**Statement of Work for   
Advanced X-ray Material Discrimination**

**Checkpoint Weapons Detection Algorithm Development**

# Introduction

The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) Explosives Division (EXD) Checked Baggage and Checkpoint Programs invest in the development and maturation of advanced screening technologies that demonstrate a potential to deliver solutions that address the Transportation Security Administration’s (TSA’s) capability gaps for screening checked baggage and personal carry-on items.

The emergence of improvised explosive threats and their use by terrorists has placed many challenges on aviation security screening. Explosive Detection Systems (EDS) have been presented with considerable adversity in developing a broad detection capability for improvised explosive threats during security screening of checked bags and carry-on items.

Technologies are needed to increase the measurement or mathematical discrimination between improvised explosive threats and stream-of-commerce clutter in checked baggage and carry-on items. The development of a next-generation software tool kit that can be made available to third party hardware and software developers to support capability transition to TSA is required to support this effort and future DHS S&T developmental test and evaluation (DT&E).

DHS S&T EXD is interested in high-impact approaches which can be retrofitted into existing EDS baselines as well as innovations in EDS concept development. Recent technological developments which are expected to impact critical metrics such as probability of detection (Pd) and probability of false alarm (Pfa) include new improvised explosive threat signature technology, compressive measurement, coded apertures, new or innovative sources and detectors including advanced detection, and novel classification and reconstruction algorithms. The work outlined here focuses on information theoretic analysis of security data which implements high impact approaches, as well as applying the tools of optimal detection, estimation, pattern recognition, machine learning, and information theory.

**II. Scope of Work**

The contractor shall develop and integrate the Automated Prohibited Items Detection (APID) algorithm for a computed tomography (CT) checkpoint system as proposed in the contractor’s response to Broad Agency Announcement Call HSHQDC-17-R-B0003.

The contractor shall develop an Automatic Prohibited Items Detection (APID) algorithm and application programming interface (API) for integrating the algorithm into a CT X-ray scanner. A human factors analysis will also be performed to identify areas of emphasis for the development effort.

The proposed algorithm will operate through the following two stage development plan:

Phase 1: Data Collection and New Algorithm Features

Phase 2: Human Factors Analysis, Algorithm Improvement and Integration

To ensure satisfaction of TSA requirements, the contractor shall evaluate the development of their algorithms against the TSA Accessible Property Screening Standard (APSS). The contractor shall provide written reporting on updates and analytical performance. The phased outline of these standards are listed below;

Timeline 1-12 months

* Expanded Threat Library (Pd/Pfa= AT-2, Tier II)
* 50% threat mass at Pd by category/overall in accordance with (IAW) APSS at ½% of AT-2 Tier II Pfa rate (5% percentage points higher than APSS without prohibited items)

Timeline 13-24 months

* 25% threat mass at Pd by category/Overall IAW APSS at ½% of AT-2 Tier II Pfa rate (5% percentage points higher than APSS without prohibited items)
* Full Compliance with APSS Level 1 with or without prohibited items detection

This project is aligned with these standards and will work toward the following objectives with a focus on prohibited items detection:

Timeline 6-12 months

* Develop preliminary prohibited items detection algorithm with the goal of achieving APSS Level 1 performance for prohibited items. This preliminary algorithm will incorporate the approved AT-2 Tier II algorithm for explosives detection.

Timeline 12-24 months

* Full Compliance with APSS Level 1+ explosives and prohibited items detection requirements

In order to achieve satisfactory prohibited items detection performance, the contractor shall execute the following as necessary:

* Proper handling of datasets
* Tests of different signature components
* Tests of algorithms
* Online/offline learning

**III. Project Tasks**

**Overview**

The program will be divided into Phase I (Base) and Phase II (Option).

* Phase I will have three tasks associated with it.
  + The final deliverables for Phase I will be prepared at the conclusion of Task 3.
* Phase II will have three tasks associated with it.
  + The final deliverables for Phase II will be prepared at the conclusion of Task 6.

Key definitions:

* **Algorithm data package** refers to computer software, executable on a Linux, Unix, or Windows-based computer system, that implements the APID algorithm and contains:
  + An executable binary file that contains the application’s main entry point and any code that was statically linked to the application target;
  + Resource files and software libraries necessary for the execution of the executable file; and
  + Computer software documentation corresponding to the use, operation, and maintenance of the application.
* **Application Program Interface** refers to computer software documentation describing how software components may interact with other software components. It details, in human-readable format, the expected behavior of software libraries. It may contain the set of public methods, variables used as arguments, and return values for public methods. It shall contain a set of protocols, routines, and tools necessary to build application software interacting with the computer software for which the API was written.

**High Level Gantt Chart**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase I (Base)** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Program Management |  |  |  |  |  |  |  |  |  |  |  |  |
| Data Collection / Preliminary Design |  |  |  |  |  |  |  |  |  |  |  |  |
| Algorithm Development / Critical Design |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Phase II (Option)** | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Program Management |  |  |  |  |  |  |  |  |  |  |  |  |
| Human Factors Analysis / Algorithm Development |  |  |  |  |  |  |  |  |  |  |  |  |
| Algorithm Test and Evaluation |  |  |  |  |  |  |  |  |  |  |  |  |

***Phase I***

**Task 1: Project Management**

***Subtask 1.1 – Project Management Support*** – Throughout the entire period of performance, the contractor shall provide a certified Project Manager (PM) dedicated to support the contract and serve as the primary point of contact to the contractor. The PM shall manage all aspects of the project in accordance with the approved Project Management Plan (PMP) which defines how the project will be executed, monitored, and controlled.

At a minimum, the PMP shall define the plans and procedures to manage the project’s baselines for cost, schedule, and scope. In addition, the following shall be documented in accordance with best practices: registers for stakeholders, communications, and baseline change requests, risks, issues, and lessons learned. The PMP shall have a minimum of the following sections for content:

* + - Scope Baseline
      * Project Scope Statement
      * Work Breakdown Structure (WBS)
      * WBS Dictionary
    - Baseline Configuration and Change Control Plan
    - Scope Management Plan
    - Cost Baseline
    - Cost Management Plan
    - Earned Value Management Plan (EVMP)
    - Schedule Baseline
    - Schedule Management Plan
    - Risk Management Plan
    - Communications Plan
    - Stakeholder Management Plan
    - Quality Plan
    - Test and Evaluation Plan

The deliverables for this task shall include the following:

* Kickoff meeting with initial Baseline Review
* Monthly Status Reports
* Monthly Performance Baseline Reviews
* Program Management Plan
* Minutes of all teleconferences, reviews, and meetings

***Subtask 1.2 – Required Meetings –*** Unless otherwise directed by the COR in writing, all meetings except for the Monthly Performance Baseline Reviews will be hosted at the DHS facility at 1120 Vermont Ave, NW in Washington DC. The Monthly Performance Baseline Reviews will be held via teleconference. The following delineations are to serve as the minimum set of criteria, exhibits, and articles for these meetings.

**1.2.1 Initial: Kickoff**

* + - * + Entrance Criteria: PMP submitted to COR for approval
        + Exit Criteria: Approved PMP
        + Required Attendees: Contractor PM, DHS COR, DHS PM
        + Exhibits and Articles:

Organization Chart

Project WBS (Work Breakdown Structure)

Integrated Master Schedule (IMS) with Critical Path Analyses

Integrated Master Plan (IMP)

Staffing Plan

Spend Plan

Risk Register with mitigation plan

Earned Value Management Plan

% Complete Metrics and Methodology

Schedule Performance Index (SPI) and Cost Performance Index (CPI) vs time

Issue and Action Registers

**1.2.2 Monthly: Performance Baseline Review (PBR)**

* + - * + Entrance Criteria: Monthly Status Reports
        + Exit Criteria: submission of all exhibits and articles per CDRL.
        + Exhibits and Articles:

Technical Performance Metric Review

SPI and CPI plots

Performance against Spend plan

Schedule Performance

Risk Register Review

Issues and Actions Review

Baseline Change Requests

**1.2.3 Technical Collaboration Meetings (TCM) *–*** The contractor shall participate in all scheduled TCMs which will take place at a DHS specified location. These meetings will consist of technology area stakeholders and will be held no more than twice per calendar year. The contractor shall complete all relevant non-disclosure agreements associated with participation.

**Task 2: Data Collection/Preliminary Design**

***Preliminary Design Summary*** – The contractor shall proceed with the development of a preliminary design based on the outcome of the System Concept Review. The contractor shall begin to refine the system specifications down to the software module level. All software modules shall be described functionally with clearly defined inputs and outputs. The contractor shall complete a preliminary design and hold a Preliminary Design Review (PDR) within six (6) months of the contract award date.

***Subtask 2.1 – System Concept Review (SCR)******–*** At the beginning of the contract the contractor shall have a requirements review with the DHS COR to establish the set of weapons to focus on for the algorithm development and to establish detection and false alarm goals. The contractor shall provide the prototype algorithm results at the time of the SCR review so that the decision of weapon priorities can factor in how difficult each weapon is to detect. The contractor shall coordinate with DHS to schedule a SCR meeting. The contractor shall prepare and submit to the DHS COR the proposed agenda and preliminary algorithm results ten (10) business days prior to the meeting and an update at the meeting. The contractor shall prepare and submit the minutes of the meeting to the DHS S&T COR within five (5) business days after the meeting.

***Subtask 2.2 – Data Collection***

***Subtask 2.2.1 – Obtain Items –*** Based on the discussion with DHS from the system concept review subtask, a list of prohibited items to be used for data collection will be defined. The items will be purchased by the contractor for scanning at Transportation Security Laboratory (TSL) in Atlantic City, NJ or an alternate site.

***Subtask 2.2.2 – Data Collection Plan –*** Based on the discussion with DHS from the system concept review subtasks, the contractor shall prepare a data collection plan. This plan shall include key image features that are to be collected as well as the methodology for scanning each prohibited item. This includes planned concealment strategies and bag configurations. The contractor shall also prepare an outline for the data collection report describing data to be provided after the data collection subtasks (subtasks 2.2.3, 2.2.4, 2.2.5) have been completed.

***Subtask 2.2.3 – Collect Data –*** The contractor will conduct the data collection at the contractor site and offsite as necessary per the data collection plan. Offsite collection is assumed at the TSL. The offsite data collection is planned for one week. The contractor shall ship any necessary equipment, install it for one week of use, and de-install and return the equipment to the contractor’s facilities at the conclusion of data collection.

***Subtask 2.2.4 – Data Truthing –*** The contractor shall review the collected data to identify and mark the threat items.

***Subtask 2.2.5*** *–* ***Prepare and Transmit Data Collection Report*** *–* The Contractor shall document the items scanned and the bag, concealment, and content information. This report shall be delivered electronically to the DHS COR.

***Subtask 2.3*** *–* ***Image Analysis and Feature Identification*** *–* The images collected will be scored using the current algorithm. The images where the threat is not detected will be examined to identify their unique features and to determine the potential strategies for detection.

***Subtask 2.4 – PDR –*** The contractor shall hold a Preliminary Design Review (PDR), within six (6) months of contract award. PDR materials shall be delivered ten (10) business days prior to PDR to the DHS S&T COR along with specifications and drawings. Approval of the PDR deliverables by the DHS S&T COR will be required prior to PDR. As part of the PDR deliverables, the contractor shall propose a system prototype baseline to include:

* System metrics for each component of the algorithm
* Data collection plan for threat and clean bag items
* System trade-offs
* Performance review and analysis of key process in threads including but not limited to:
  + Detection metrics, image quality metrics
  + Detection performance against APSS Level 1 Standard
  + Processing timelines
  + Processor and memory utilization
  + Detection classification timelines
* Test Plan and User’s Guide for delivered software
* Risk areas (performance, cost, and schedule impacts)
* Compliance matrix of key requirements
* Description of the delivered software tools and computing environment

**Task 3: Algorithm Development / Critical Design**

***Algorithm Development and Critical Design Summary*** – The contractor shall complete development leading to the critical design on the proposed algorithm. The contractor shall complete a Critical Design Review (CDR) at month 11 of algorithm development. The contractor shall also provide a test plan with which the approved design will be tested under Subtask 3.4 of this SOW.

***Subtask 3.1 – New Algorithm Features –*** To improve the detection of knives and guns the contractor shall plan to develop sharpness measurements or shape features to help identify objects that represent knives, guns or other prohibited items. The plan is to create volumetric measurements that can identify voxels that appear to have unique features to prohibited items. These measurements will give the classifier the ability to factor in some global shape characteristics of each object into the weapon classifier decision. Part of this work will also involve adjusting segmentation algorithms to try to separate nearby objects from one another. There are times where two nearby objects are merged together and form a single object that causes the global shape measurements for the object to be incorrect. By separating the objects from one another, each object will have correct feature measurements.Prior to developing the algorithm features, the contractor shall develop a test plan which shall be executed as part of subtask 3.4 to evaluate the algorithm feature performance.

***Subtask 3.2 – Rebuild Algorithm Classifier –*** The contractor shall use the data collected and truthed in Subtask 2.2 and the algorithm features developed in Subtask 3.1 to retrain the algorithm classifier. The classifier is built based on a “training” portion of the data, typically about half of the available data and then the performance on the separate “test” data is used to validate the algorithm performance.

***Subtask 3.3 – Integrate Algorithm –*** The contractor shall integrate the newly developed independent features from the previous tasks and integrate them into the full detection algorithm. This involves integrating the feature calculations into the full algorithm software and adding code to incorporate each measurement onto each object identified by the algorithm. The algorithm classifier building software will also need to be updated to allow adding the new features and to identify which features are most beneficial.

***Subtask 3.4 – Software Testing –*** The base year software release will be tested according to the test plan developed in Subtask 3.1 to determine the performance on the weapons and prohibited items. The results will be included in the Critical Design Review.

***Subtask 3.5 – Higher Resolution Software Development –*** The contractor shall update the system software to transfer the full volumetric data at 1mm resolution to the algorithm and optimize the efficiency of the implementation of the new algorithm features to meet the throughput goal of >300 bags per hour.

***Subtask 3.6 – Critical Design Review –*** The contractor shall hold a Critical Design Review (CDR) and present the pre-prototype algorithm, software and data classification package including detailed designs and concepts. The contractor shall provide the presentation slides and critical design package ten (10) business days prior to the scheduled date of the CDR. The CDR will be held within 11 months and 10 calendar days of the contract award date and shall include the following:

* Detailed designs of the software modules. The detailed designs will include drawings and block diagrams of the processing steps. Software designs should be to a completion level, such that detailed implementation or coding can begin if the CDR is favorable during the Government review process.
* Performance reviews of key components and system response timelines. Take budgets from PDR and show they can be met by detailed designs.
* Literature Review Results. Final results of trade studies that led to proposed CDR baseline choices for classifier approach chosen and subsystems.
* Updates since PDR:
* Status of Program goals
* Software Integration Plan
* Performance review and analysis of key process in threads including but not limited to:
  + Detection metrics, image quality metrics
  + Processing timelines
  + Processor and memory utilization
  + Detection classification timelines
  + Detection performance against the APSS Level 1 Standard
  + Test Plan and User’s Guide for delivered software
  + Compliance matrix of key requirements
  + Description of the delivered software tools and computing environment with execution time estimates.

***Phase II***

**Task 4: Program Management**

***Subtask 4.1 – Program Management Support*** – A program manager (PM) will support the overall contract and provide the primary customer point of contact. The PM will manage the project’s cost and schedule and risk areas as well as provide the required reports. A revised program management plan will be submitted to define the plan to manage project cost, schedule, communication, and risk based on lessons learned from Phase I. The deliverables for this task include: Monthly and Annual Reports, Quarterly Review Agenda and Minutes, Program Management Plan.

**Task 5: Algorithm Development**

***Subtask 5.1 – Human Factors Analysis*** – The contractor shall conduct a human factors analysis and deliver to the DHS COR no later than 60 calendar days after the start of the Option Period a report on recommendations from the analysis using the demonstration of the algorithm developed in Task 3. The report shall contain input into the Phase II development effort and areas of emphasis.

***Subtask 5.2 – API Development*** – An Application Programming Interface (API) be prepared and delivered to the DHS COR no later than 120 calendar days after the start of the Option Period to define the requirements for how third party CT systems could integrate the new algorithm.

***Subtask 5.3 – Algorithm Feature Development*** – The objective of the follow-on year will be to improve the algorithm and add the next tier of threat priorities and modifications identified at the Critical Design Review. This task is extended effort of task 3.1-3.3 above to include developing new algorithm features, rebuilding the algorithm classifier, and integrating the algorithm into a deployable CT system. Prior to developing the algorithm features, the contractor shall develop and deliver to the DHS COR no later than 150 calendar days after the start of the Option Period a test plan which shall be executed as part of subtask 6.1 to evaluate the algorithm feature performance.

**Task 6: Algorithm Test and Evaluation**

***Subtask 6.1 – Test and Evaluation*** – The contractor shall execute the test plan created in subtask 5.3 to evaluate the integrated algorithm developed under Task 5. When test & evaluation is complete the contractor shall prepare and deliver to the DHS COR a test report at least ten (10) business days prior to the technical readiness review summarizing the performance results.

***Subtask 6.2 – Algorithm Data Package and TRR*** – The contractor shall prepare the Algorithm Data Package and release it for TSL evaluation. The Algorithm Data Package, Final API, and results from Phase II algorithm development shall be presented at a Technical Readiness Review. The contractor will prepare and submit the proposed agenda, the full algorithm data package, and test results to the DHS COR at least ten (10) business days prior to the review and an update at the meeting. The contractor will prepare and submit the minutes of the review within 5 business days after the meeting.

**IV. Deliverables**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones and Deliverables** | | | | |
| **Program Element/Task** | **Major Tasks** | **Key Milestone or Deliverable** | **Deliver to** | **Date Due** |
| **PHASE I** | | | | |
| 1. Program Management | Kickoff Meeting | Kickoff meeting | Coordinate attendance with COR | No later than (NLT) 30 calendar days after contract award |
| Kickoff meeting materials | COR | 10 business days prior to the kickoff meeting |
| Program Management Support | Monthly Reports | COR | On or before the 15th of each month |
| Annual Reports | COR | NLT 365 calendar days after contract award |
| Monthly Performance Baseline Review Agenda | COR | NTL 10 business days prior to the Monthly Performance Baseline meeting |
| Monthly Performance Baseline Review Minutes | COR | NLT 5 business days after the Monthly Performance Baseline meeting |
| Program Management Plan | COR | 10 business days prior to the kickoff meeting |
| 2. Data Collection / Preliminary Design | System Concept Review | SCR Meeting | Coordinate attendance with COR | NLT 60 calendar days after contract award |
| SCR Meeting Materials | COR | NLT 10 business days prior to the SCR Meeting |
| SCR Meeting Minutes | COR | NLT 5 business days after the SCR meeting |
| Data Collection  Image Analysis and Feature Identification | Data Collection Plan | COR | NLT 90 calendar days after contract award |
| Data Collection Report | COR | NLT 180 calendar days after contract award |
| PDR | Formal PDR as specified in Subtask 2.4 of this SOW | Coordinate attendance with COR | NLT 210 calendar days after contract award |
| System Prototype Baseline | COR | NLT 10 business days prior to PDR |
| 3.      Algorithm Development / Critical Design | Algorithm Development and Integration  Software Testing | Algorithm Test Plan | COR | NLT 240 days after contract award |
| Critical Design Review | Detailed algorithm designs | COR | NLT 365 days after contract award |
| Algorithm performance reviews and analysis | COR | NLT 365 days after contract award |
| Critical Design Review Meeting | Coordinate attendance with COR | NLT 365 days after contract award |
| Presentation Slides | COR | NLT 10 business days prior to the Critical Design Review |
| Critical Design Package | COR | NLT 10 business days prior to the Critical Design Review |
| CDR Meeting Minutes | COR | NLT 5 business days after the Critical Design Review |
| **PHASE II** | | | | |
| 4. Program Management | Program Management Support | Monthly Reports | COR | On or before the 15th of each month |
| Annual Reports | COR | NLT 365 after start of Option Period |
| Monthly Performance Baseline Review Agenda | COR | NLT 10 days prior to the Monthly Performance Baseline Review |
| Monthly Performance Baseline Review Minutes | COR | NLT 5 days after the Monthly Performance Baseline Review |
| Updated Program Management Plan | COR | NLT 30 calendar days after start of Option Period |
| 5.      Algorithm Development | Human Factors Analysis | Human Factors Analysis Report | COR | NLT 60 calendar days after start of Option Period |
| API Development | Draft API | COR | NLT 120 calendar days after start of Option Period |
| Algorithm Feature Development | Algorithm Development Test Plan | COR | NLT 150 calendar days after start of Option Period |
| 6. Algorithm Test and Evaluation | Test and Evaluation | Test Report | COR | NLT 345 calendar days after start of Option Period |
| Test Readiness Review | Algorithm Data Package | COR | NLT 345 calendar days after start of Option Period |
|  | Final API | COR | NLT 345 calendar days after start of Option Period |
|  | Test Readiness Review (TRR) | Coordinate attendance with COR | NLT 350 calendar days after start of Option Period |
|  | Test Readiness Review Materials | COR | NLT 10 business days prior to TRR |
|  | Test Readiness Review Meeting Minutes | COR | NLT 5 business days after TRR |

**Note 1: Presentations**

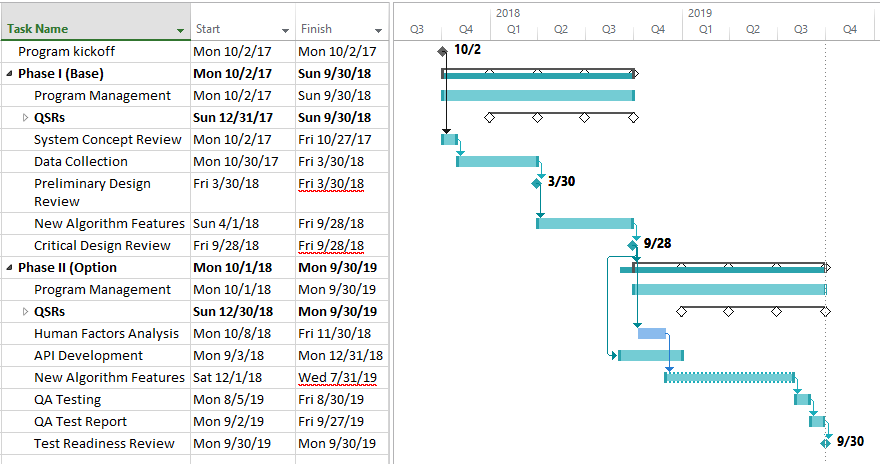
The Contractor shall prepare and submit an agenda two weeks prior to a scheduled review. The Contractor shall prepare and submit a draft set of Presentation Charts one week prior to a scheduled review. Final charts as presented are due at the beginning of the review meeting and any updates from the review are due within five (5) days.

**Note 2: Meeting Minutes**

The Contractor shall submit meeting minutes within five (5) days after each meeting or review held by the Contractor in support of this effort covering a summary of major points of discussion, action item assignment as agreed in the meeting, and a list of attendees.

**V. Project Timeline**

Below is the Gantt chart summarizing all Tasks and scheduled meetings throughout the performance period of the contract. The durations of all Tasks shown as horizontal bars indicate the timeframe during which activities will occur to complete the respective Task. However, all tasks must be completed during the period of performance of the contract specified in Section F of the contract. The diamonds indicate the scheduled meetings such as PDR, CDR and Quarterly Status Reviews.



**VI. Other Contract Details**

Place of Performance: Work performed under this contract shall be located at the Contractor’s facilities.

Period of Performance: The period of performance is 24 months from contract award date, consisting of a 12-month base period and a 12-month option period.

Travel: Travel within the continental United States (CONUS) to attend technical meetings as requested by the DHS COR. Additional travel may be required based on emergent requirements.

**VII. DHS-Furnished Information**

1. DHS shall provide certain DHS information, materials, and forms unique to DHS to the contractor to support certain tasks under this Statement of Work (SOW).
2. The DHS COR identified in this SOW shall be the point of contact (POC) for identification of any required information to be supplied by DHS.
3. The contractor shall prepare any documentation according to the guidelines provided by DHS and disseminate in accordance with DHS rules and regulations.

**VIII. DHS-Furnished Facilities, Supplies and Services**

The work performed under this SOW is to be primarily accomplished at the contractor’s facility. Limited travel and work at other DHS and government facilities may be required. If work at other DHS and government facilities is necessary for the services being performed under this SOW, basic facilities such as work space and associated operating requirements (e.g., phones, desks, utilities, desktop computers, and consumable and general purpose office supplies) may be provided to the contractor.

**IX. DHS-Furnished Property**

Before purchasing any individual item equal to or exceeding $5,000.00 that is required to support technical tasks performed pursuant to this SOW, the contractor shall obtain the DHS Contracting Officer’s prior written consent. Property associated or purchased for this contract shall be the property of DHS but managed and maintained by the contractor (where applicable). All DHS property shall be returned to DHS at the end of the contract.

**X. Deliverables**

The Contractor shall provide all deliverables identified in this SOW directly to the DHS Contracting Officer and COR.

**XI. Program Status Report**

The Contractor shall deliver a monthly program status report according to a mutually agreed format and content requirements as described in Section IV, Deliverables to the DHS Contracting Officer, COR, and to [SandT.explosives.msr@ hq.dhs.gov](mailto:SandT.explosives.msr@%20hq.dhs.gov) within two (2) business days of the 15th of each month. This report shall include metrics pertaining to financial information, schedule information, scope information, risk information, and performance assessment information on all work performed hereunder. This document will describe the previous 30 calendar days’ activity, technical progress achieved against goals, difficulties encountered, recovery plans (if needed), plans for the next 30 calendar days, and financial status.

**XII. Funding Requirements**

DHS shall provide funding according to DHS’s appropriations and available funds.

**XIII. Security Requirements**

The work performed under this SOW is unclassified.  However some of the work performed under this effort is expected to require handling of Sensitive Security Information (SSI) related to vendor equipment data sets and some aspects related to the specific explosive chemistry formulations. All SSI shall be handled in accordance with DHS Management Directive (MD) 11056.1.

Each individual employed under the contract who will have access to sensitive information shall be a citizen of the United States of America, or an alien who has been lawfully admitted for permanent residence as evidenced by a Permanent Resident Card (USCIS I-551). Any exceptions must be approved by the DHS S&T Chief Security Officer or designee.

Contractor personnel having access to SSI data shall be required to obtain a DHS Suitability Clearance. All contractor employees and subcontractors with access to SSI shall sign a DHS Form 11000-6 (Non-Disclosure Agreement) and mark both the sensitive information box and the SSI box.

While there are no restrictions on the employment of foreign nationals for this contract award, only U.S. citizens or lawful permanent residents may be given access to sensitive information that the contractor is given, uses, or is derivative of the same, as a result of this contract.

DHS has and will exercise full control over granting, denying, withholding, or terminating unescorted Government facility, Government systems and/or sensitive Government information access for Contractor employees, based upon the results of a DHS fitness (suitability) investigation. DHS may, as it deems appropriate, authorize and make a favorable entry of duty (EOD) decision based on preliminary security checks. The favorable EOD decision would allow the contactor to commence work temporarily prior to the completion of the full investigation. The granting of a favorable EOD decision shall not be considered as assurance that a full employment contractor fitness (suitability) authorization will follow as a result thereof. The granting of a favorable EOD decision or a full contractor fitness (suitability) authorization determination shall in no way prevent, preclude, or bar the withdrawal or termination of any such access by DHS, at any time during the term of the task order. No employee of the contractor shall be allowed unescorted access to a Government facility, access to any sensitive information or access to DHS Systems without a favorable EOD decision or contractor fitness (suitability) determination by the DHS Office of Security. Contract employees assigned to the task order not needing access to sensitive DHS information, DHS systems or access to DHS facilities will not be subject to security contractor fitness (suitability) screening. Contract employees waiting an EOD decision may not begin work on the task order. Limited access to Government buildings is allowable prior to the EOD decision if the contractor is escorted by a Government employee. This limited access is to allow contractors to attend briefings, nonrecurring meetings, and begin transition work. Classified information is Government information which requires protection in accordance with Executive Order 13526, National Security Information (NSI) as amended and supplemental directives. If the contractor has access to classified information at a DHS owned or leased facility, it shall comply with the security requirements of DHS and the facility. If the contractor is required to have access to classified information at another Government Facility, it shall abide by the requirements set forth by the agency.

The contractor will test objects and bags that they have made in their own facility or will use simulations. There shall be no contractor lead testing of operational explosives, only simulants. DHS will have ownership of the images and data first produced. There will be no personally identifiable information (PII) included in the data sets.

**XIV. Special Requirements**

The Government reserves the right to witness all Contractor-conducted test activities. The Contractor shall provide the Government at least one week’s written notice prior to conducting a formal test (requires a formal test plan).

Reviews will be attended by the Contractor and key team member staff, DHS S&T program managers and staff, along with DHS S&T selected external reviewers or consultants consisting of Government and non-government individuals as appropriate. DHS S&T anticipates attendance by other awardees on this targeted BAA at reviews.

**XV. Invoices**

The Contractor will deliver a monthly invoice to [InvoiceSAT.Consolidation@ice.dhs.gov](mailto:InvoiceSAT.Consolidation@ice.dhs.gov) no later than the 15th of each month

**XVI. Points of Contact (POCs)**

Contractor POCs are as follows:

**Technical**

Jeff Stillson

10E Commerce Way

Woburn, MA 01921

Phone: 781-939-3804

E-mail: jeff.stillson@l3t.com

**Contracting**

Dan Curtis

Contracts Manager

10E Commerce Way

Woburn, MA 01921

Phone: 781-970-1619

Cell: 781-301-1871

E-mail: [dan.curtis@L3T.com](mailto:dan.curtis@l-3com.com)

DHS POCs are as follows:

**DHS S&T Contracting Officer**

Robin Jones

Office of Procurement Operations

Science and Technology Directorate

DHS S&T EXD MS0210

245 Murray Lane

Washington, DC 20528-0200

Phone: 202-254-8893

E-mail: robin.jones@hq.dhs.gov

**DHS S&T Contract Specialist**

Frances Gray

Office of Procurement Operations

Science and Technology Directorate

DHS S&T EXD MS0210

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Washington, DC 20528-0200

Phone: 202-254-8259

E-mail: frances.gray@hq.dhs.gov

**DHS S&T COR**

James Viar

Explosives Division

Science and Technology Directorate

DHS S&T EXD MS0200

245 Murray Lane

Washington, DC 20528-0200

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**DHS S&T Invoicing**

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DHS S&T may change the individual designated as POC upon notice to the contractor of such change.