. Sensor Package

1. **Laser Equipment:** The contractor will purchase all laser equipment required to implement the DIAL and CARS techniques. (b) (4)  
[REDACTED] Output of task: Equipment listed above.
2. **Sensor Package Design:** The contractor will design and build an integrated sensor package to house, position, and protect the RVIS laser equipment. This will include developing initial design concepts, modeling and simulation of the laser components, performing laboratory testing,

documenting test results, performing sensor architecture trade studies, and producing design drawings. Output of task: Models, Reports, and Sensor Package Design Drawings

3. **Sensor Package Integration/Assembly/Test and Checkout:** The contractor will integrate, assemble and test the integrated sensor package. Output of task: Integrated Sensor Package
4. **Sensor Proof of Concept:** The contractor will perform necessary activities to prove the DIAL and CARS laser techniques can identify a vapor from an explosive material in a laboratory. Output of task: Test results.

d. **Computing System**

1. **Computing Hardware:** The contractor will purchase all computing hardware required to implement the RVIS prototype. Output of task: Computing hardware for prototype system.
2. **User Interface Hardware:** The contractor will purchase all user interface hardware required to implement the RVIS prototype design. Output of task: User interface hardware for prototype system.
3. **Computing Design:** The contractor will design and build the integrated computing system for the RVIS prototype. This will include developing initial design concepts and producing the design drawings. Output of task: Computing Design Drawings.

e. **Software**

1. **Detection Algorithms & Signal Processing:** The contractor will develop and optimize signal processing and detection techniques to improve the response time, improve probability of detection and decrease probability of false alarms for the RVIS prototype. Output of task: Software code.
2. **Data Management:** The contractor will develop data acquisition and management software to support the computing design for the RVIS prototype. Output of task: Software code.
3. **User Interface:** The contractor will develop user interface software to support the computing design for the RVIS prototype. Output of task: Software code.

f. **Mechanical System**

1. **RVIS Mechanical Hardware:** The contractor will purchase all mechanical hardware required to implement the RVIS prototype design. Output of task: Mechanical hardware for prototype system.
2. **Mechanical Design:** The contractor will design and build the integrated mechanical system for the RVIS prototype. This will include developing initial design concepts and producing the design drawings. Output of task: Mechanical Design Drawings.

g. **Electrical System**

1. **RVIS Electrical Material:** The contractor will purchase all electrical material required to implement the RVIS prototype design. Output of task: Electrical material for prototype system.
2. **Electrical Design:** The contractor will design and build the integrated electrical system for the RVIS prototype. This will include developing initial design concepts and producing the design drawings. Output of task: Electrical Design Drawings

h. **RVIS Test and Evaluation**

**RVIS Integrated Prototype Demonstration:** The contractor will demonstrate the basic capability of the RVIS by using the prototype unit to detect and identify an explosive material in a 20 foot ISO container. The activities associated with this demonstration include: test plan development, test coordination, test execution, and test reporting. Output of task: Demonstration test plan and report.

i. **System Integration/Assembly/Test and Checkout**

1. **RVIS Assembly Design:** The contractor will perform assembly activities and checkout tests for the integrated RVIS design. The assembly activities include generating assembly drawings, coordinating the assembly, tracking anomalies, updating drawings per the anomaly disposition, and other quality assurance activities. Output of task: Demonstration test plan and report.
2. **Special Test Equipment:** In order to perform the RVIS demonstration test, various Special Test Equipment items will be required. This test equipment has yet to be defined, but is anticipated to be equipment



associated with handling explosive materials, air concentrators, co-operative mirrors, volume/sample collection devices, and typical electrical and computing test equipment. Output of task: Test equipment described above.

**D.0 PACKAGING AND MARKING**

**D.1 PACKAGING AND MARKING**

Deliverables shall be electronically submitted to Mr. Edward Turner at Edward.Turner@dhs.gov

**E.0 INSPECTION AND ACCEPTANCE**

**E.1 CLAUSES INCORPORATED BY REFERENCE**

The following FAR clauses are available in full text at <http://www.acqnet.gov/far/> and incorporated by reference into this contract:

52.246.9	Inspection of Research & Development – Cost Reimbursement (Short Form)	APR 1984
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**E.2 INSPECTION AND ACCEPTANCE BY THE GOVERNMENT**

The Contracting Officer's Technical Representative (COTR) identified in Section G of this Contract is responsible for inspection and acceptance of all contract deliverables.

**E.3 ACCEPTANCE CRITERIA**

Certification by the Government of satisfactory services provided is contingent upon the Contractor performing in accordance with the terms and conditions of the contract and all modifications.

**F.0 DELIVERIES OR PERFORMANCE**

**F.1 CLAUSES INCORPORATED BY REFERENCE**

The following FAR clauses are available in full text at <http://www.acqnet.gov/far/> and incorporated by reference into this contract:

52.242-15 Alt I	Stop-Work Order (Alternate I)	Aug 1989 Apr 1984 (Alt I)
52.247-34	F.O.B. Destination	Nov 1991

**F.2 PERIOD OF PERFORMANCE**

The period of performance is from April 15, 2008 through April 14, 2010. The Government may give subsequent written notice of contract extension in accordance with the terms and conditions of this contract.

**F.3 PLACE OF PERFORMANCE**

The principal places of performance shall be at the contractor's facilities. The contractor may be required to perform work at other Government facilities as designated by the COTR.

**F.4 DELIVERY ADDRESS**

All deliverables shall be submitted electronically to the COTR and Program Manager identified in Section G.2 of this Contract.

**F.5 DELIVERABLES/DELIVERY SCHEDULE**

Unless otherwise required in the contract, all deliverables identified below will be provided in their resident Microsoft native format (such as Word, PowerPoint, Visio) and Adobe PDF formats as electronic files.

Deliverable	Content	Deliverable Due Date
Integrated Master Schedule	Updated Master Schedule for Phase I and Phase II indicating all major milestones and critical path.	1 month after contract award and as required
Phase I Report	As described in SOW	30 days after completion of Phase I
Interim Program Review (IPR) Reports	All pertinent tests, analyses, risk analysis, presentations, and milestone validation data	Every 6 months or as required
Final Report	As described in SOW	45 days after completion of
Monthly Progress Reports	As described in Section G.9 of this contract.	15 <sup>th</sup> of each month after contract award
Risk Management Reports	Including risk strategy, prioritized risk list, and risk mitigation plan	1 month after contract award and as required
Test Plans	As described in SOW	45 days prior to scheduled test event
Test Reports	Test result summary and data results	As Required
Meeting Material	Presentations, MPEGs, and supporting material.	As Required
Technical Papers and Patents	Any technical papers and/or patent applications resulting from concept investigation activities or experimental results specific to tasks performed on this contract will be coordinated with the government COTR prior to submittal.	As Required

**F.6 METHOD OF DELIVERY**

Electronic copies shall be delivered in Microsoft Office formatted files unless otherwise specified by the COTR. Electronic submission shall be made via e-mail, unless otherwise directed by the COTR.

**G.0 CONTRACT ADMINISTRATION DATA**

**G.1 DHS OFFICE OF PROCUREMENT OPERATIONS (OPO) POINT OF CONTACT:**

The Contracting Officer for this Contract is identified below:

Name: Ms. Linda Mulligan  
Title: Contracting Officer  
Agency: Department of Homeland Security  
Science & Technology Directorate  
Office of Procurement Operations  
Address: Washington, DC 20528  
Voice: (b) (6)  
Fax: (202) 254-5391  
Email: Linda.Mulligan@dhs.gov

**G.2 CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR)**

The COTR for this Contract is identified below:

Name: Mr. Edward Turner  
Title: HSARPA Program Manager  
Agency: Department of Homeland Security  
Science & Technology Directorate  
Address: Washington, DC 20528  
Federal Express, Anacostia Naval Annex  
UPS, etc. and hand 245 Murray Lane, SW, Bldg 410  
deliveries Washington, DC 20528  
Voice: (b) (6)  
Email: Edward.Turner@dhs.gov

**G.3 CONTRACTING OFFICER'S AUTHORITY**

The Contracting Officer (CO) assigned to this contract has responsibility for ensuring the performance of all necessary actions for effective contracting; ensuring compliance with the terms of the contract and safeguarding the interests of the United States in its contractual relationships. The CO is the only individual who has the authority to enter into, administer, or terminate this contract and is the only person authorized to approve changes to any of the requirements under this

contract, and notwithstanding any provision contained elsewhere in this contract, this authority remains solely with the CO.

It is the Contractor's responsibility to contact the CO immediately if there is even the appearance of any technical direction that is or may be outside the scope of the contract. The Government will not reimburse the Contractor for any work not authorized by the CO, including work outside the scope of the contract.

**G.4 CONTRACTING OFFICER'S REPRESENTATIVE (HSAR 3052.242-72)  
(DEC 2003)**

(a) The Contracting Officer may designate Government personnel to act as the Contracting Officer's Technical Representative (COTR) to perform functions under the contract such as review or inspection and acceptance of supplies, services, including construction, and other functions of a technical nature. The Contracting Officer will provide a written notice of such designation to the Contractor within five working days after contract award or for construction, not less than five working days prior to giving the contractor the notice to proceed. The designation letter will set forth the authorities and limitations of the COTR under the contract.

(b) The Contracting Officer cannot authorize the COTR or any other representative to sign documents, such as contracts, contract modifications, etc., that require the signature of the Contracting Officer.

**G.5 INTERPRETATION OR MODIFICATION**

No oral statement by any person, and no written statement by anyone other than the Contracting Officer (CO), or his/her authorized representative acting within the scope of his/her authority, shall be interpreted as modifying or otherwise affecting the terms of this contract. All requests for interpretation or modification shall be made in writing to the CO.

**G.6 ACCOUNTING AND APPROPRIATION DATA**

NONE000-000-7X-36-02-01-004-01-00-0000-00-00-00-00-GE-DL-25-50-000000  
Amount: \$2,605,622

**G.7 TRAVEL**

(a) Domestic/local travel shall take place in accordance with the Federal Travel Regulations (FTR) and will be considered reasonable and allowable to the extent permitted by FAR 31.205-46. All invoices for travel reimbursement shall be accompanied by supporting receipts, when requested.

(b) Approval of Foreign Travel: The cost of foreign travel is allowable only when the specific written approval of the Contracting Officer or Contract Specialist is obtained prior to commencing the trip. Approval must be requested at least 30 days before the

scheduled departure date in order that all necessary clearances may be processed. Each individual trip must be approved separately even though it may have been included in a previously approved budget. Foreign travel is defined as any travel outside of Canada and the United States and its territories and possessions.

#### G.8 PAYMENT AND INVOICING INSTRUCTIONS

- (a) Payments will be made promptly to the contractor when requested as work progresses, but (except for small business concerns) not more than every 2 weeks.
- (b) To initiate payment, the contractor shall submit proper invoices for payment in the manner and format described below:

- 1) The Contractor shall submit an original invoice or send via facsimile or email to the following address:

Department of Homeland Security  
Science & Technology Directorate  
Attn: SPB Invoice Desk  
245 Murray Drive, SW Building 410  
Washington, DC 20528  
Email address: [ST.Invoicing@dhs.gov](mailto:ST.Invoicing@dhs.gov)  
Also include in the same email the following:  
[Edward.turner@dhs.gov](mailto:Edward.turner@dhs.gov) and [Linda.mulligan@dhs.gov](mailto:Linda.mulligan@dhs.gov)

- 2) Each invoice shall include the following:

- (1) Contract Number
- (2) Contractor Name
- (3) Date of Invoice
- (4) Invoice/voucher Number
- (5) Incurred/Allowable costs (specify cost category; e.g., labor, material, travel, other direct costs, etc.)
- (6) Incurred/Allowable Indirect Costs (specify indirect costs; e.g., labor overhead, G&A, etc.)
- (7) Total Incurred/Allowable Costs
- (8) Fixed-Fee

- 3) All incurred/allowable costs identified in each invoice (direct and indirect) shall be based on data/information provided in the appropriate month's progress report.

### G.9 PROGRESS REPORTS

The contractor shall submit a monthly progress report, via email, of all work performed under this contract by the 15<sup>th</sup> of each month. The progress report shall contain the following information:

- (a) Summary of progress during the reporting period (include any significant technical information).
- (b) Unanticipated technical or management problems of significance.
- (c) Problems anticipated in future reporting periods.
- (d) Summary of important meetings, briefings, trips and conferences during the period of the report and those planned for the following period.
- (e) Requirements for changes in key personnel.
- (f) A projection of the entire budget by task, over the life of the program shall be provided in the first report. This projection shall be revised as changes become necessary with written explanation.
- (g) Labor hours utilized versus labor hours planned per task; this information shall be reported both (1) for the reporting period being and (2) for the entire contract (cumulative) through the most recent reporting period.
- (h) Total cost (by cost element) versus budgeted task. The breakdown shall represent the period being reported on as well as the entire contract (cumulative) through the most recent reporting period.
- (i) Statement that the contract can or cannot be completed within the total estimated cost.
- (j) Statement of projection (budget) for the next reporting period.
- (k) A detailed breakdown of labor to include labor category, labor rate to include fringe, number of hours; indirect rates and total; itemized expenses of other direct costs. The total amount should be consistent with the total submitted on monthly invoices. The breakdown should reflect details on a monthly basis and separate breakdown for cumulative totals to date.

All reports and correspondence, except as otherwise specified, shall be directed to the DHS points of contact identified in Section G of this contract.

## **H.0 SPECIAL CONTRACT REQUIREMENTS**

### **H.1 GOVERNMENT CONSENT OF PUBLICATION/ENDORSEMENT**

The contractor agrees not to refer to awards in commercial advertising in such a manner as to state or imply that the product or service provided is endorsed or preferred by the Federal Government or is considered by the Government to be superior to other products or services.

Under no circumstances shall the contractor, or anyone acting on behalf of the contractor, refer to the supplies, services, or equipment furnished pursuant to the provisions of this contract in any news release, commercial advertising or other publication without first obtaining explicit written consent to do so from the Contracting Officer.

### **H.2 CONFIDENTIALITY INFORMATION**

- (a) Pursuant to HSAR 3052.204-71, incorporated herein, the Contractor, to the extent that the work under this contract requires that the Contractor be given access to or be furnished with confidential or proprietary business, technical, or financial information or data belonging to other entities which is clearly marked as confidential or proprietary (including orally disclosed information that is promptly reduced to writing), shall, after receipt thereof, treat such information in confidence and agrees not to appropriate such information to its own use or to disclose such information to third parties unless specifically authorized in writing by the Contracting Officer and shall have its employees having access to such information to sign appropriate non-disclosure agreements consistent with this clause and HSAR 3052.204-71.
- (b) The foregoing obligations, however, shall not apply to:
  - (1) Information or data which is in the public domain at the time of receipt by the Contractor;
  - (2) Information or data which is published or otherwise subsequently becomes part of the public domain through no fault of the Contractor;
  - (3) Information or data which the Contractor can demonstrate was already in its possession at the time of receipt thereof; or
  - (4) Information or data which the Contractor can demonstrate was received by a third party who did not require the Contractor to treat it in confidence.
  - (5) Information that is independently developed by the Contractor.



- (c) The Contractor agrees (1) to enter into an agreement, identical in all material respects to the requirements of paragraph (a) above, with each entity requesting such agreement and that is supplying such confidential or proprietary information or data to the Contractor under this contract and (2) to supply a copy of such agreement to the Contracting Officer, upon written request.
- (d) This clause shall be included in any subcontract under which there is a requirement or there becomes a requirement that the subcontractor be given access to or be furnished with confidential or proprietary business, technical, or financial information or data. The Contractor shall hold in confidence all information disclosed to it under this contract for a period of five (5) years from the effective date of disclosure.

### **H.3 POST AWARD EVALUATION OF CONTRACTOR PERFORMANCE**

#### **a. Contractor Performance Evaluations**

Annual and final evaluations of contractor performance will be prepared on this contract in accordance with FAR 42.15 (or FAR 36.201 for construction, or FAR 36.604 for Architect-Engineering). The final performance evaluations will be prepared at the time of completion of work. Annual and final evaluations will be provided to the contractor as soon as practicable after completion of the evaluation. The Contractor can elect to review the evaluation and submit additional information or a rebuttal statement. The contractor will be permitted thirty days to respond. Contractor response is voluntary. Any disagreement between the parties regarding an evaluation will be referred to the Head of the Contracting Activity, whose decision is final. Copies of the evaluations, contractor responses, and review comments, if any, will be retained as part of the contract file, and may be used to support future award decisions.

#### **b. Electronic Access to Contractor Performance Evaluations**

FAR 42.15 require agencies to prepare annual and final evaluations of contractor performance. The U.S. Department of Homeland Security utilizes the National Institutes of Health (NIH) Contractor Performance System (CPS) to record and maintain past performance information. Contractors that have Internet capability may access evaluations through a secure Web site for review and comment by completing the registration form that can be obtained at the following URL: <https://cpscontractor.nih.gov/>.

The registration process requires the contractor to identify an individual that will serve as a primary contact and who will be authorized access to the evaluation for review and comment. In addition, the contractor will be required to identify a secondary contact who will be responsible for notifying the cognizant contracting official in the event the primary contact is unavailable to process the evaluation within the required 30-day time period. Once the contractor is registered and a performance evaluation has been prepared and is ready for comment, the CPS will send an email to the contractor representative notifying that individual that a performance evaluation is electronically available for review and comment.

#### **H.4 HOLIDAYS AND ADMINISTRATIVE LEAVE**

U. S. Department of Homeland Security personnel observe the following days as holidays:

New Year's Day	Labor Day
Martin Luther King's Birthday	Columbus Day
Presidents' Day	Veteran's Day
Memorial Day	Thanksgiving Day
Independence Day	Christmas Day

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

When any such day falls on a Saturday, the preceding Friday is observed. When any such day falls on a Sunday, the following Monday is observed. Observance of such days by Government personnel shall not be cause for an extension to the delivery schedule or period of performance or adjustment to the price, except as set forth in the contract.

#### **I.0 CONTRACT CLAUSES**

##### **I.1 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. The FAR clauses are available in full text at <http://www.acqnet.gov/far/> and [http://www.dhs.gov/dhspublic/interweb/assetlibrary/DHS\\_HSAR\\_With\\_Notice\\_04-01.pdf](http://www.dhs.gov/dhspublic/interweb/assetlibrary/DHS_HSAR_With_Notice_04-01.pdf):

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity	JAN 1997
52.203-11	Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions	SEP 2007
52.203-12	Limitation on Payments to Influence Certain Federal Transactions	SEP 2007
52.204-2	Security Requirements	AUG 1996
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	JUL 2006
52.204-8	Annual Representations and Certifications	JAN 2006
52.209-6	Protecting the Government's Interest when Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-2	Audit and Records – Negotiation	JUN 1999
52.215-8	Order of Precedence - Uniform Contract Format	OCT 1997
52.215-10	Price Reduction for Defective Cost or Pricing Data – Modifications	OCT 1997
52.215-12	Subcontractor Cost or Pricing Data	OCT 1997
52.215-14	Integrity of Unit Prices (OCT 1997) and Alternate I	OCT 1997
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
52.215-16	Facilities Capital Cost of Money	OCT 1997
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other Than Pensions	JUL 2005

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52.215-20	Requirements for Cost or Pricing Data Pricing or Information Other Than Cost or Pricing Data	OCT 1997
52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data – Modifications	OCT 1997
52.216-7	Allowable Cost and Payment	DEC 2002
52.216-8	Fixed Fee	MAR 1997
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.222-2	Payment for Overtime Premiums (Note: The word "zero" is inserted in the blank space indicated by an asterisk)	JUL 1990
52.222-3	Convict Labor	JUN 2003
52.222-21	Prohibition of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007
52.222-35	Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action for Workers with Disabilities	JUN 1998
52.222-37	Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-39	Notification of Employee Rights Concerning Payment of Union Dues or Fees	DEC 2004
52.222-50	Combating Trafficking in Persons	APR 2007
52.223-6	Drug-Free Workplace	MAY 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-13	Limitation on Certain Foreign Purchases	FEB 2006
52.227-1 ALT 1	Authorization and Consent (R&D)	JUL 1995
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement	AUG 1996
52.227-11	Patent Rights – Retention by the Contractor (Short Form)	DEC 2007

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52.227-14 Alt I	Rights in Data – General – Alternate I	DEC 2007 DEC 2007 Alt I
52.227-16	Additional Data Requirements	JUN 1987
52.227-17	Rights in Data – Special Works (Applies to Data Deliverables IAW Section F.5)	JUN 1987
52.228-7	Insurance – Liability to Third Persons	Mar 1996
52.230-2	Cost Accounting Standards	APR 1998
52.230-6	Administration of Cost Accounting Standards	APR 2005
52.232-9	Limitation on Withholding of Payments	APR 1984
52.232-17	Interest	JUN 1996
52.232-20	Limitation of Cost	APR 1984
52.232-23	Assignment of Claims	JAN 1986
52.232-25	Prompt Payment	OCT 2003
52.232-33	Payment by Electronic Funds Transfer - Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3 Alt I	Protest After Award - Alternate I	Aug 1996, Jun 1985 (Alt I)
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.242-1	Notice of Intent to Disallow Costs	APR 1984
52.242-3	Penalties of Unallowable Costs	MAY 2001
52.242-4	Certification of Final Indirect Costs	JAN 1997
52.242-13	Bankruptcy	JUL 1995
52.243-2 Alt V	Changes –Cost Reimbursement – Alternate V	Aug 1987 Apr 1984 (Alt V)

52.243-7	Notification of Changes – "...the Contractor shall notify the Administrative Contracting Officer in writing promptly, within fifteen (15) calendar days that the Contractor identifies any Government conduct (including actions, inactions, and written or oral communications) that the Contractor regards as a change to the contract terms and conditions."	APR 1984
52.244-2 Alt 1	Subcontracts – Alternate I	JUN 2007 JUN 2007 (Alt I)
52.244-5	Competition in Subcontracting	DEC 1996
52.244-6	Subcontracts for Commercial Items	MAR 2007
52.245-1	Government Property	JUN 2007
52.245-9	Use and Charges	JUN 2007
52.246-23	Limitation of Liability	FEB 1997
52.246-24	Limitation of Liability – High Value Items	FEB 1997
52.246-25	Limitation of Liability – Services	FEB 1997
52.247-1	Commercial Bill of Lading Notations	APR 1984
52.247-63	Preference for U.S.- Flag Air Carriers	JUN 2003
52.249-6	Termination (Cost Reimbursement)	MAY 2004
52.249-14	Excusable Delays	APR 1984
52.251-1	Government Supply Sources	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
3052.228-70	Insurance	DEC 2003
3052.242-71	Dissemination of Contract Information	DEC 2003
3052.245-70	Government Property Reports	JUN 2006

**I.2 NOTIFICATION OF OWNERSHIP CHANGES (FAR 52.215-19) (OCT 1997)**

- (a) The Contractor shall make the following notifications in writing:
- (1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.
  - (2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.
- (b) The Contractor shall --
- (1) Maintain current, accurate, and complete inventory records of assets and their costs;
  - (2) Provide the ACO or designated representative ready access to the records upon request;
  - (3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and
  - (4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.
- (c) The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

**I.3 NOTIFICATION OF EMPLOYEES RIGHTS CONCERNING PAYMENT OF UNION DUES AND FEES (FAR 52.222-39) (DEC 2004)**

- (a) *Definition.* As used in this clause—
- “United States” means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.
- (b) *Except* as provided in paragraph (e) of this clause, during the term of this contract, the Contractor shall post a notice, in the form of a poster, informing employees of their rights concerning union membership and payment of union dues and fees, in conspicuous places in and about all its plants and offices, including all places where notices to employees are customarily posted. The notice shall include the following information (except that the information pertaining to National Labor Relations Board shall not be included in notices posted in the plants or offices of carriers subject to the Railway Labor Act, as amended (45 U.S.C. 151-188)).

Notice to Employees

Under Federal law, employees cannot be required to join a union or maintain membership in a union in order to retain their jobs. Under certain conditions, the law permits a union and an employer to enter into a union-security agreement requiring employees to pay uniform periodic dues and initiation fees. However, employees who are not union members can object to the use of their payments for certain purposes and can only be required to pay their share of union costs relating to collective bargaining, contract administration, and grievance adjustment.

If you do not want to pay that portion of dues or fees used to support activities not related to collective bargaining, contract administration, or grievance adjustment, you are entitled to an appropriate reduction in your payment. If you believe that you have been required to pay dues or fees used in part to support activities not related to collective bargaining, contract administration, or grievance adjustment, you may be entitled to a refund and to an appropriate reduction in future payments.

For further information concerning your rights, you may wish to contact the National Labor Relations Board (NLRB) either at one of its Regional offices or at the following address or toll free number:

National Labor Relations Board  
Division of Information  
1099 14th Street, N.W.  
Washington, DC 20570  
1-866-667-6572  
1-866-316-6572 (TTY)

To locate the nearest NLRB office, see NLRB's website at <http://www.nlr.gov>.

- (c) The Contractor shall comply with all provisions of Executive Order 13201 of February 17, 2001, and related implementing regulations at 29 CFR Part 470, and orders of the Secretary of Labor.
- (d) In the event that the Contractor does not comply with any of the requirements set forth in paragraphs (b), (c), or (g), the Secretary may direct that this contract be cancelled, terminated, or suspended in whole or



- in part, and declare the Contractor ineligible for further Government contracts in accordance with procedures at 29 CFR Part 470, Subpart B— Compliance Evaluations, Complaint Investigations and Enforcement Procedures. Such other sanctions or remedies may be imposed as are provided by 29 CFR Part 470, which implements Executive Order 13201, or as are otherwise provided by law.
- (e) The requirement to post the employee notice in paragraph (b) does not apply to—
- (1) Contractors and subcontractors that employ fewer than 15 persons;
  - (2) Contractor establishments or construction work sites where no union has been formally recognized by the Contractor or certified as the exclusive bargaining representative of the Contractor's employees;
  - (3) Contractor establishments or construction work sites located in a jurisdiction named in the definition of the United States in which the law of that jurisdiction forbids enforcement of union-security agreements;
  - (4) Contractor facilities where upon the written request of the Contractor, the Department of Labor Deputy Assistant Secretary for Labor-Management Programs has waived the posting requirements with respect to any of the Contractor's facilities if the Deputy Assistant Secretary finds that the Contractor has demonstrated that—
    - (i) The facility is in all respects separate and distinct from activities of the Contractor related to the performance of a contract; and
    - (ii) Such a waiver will not interfere with or impede the effectuation of the Executive order; or
  - (5) Work outside the United States that does not involve the recruitment or employment of workers within the United States.
- (f) The Department of Labor publishes the official employee notice in two variations; one for contractors covered by the Railway Labor Act and a second for all other contractors. The Contractor shall—
- (1) Obtain the required employee notice poster from the Division of Interpretations and Standards, Office of Labor-Management Standards, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-5605, Washington, DC 20210, or from any field office of the Department's Office of Labor-Management Standards or Office of Federal Contract Compliance Programs;
  - (2) Download a copy of the poster from the Office of Labor-Management Standards website at <http://www.olms.dol.gov>; or
  - (3) Reproduce and use exact duplicate copies of the Department of Labor's official poster.
- (g) The Contractor shall include the substance of this clause in every subcontract or purchase order that exceeds the simplified acquisition threshold, entered into in connection with this contract, unless exempted by the Department of Labor Deputy Assistant Secretary for Labor-

Management Programs on account of special circumstances in the national interest under authority of 29 CFR 470.3(c). For indefinite quantity subcontracts, the Contractor shall include the substance of this clause if the value of orders in any calendar year of the subcontract is expected to exceed the simplified acquisition threshold. Pursuant to 29 CFR Part 470, Subpart B—Compliance Evaluations, Complaint Investigations and Enforcement Procedures, the Secretary of Labor may direct the Contractor to take such action in the enforcement of these regulations, including the imposition of sanctions for noncompliance with respect to any such subcontract or purchase order. If the Contractor becomes involved in litigation with a subcontractor or vendor, or is threatened with such involvement, as a result of such direction, the Contractor may request the United States, through the Secretary of Labor, to enter into such litigation to protect the interests of the United States.

**I.4 PROHIBITION ON CONTRACTS WITH CORPORATE  
EXPATRIATES (HSAR 3052.209-70) (JUN 2006)**

(a) Prohibitions.

Section 835 of the Homeland Security Act, 6 U.S.C. 395, prohibits the Department of Homeland Security from entering into any contract with a foreign incorporated entity which is treated as an inverted domestic corporation as defined in this clause, or with any subsidiary of such an entity. The Secretary shall waive the prohibition with respect to any specific contract if the Secretary determines that the waiver is required in the interest of national security.

(b) Definitions. As used in this clause:

*Expanded Affiliated Group* means an affiliated group as defined in section 1504(a) of the Internal Revenue Code of 1986 (without regard to section 1504(b) of such Code), except that section 1504 of such Code shall be applied by substituting 'more than 50 percent' for 'at least 80 percent each place it appears.

*Foreign Incorporated Entity* means any entity which is, or but for subsection (b) of section 835 of the Homeland Security Act, 6 U.S.C. 395, would be, treated as a foreign corporation for purposes of the Internal Revenue Code of 1986.

*Inverted Domestic Corporation.* A foreign incorporated entity shall be treated as an inverted domestic corporation if, pursuant to a plan (or a series of related transactions)—

(1) The entity completes the direct or indirect acquisition of substantially all of the properties held directly or indirectly by a domestic corporation or substantially all of the properties constituting a trade or business of a domestic partnership;

(2) After the acquisition at least 80 percent of the stock (by vote or value) of the entity is held—

(i) In the case of an acquisition with respect to a domestic corporation, by former shareholders of the domestic corporation by reason of holding stock in the domestic corporation; or

(ii) In the case of an acquisition with respect to a domestic partnership, by former partners of the domestic partnership by reason of holding a capital or profits interest in the domestic partnership; and

(3) The expanded affiliated group which after the acquisition includes the entity does not have substantial business activities in the foreign country in which or under the law of which the entity is created or organized when compared to the total business activities of such expanded affiliated group.

*Person, domestic, and foreign* have the meanings given such terms by paragraphs (1), (4), and (5) of section 7701(a) of the Internal Revenue Code of 1986, respectively.

(c) Special rules. The following definitions and special rules shall apply when determining whether a foreign incorporated entity should be treated as an inverted domestic corporation.

(1) *Certain Stock Disregarded.* For the purpose of treating a foreign incorporated entity as an inverted domestic corporation these shall not be taken into account in determining ownership:

(i) Stock held by members of the expanded affiliated group which includes the foreign incorporated entity; or

(ii) stock of such entity which is sold in a public offering related to the acquisition described in subsection (b)(1) of Section 835 of the Homeland Security Act, 6 U.S.C. 395(b)(1).

(2) *Plan Deemed In Certain Cases.* If a foreign incorporated entity acquires directly or indirectly substantially all of the properties of a domestic corporation or partnership during the 4-year period beginning on the date which is 2 years before the ownership requirements of subsection (b)(2) are met, such actions shall be treated as pursuant to a plan.

(3) *Certain Transfers Disregarded.* The transfer of properties or liabilities (including by contribution or distribution) shall be disregarded if such transfers are part of a plan a principal purpose of which is to avoid the purposes of this section.

(d) *Special Rule for Related Partnerships.* For purposes of applying section 835(b) of the Homeland Security Act, 6 U.S.C. 395(b) to the acquisition of a domestic partnership, except as provided in regulations, all domestic partnerships which are under common control (within the meaning of section 482 of the Internal Revenue Code of 1986) shall be treated as a partnership.

(e) Treatment of Certain Rights.

(1) Certain rights shall be treated as stocks to the extent necessary to reflect the present value of all equitable interests incident to the transaction, as follows:

- (i) warrants;
- (ii) options;
- (iii) contracts to acquire stock;
- (iv) convertible debt instruments; and
- (v) others similar interests.

(2) Rights labeled as stocks shall not be treated as stocks whenever it is deemed appropriate to do so to reflect the present value of the transaction or to disregard transactions whose recognition would defeat the purpose of Section 835.

(f) *Disclosure.* The offeror under this solicitation represents that [**Check one**]: X it is not a foreign incorporated entity that should be treated as an inverted domestic corporation pursuant to the criteria of (HSAR) 48 CFR 3009.104-70 through 3009.104-73;

\_\_\_ it is a foreign incorporated entity that should be treated as an inverted domestic corporation pursuant to the criteria of (HSAR) 48 CFR 3009.104-70 through 3009.104-73, but it has submitted a request for waiver pursuant to 3009.104-74, which has not been denied; or

\_\_\_ it is a foreign incorporated entity that should be treated as an inverted domestic corporation pursuant to the criteria of (HSAR) 48 CFR 3009.104-70 through 3009.104-73, but it plans to submit a request for waiver pursuant to 3009.104-74.

(g) A copy of the approved waiver, if a waiver has already been granted, or the waiver request, if a waiver has been applied for, shall be attached to the bid or proposal.

**I.5 KEY PERSONNEL (HSAR 3052.215-70) (DEC 2003)**

(a) The personnel specified below are anticipated to be key personnel in performing under this contract and may be changed from time to time during the course of the contract by adding or deleting personnel.

(b) Before removing or replacing any of the specified individuals, the contractor shall notify the program office through the monthly report.

**Key Personnel**

(b) (4)  
(b) (4)

**K.0 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS**

**K.1 ONLINE REPRESENTATIONS AND CERTIFICATIONS APPLICATION (ORCA)**

Vendor is in compliance with ORCA, an e-Government initiative that was designed by the Integrated Acquisition Environment (IAE) to replace the paper based Representations and Certifications (Reps and Certs) process.