

STATEMENT OF WORK

Requisition #287155

Title: OGI Analysis of Tank Farm Chemical Vapor Sources

Revision Number: 0

Date: April 7, 2016

Prior SOW or Revision Date: N/A

1.0 Objective

Washington River Protection Solutions (WRPS) has identified that toxic vapors are present in Hanford High Level Waste (HLW) tanks. Vapor emissions are everyday occurrences. Protection of Hanford tank farm (TF) workers is of paramount importance. To ensure that workers are properly protected, WRPS is developing a vapor monitoring and detection system (VMDS). Chemical vapors originate from both primary sources and fugitive sources. Optical Gas Imagers (OGI), such as the FLIR GF306 and FLIR GF346 are sensitive to many tank farm chemical vapors and can be used to determine the shape and movement patterns of chemical vapors originating from both known and fugitive sources. OGI's have never been used on the Hanford Site and professional services from individuals with specialized OGI experience are required for the Pilot Scale Demonstration of chemical vapor sensing technologies being evaluated as part of the Vapor Monitoring and Detection System Project.

2.0 Background/Introduction

In 2013, WPRS tasked Savannah River National Lab to establish a blue ribbon panel to evaluate worker concerns that toxic fumes were being released from Hanford HLW tanks. This team published the Toxic Vapor Assessment Team (TVAT) Report¹ in late 2014. The TVAT evaluated available tank vapor space analyses, Industrial Hygiene (IH) data and worker experience to draw a number of conclusions about toxic vapor releases from the HLW tanks in the TFs. The primary result was that normal IH methods used in the TFs were not adequate to identify and protect workers from short term, high concentration vapor release (Bolos) events. As a result, WRPS initiated a process to develop and install the VMDS to monitor vapor plumes as they traverse worker breathing spaces. Data from the VMDS feeds dispersion and computational fluid dynamics (CFD) models to predict plume movement based on vapor emissions and atmospheric conditions. Actual and predicted plume locations will be used to inform work planning to ensure an environment that maximizes worker productivity while ensuring that workers are properly protected.

¹ Wilmarth 2014. W. R. Wilmarth, M. A. Maier, T.W. Armstrong, R.L. Ferry, J.L. Henshaw, R.A. Holland, M.A. Jayjock, M.H. Lee, J.C. Rock, C. Timchalk. Hanford Tank Vapor Assessment Report, SRNL-RP-2014-00791 Savannah River National Laboratory, Savannah River Nuclear Solutions LLC, Aiken, South Carolina.

3.0 Scope

The vendor shall provide expert OGI experience to examine chemical vapor emissions originating from a mock passive breather filter, a specified tank farm exhauster and a specified tank farm passive breather filter as determined by WRPS. The vendor will also provide expert OGI analysis skills to assist WRPS personnel and PNNL employees in the analysis of captured OGI data. WRPS will provide FLIR GF series cameras, tripods, and computers and FLIR ResearcherIR software for use in the project. The vendor shall perform the following tasks as part of this work scope.

Task 1: Develop Test Plan for OGI Examination

The vendor will develop a test plan describing the testing approach to the activities described in Tasks 2 –4. The test plan shall be approved by WRPS prior to commencement of Tasks 2-4.

Task 2: Examine mock passive breather filter using OGI

The vendor will use the portable OGI camera (FLIR GF306 or FLIR GF346) to inspect chemical vapor emissions from a mock passive breather filter (PBF) to demonstrate the performance of the camera in a controlled setting prior to operating the camera in the Hanford tank farms. Analysis of the mock PBF shall coincide with part 2 of the Bench Scale Demonstration being conducted at Pacific Northwest National Laboratory (PNNL). Part 2 of the Bench Scale Demonstration is scheduled to occur between 3/1/16 and 9/1/16. Field activities shall take a period no longer than 3 days. The Bench Scale OGI analysis report shall include analysis of the plume shape and behavior and report all configuration of hardware and software. A report shall be submitted 2 calendar weeks after the demonstration for WRPS approval.

Task 3: Examine emissions from a tank farm exhauster, passive breather filter, and fugitive sources using an OGI

The vendor will use the portable OGI camera (FLIR GF306 or FLIR GF346) to inspect chemical vapor emissions from a tank farm exhauster and tank farm passive breather filter to characterize the plume shape and behavior. The vendor will also conduct a survey of the AP and A/AX Tank Farms to identify fugitive chemical vapor emission sources if present. Analysis of the sources shall commence within one month of the start of the Pilot Scale Demonstration, which is expected to start between 4/1/16 and 5/1/16. Field activities shall take a period no longer than 4 days. The OGI analysis report shall include analysis of the plume shape and behavior and report all configuration of hardware and software. A report shall be submitted 2 calendar weeks for WRPS approval.

Task 4: Provide report of recommended OGI hardware and software configuration

Based on field observations of sources in the tank farms, the vendor will provide a report describing recommended OGI hardware and software configuration for OGI operation as a general field inspection instrument and as a research analysis tool. A report shall be submitted 3 calendar weeks after completion of all field activities for WRPS approval.

4.0 Submittals

In support of the work scope established in Section 3.0 above, submittals are listed on the Master Submittal Register (MSR).

Submittals shall be provided using the TOC Incoming Letter of Transmittal (form A-6005-315). All transmittal subject headings shall contain, at a minimum, the subcontract number, submittal number, and submittal description.

Submittals shall be provided in electronic format unless available only as a hard copy. Electronic submittals may be sent to TOCVND@rl.gov or delivered via a WRPS designated File Transfer Protocol (FTP) site. Electronic formats must be non-password protected in one of the following formats:

- Microsoft® Office Compatible
- Portable Document Format (PDF)
- Tagged Image File Format (TIFF)
- Graphics Interchange Format (GIF)
- Joint Photographic Experts Group (JPEG)
- Windows Media Video (WMV)
- Moving Picture Expert Group (MPEG)
- Extensible Markup Language (XML)
- HyperText Markup Language (HTML)
- Comma Separated Values (CSV)
- Text (TXT)

5.0 Acceptance Criteria

All deliverables associated with this scope of work shall be submitted to WRPS for a review of completeness and accuracy prior to final acceptance. Any WRPS review comments, findings, or non-conformances must be fully resolved prior to final acceptance. Subcontractor personnel provided under this subcontract shall possess the qualifications, certifications and any other attributes required to complete assigned work.

6.0 Configuration Management and Standards

6.1 Configuration Management Requirements

New or revised Technical Documents shall be prepared in accordance with TFC-BSM-AD-STD-02, *Editorial Standards for Technical Documents* and meet the document release criteria found in Table 3 of TFC-ENG-DESIGN-C-25, *Technical Document Control*.

6.2 Applicable Standards

APPLICABLE ENGINEERING CODES AND TOC ENGINEERING STANDARDS

	Number	Title
1.	TFC-ENG-DESIGN-C-25	Technical Document Control
2.	TFC-BSM-AD-STD-02	Editorial Standards for Technical Documents

7.0 ESH&Q Requirements

7.1 Quality Assurance Requirements

The Subcontractor shall have a documented and implemented Quality Assurance Program.

The Subcontractor's program shall be submitted for review/approval against the requirements identified on site form A-6006-661 Quality Assurance Requirements dated 3-15-16.

7.1.1 Supplier Quality Assurance Program

The Subcontractor's Quality Assurance Program shall be subject to review at all times, including prior to award.

7.1.2 Supplier Quality Assurance Program Changes

The Subcontractor shall, during the performance of this subcontract, submit proposed changes to their approved quality assurance program to the WRPS Buyer for review and concurrence prior to implementation.

7.1.3 Quality Assurance Oversight

WRPS personnel will co-ordinate with the supplier to conduct scheduled and periodic oversight of activities or products associated with this scope of work.

7.2 Price-Anderson Amendments Act Requirements

This 7.2 section and the General Provisions Article 2.11 entitled, *Price-Anderson Amendments Act (PAAA)*, are both determined to be N/A.

7.3 Special ESH&Q Requirements

Preliminary hazard assessment PHA ID: 32 is to be used for general office duties performed in TOC-controlled office facilities and/or observations/walkthroughs in tank farm non-radiological and radiologically controlled areas, including soil contamination areas and buffer areas, requiring a General (Not Specific) Radiological Work Permit (RWP) only. Observation activities only are allowed; no hands-on work activities may be performed. No ladder/scaffolding access is allowed. Prior to performing any other activities, a job hazard analysis (JHA) must be completed to cover the activities to be performed. The JHA must be approved by a TOC Safety Representative.

8.0 Verification/Hold Points

There are no hold points for this SOW.

9.0 Reserved

10.0 Work Location/Potential Access Requirements

Work will be performed at the Subcontractor's facilities. The Subcontractor will need access to 3110 Port of Benton Blvd, 2750E, the 200 East area and other buildings as required.

11.0 Training

The Subcontractor is expected to provide appropriately trained and qualified staff to perform the type of work specified. This shall include necessary expertise and training including necessary continuing training programs to assure Subcontractor personnel maintains a current understanding of laws, requirements, and industry standards. The Subcontractor shall maintain company and regulatory required certifications and qualifications for personnel.

Subcontractor personnel required to be on site for more than six consecutive days in support of this subcontract shall at a minimum, complete Hanford General Employee Training (HGET).

The Subcontractor shall be responsible for all costs associated with training and/or continuing education for Subcontractor employees that are not Hanford-specific training courses (e.g. commercially available training for certifications, etc.).

12.0 Qualifications

With proposal, the vendor will supply WRPS with expert OGI operation and OGI data analysis credentials for approval prior to issue of contract. The credentials shall demonstrate ASNT NDT Level III – TIR Certification and at least 10 years or greater of experience operating FLIR OGI cameras.

13.0 Special Requirements

Vendor personnel needing access to the Hanford site shall be US Citizens. These personnel shall adhere to badging and escort requirements, as defined at the time site access is granted.

Use of Government Vehicles

There is no anticipated need for any Subcontractor employees to use a Government-furnished vehicle in the performance of this statement of work. The Subcontractor's employees, therefore, are specifically prohibited from driving any Government-furnished vehicles under the performance of this statement of work unless this statement of work is formally so modified by the parties and the employee(s) will present a valid driver's license to the BTR for review.

14.0 Reporting/Administration

Subcontractor information including reports and other documents shall be submitted in either hard copy or electronic format as designated by WRPS. If electronic formatted documents are required, the documents must be viewable using either Microsoft® Windows®, Microsoft® Office, or Adobe® Acrobat® software.

- Develop a detailed project schedule with specific milestones identified.
- Informal weekly status meetings via teleconference with informal updates of cost, schedule, and technical status
- Monthly cost/schedule performance, (including technical status) reports as directed by the Technical Point of Contact or designee. WRPS will provide a standard form for the Monthly Project Status Report.

15.0 Workplace Substance Abuse Program Requirements

A Workplace Substance Abuse Program does not apply to this SOW.