TEMPLATE “E”
DESIGN/FACTORICATION

STATEMENT OF WORK

Requisition #: 298090

Title: A-105 Alternate Retrieval End Effector (Hanford Waste End Effector) Design and Build

Revision Number: 0

Date: 02/27/2017

1.0 Objective

Washington River Protection Solutions, LLC (WRPS) (hereafter called the Buyer) requires the services of an engineering and manufacturing subcontractor (hereafter called the Subcontractor) to design, construct, and deliver an alternate retrieval technology end effector for specific application in Hanford Tank 241-A-105. This device will hereafter be referred to as the Hanford Waste End Effector (HWEE). The HWEE will be built for cold testing in FY17. For expedience the HWEE design and fabrication is to be based on an existing previous confined sluicing end effector design as provided by WRPS. The completed HWEE will be tested in a ‘to-be-determined’ test facility which will prove the effectiveness of the HWEE to mobilize simulated waste.

2.0 Background/Introduction

Washington River Protection Solutions is the Tank Operating Contractor (TOC) for the U.S. Department of Energy-Office of River Protection (DOE-ORP) on the Hanford Site. The Hanford Site stores an estimated 56 million gallons of mixed radioactive and chemically hazardous waste in large underground tanks. Tank A-105 is a 1 million gallon, single-shell tank built in 1955. It was placed into service in 1962 and held plutonium-uranium extraction waste. The tank is 75 ft. in diameter and approximately 35 ft. high. This tank has a 42-in. diameter cylinder (referred to as a down comer) extending from the riser into the tank to a height that was 20 ft. from the tank bottom at the time of construction (see Figure 1). This tank was constructed with four in-tank ALCs, each 24-in. in diameter to enhance waste cooling capability. Figure 1 shows an artist’s rendition of a deployed end effector in Tank 241-A-105. This work scope includes only the end effector but must consider a deployment mechanism for future test phases.
Tank A-105 is a ‘confirmed leaker’ and has a significant tear in the primary liner. In 1963, a leakage problem was reported when low-intensity radiation was detected in one of the leak-detection laterals. On January 28, 1965, a sudden steam release occurred. Heat generated by the waste turned water inside the tank into steam, which was released through a nearby riser. Water trapped between the tank’s inner steel liner and the outside concrete liner also turned into steam. The steam pressure bulged the bottom inner liner upward to an estimated height of 8.5 ft. at one point, and ripped the liner away from the side wall.

3.0 Scope

The scope of this Statement of Work (SOW) is to design, construct, and deliver the HWEE based upon an existing design. The design will be based upon the Fernald Silo Retrieval Project Final Design Package BNW-29994-WCS-FDR (Rev 0) with further details provided in RPP-SPEC-61356 Rev 0 “Procurement Specification for the Hanford Waste End Effector.” Figure 2 shows a previous end effector which provides the primary basis for the HWEE.

3.1 Phase I (Design):

3.1.1 The Subcontractor shall use an existing design (BNW-29994-WCS-FDR (Rev 0) to construct the HWEE in accordance with this SOW. Phase I will include verifying that the existing drawing set is adequate for full construction. After the design review process has been completed
by the Subcontractor, Buyer review and approval of the detailed design shall be obtained by the Subcontractor through the submittal process identified in Section 4.0 of this SOW.

### 3.2 Phase II (Manufacturing):

3.2.1 Upon Buyer’s written authorization to proceed with Phase II, the Subcontractor shall procure parts and materials, manufacture, test and deliver the HWEE.

### 3.3 Phase III (Site Support):

3.3.1 The Subcontractor shall perform installation consultation at the hydraulic test bed, location at a local vendor (TBD).

### 3.5 Design Documentation

The following documents will be submitted by the Subcontractor to WRPS per the MSR (see Section 4.0)

1. As-built Drawings will be provided based upon drawings included in BNW-29994-WCS-FDR (Rev 0).
2. Shipping/handling (including Hoisting &Rigging) requirements will be provided in a document submitted as a draft and final.
3. Operations and Maintenance Manual shall be provided based upon manufactures recommendations for individual components.
4. Vendor Acceptance Test Procedure based on applicable specifications in RPP-SPEC-61356.
5. Nonconformance Reports.
6. Final Vendor Acceptance Test report, includes results of the vendor acceptance test.

### 4.0 Submittals

In support of the work scope established in Section 3.5 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)
- Moving Picture Expert Group (MPEG)
- Extensible Markup Language (XML)
- HyperText Markup Language (HTML)
- Comma Separated Values (CSV)
- Text (TXT)
- Windows Media Video (WMV)

### 5.0 Acceptance Criteria

Work products and services provided must meet established applicable TOC procedures for control and review of work products.

- Acceptance and approval of work products will be provided by the WRPS task lead and shall conform to requirements mutually discussed and agreed upon between subcontractor and the WRPS task lead.
- Acceptance and approval of reports shall be accomplished through the document review and approval process using the subcontractors document control procedures.

Unless otherwise approved by TOC, All electrical control panels and electrical equipment [a general term including material, fittings, devices, appliances, luminaries (fixtures), apparatus, and the like, used as a part of, or in connection with, an electrical installation] delivered or brought onto the site in performance of this subcontract must be listed or labeled by an organization currently recognized by OSHA as a nationally recognized testing laboratory.

### 6.0 Configuration Management and Standards

#### 6.1 Configuration Management Requirements

TOC documents are not expected, but if they are required the following terms will apply.

Configuration management requirements for this Subcontract are based upon the types of engineering services being procured and include the TOC standards listed in Section 6.2 Applicable Standards and the statements below.

The Subcontractor is responsible for performing constructability review(s) on the Subcontractor’s design products. The constructability review(s) shall include a check for interferences and fit-up and consider the as-installed configuration as well as interim configurations during the installation process. In the event that the Subcontractor cannot adequately perform a constructability review due to incomplete or inadequate as-built or field walk-down information, the Subcontractor shall notify the Buyer’s Technical Representative to determine an acceptable alternate technical approach.

New or revised Engineering Drawings to be released into the TOC document control system shall be prepared and entered into the Document Management and Control System (DMCS) in accordance with TFC-ENG-DESIGN-C-09, Engineering Drawings and TFC-ENG-STD-10, Drawing Standard.

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.

Key staff members assigned to the project shall be identified and qualifications evidence provided to WRPS. WRPS shall approve the assignment of key staff to the project.
6.2 Applicable Standards

APPLICABLE CODES AND STANDARDS

See Procurement Specification RPP-SPEC-61356 for all codes and standards

7.0 ESH&Q Requirements

7.1 Quality Assurance Requirements

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

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 not applicable.

7.3 Special ESH&Q Requirements

Hanford Site access is not authorized for work to be completed under this SOW.

8.0 Verification/Hold Points

As part of the subcontract submittal process and unless otherwise specified, TOC will review subcontractor prepared documents and designate all required TOC review, inspection, witness, and notification points.

9.0 Reserved

10.0 Work Location/Potential Access Requirements

Most of the work associated with this statement of work will be completed at the subcontractor’s facilities. Weekly work scope status meetings will either be accomplished
by teleconference or be held at either the subcontractor site or at WRPS administrative office buildings in Richland WA. as necessary.

11.0 Training

Not applicable. No Hanford specific training is anticipated.

12.0 Qualifications

The subcontractor shall have extensive experience in project management, engineering design and construction, development project experience is required. The subcontractor shall have completed projects of similar design, size, and scope, performed the projects on time within budget, and demonstrated technical competency. Key discipline leads shall have a minimum of a BS in Engineering with 10 years of engineering experience. The subcontractor personnel performing work shall have training, experience, qualifications, and certifications to perform these tasks. The subcontractor shall maintain company and regulatory required certifications and qualifications for its personnel.

13.0 Special Requirements

There are no special requirements associated with this statement of work.

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

The contractor shall develop and maintain a working level schedule of all activities associated with this work. This schedule shall be statused on a regular basis and will form the basis for identifying information that will be rolled up to the WRPS reporting level.

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 Microsoft® Windows®, Microsoft® Office, or Adobe® Acrobat® software.

Accruals shall be provided by the 15th of the month for the current month on standard WRPS forms.

It is expected that WRPS will participate in working level status and decision meetings with subcontractor staff.

All internal subcontractor working and issued documents associated with this SOW shall be made available to WRPS in a timely manner upon request.
15.0  Workplace Substance Abuse Program Requirements

A Workplace Substance Abuse Program is not required for this SOW.
APPENDIX B: PROCUREMENT QUALITY ASSURANCE CLAUSES WORKSHEET

Procurement quality clauses may be used for the acquisition of items and services. The clauses establish contractual obligations for quality program systems, identification, traceability, documents submittals, testing, reporting, qualification, special process controls, inspections, etc. This worksheet is for Internal Use Only and will not be sent to the Subcontractor in the SOW package.

The clauses have been created as a convenient way to communicate quality requirements to the subcontractor. By checking the appropriate clause below, the Procurement Specialist will insert the appropriate contract language in the QA section of the subcontract/purchase order.

The specific language for each clause and further information can be found at http://idmsweb.rl.gov/idms/livelink.exe/207075580/QA_AVS_Appedix.doc?func=doc.Fetch&nodeid=207075580

PREAWARD AND SUPPLIER FABRICATION

B01 () Quality Assurance Program Submittal and Pre-award Survey
B04 () Supplier Quality Program Evaluation
B07 () Certified Quality Program
B10 () Quality System for Materials Specifying Testing Per ASME
B12 () Supplier Use of Calibrated Equipment
B13 (X) Fabrication/Inspection/Test Plan
B14 () Supplier Use of Software Controlled Instruments and Equipment Containing Embedded Software (Firmware)
B15 () Supplier Use of Commercial off the Shelf Software
B16 () Source Inspection
B17 () Certified Electrical Inspector (Non-NEC-IAEI)
B18 () Supplier Use of Spreadsheet Calculations Using Commercial off the Shelf Software
B19 () First Article Inspection-Source
B22 (X) Nonconformance Documentation and Reporting
B25 () Certified Weld Inspector (CWI)
B28 () Welding Procedures and Qualifications
B31 () Nondestructive Examination Process

MATERIAL IDENTIFICATION

B32 () Identification of Items with Part number/Model number
B33 () Identification of Items with Catalog Cut
B34 (X) Identification of Items
B37 () Identification and Traceability of Items
B43 () Identification of Age Control Items

TESTING AND TEST DATA

B46 () Liquid Penetrant Material Certification
B49 () Certified Material Test Report
B52 (X) Inspection and Test Report
B55 () Flame Test Report
B58 () Calibration Report
B61 () Certification of Calibration
B64 () Repair and Calibration Services
Nationally Recognized Testing Laboratory (NRTL) Listed or Labeled

INSPECTION AND ACCEPTANCE CRITERIA

First Article Inspection/Test-Receiving
Supplier Furnished Items
Control of Graded Fasteners
Procurement of Potentially Suspect/Counterfeit Items
Certificate of Conformance (C of C)
C of C for Commercial Grade Surveyed Procurements
Recommended Spare Parts Listing
Certificate of Conformance for Respiratory Protection Equipment
Commercial Grade Dedication of Items/Services

MATERIAL HANDLING

Packaging/Shipping Procedures
Direct Drop Shipment