

## REQUEST FOR EXPRESSION OF INTEREST Robotic Solution for Hanford Pit Access (Pit Vyper)

### Introduction

Washington River Protection Solutions (WRPS) is the Tank Operating Contractor (TOC) for the U.S. Department of Energy Hanford site. The Hanford Site stores mixed radioactive and chemically hazardous waste in large underground tanks. Hanford Tank Farms includes many underground pits that house crucial process equipment. Access to these locations is very limited. Typically, only small penetrations (4" to 12" diameter) are available to inspect and interact with in-pit equipment in a non-invasive fashion. More significant interaction requires the removal of 2ft thick concrete shielding blocks and connected equipment. This is a time and resource intensive activity. A solution is requested that allows Tank Farms more capability to perform in-pit work without coverblock removal. Figure 1 depicts a typical Double Shell Tank (DST) pit and shows the types of equipment systems that are encountered. Figure 2 depicts a typical Single Shell Tank (SST) and shows the types of equipment, debris, and pit conditions that are encountered.

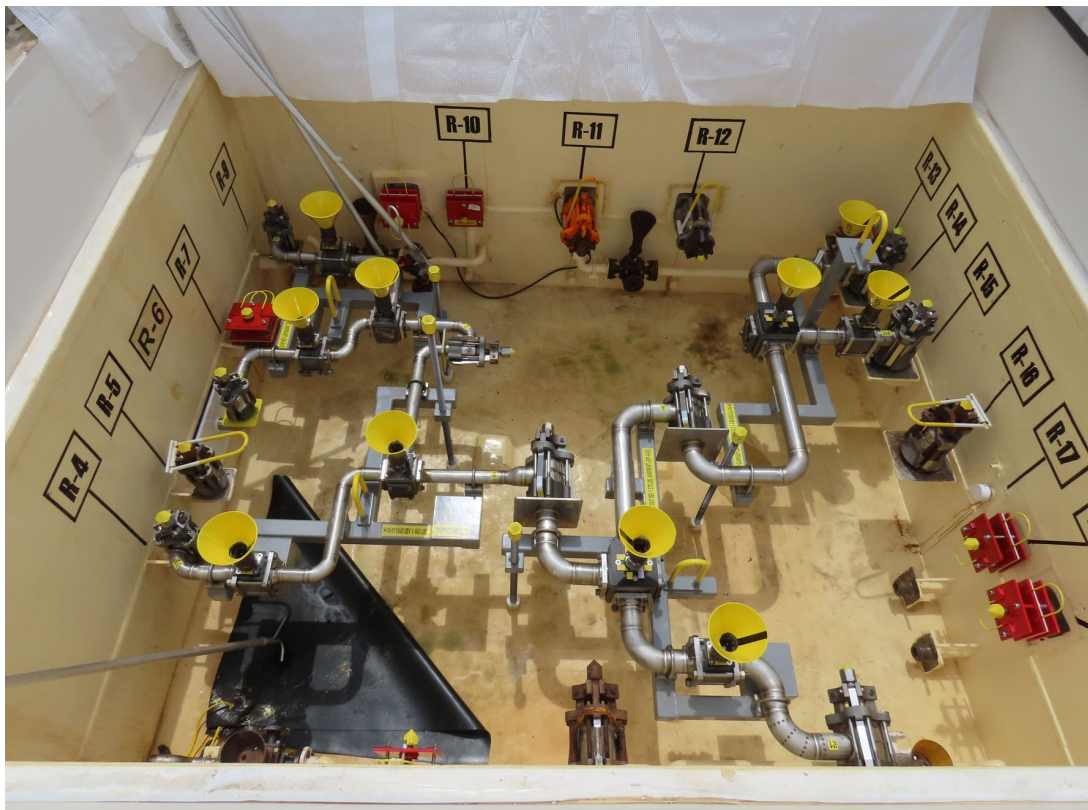


Figure 1. Image of a typical DST pit (with shield blocks removed)



Figure 2. Image of a typical SST pit (with shield blocks removed)

### Current Technology

For more historical Hanford tank information please visit <http://www.hanford.gov/page.cfm/hab>.

### Technology Need

The robotic solution will be referred to as the Pit Vyper in this document. Initial deployment of the Pit Vyper will be to visually inspect underground valve and pump pits without removing the coverblocks. This will include supporting NACE inspections, setting equipment position, and basic comprehensive visual inspections. The system should be modular in nature to allow for future change out of various end effectors as new needs arise.

## QUALITY ASSURANCE

This work is classified as QL-3, General Service. The subcontractor shall have a Quality Program that meets or is equivalent to the requirements outlined in the attached Quality Assurance Requirements (QAR) document dated 1/19/23 and provide a copy of your uncontrolled QA Manual for review by WRPS.

## EOI SUBMITTALS:

Interested parties are invited to submit an expression of interest letter to include the following:

- Provide a description of similar projects where your technology was used, if possible
- Rough Order of Magnitude (ROM)
- Include a response to the following 16 items which signify the robotic criteria:
  1. Does the robot fit down a diameter of 5.5" or less?
  2. Can the robot remotely manipulate pit equipment?
  3. Can the robot traverse and acquire line of sight access to 100% of pit?
  4. Is the robot capable of determining its own path to travel between user selected destinations?
  5. Can the robot install encasement drain plugs?
  6. Does the robot have radiological mapping capability?
  7. Can the robot obtain a realtime 3D image of the environment?
  8. Can the robot automatically scan in the pit internals to generate a 3D, photogrammetry image?
  9. Does the robot provide realtime video feed to operators?
  10. Does the equipment use consensus standard tools and connections?
  11. Can the robot be sleeved to reduce potential contamination?
  12. Is the deployed hardware water proof or water resistant?
  13. What are the temperature ranges that the equipment can handle?
  14. How durable are the instruments (i.e. jarring, dropping, vibration, etc.)?
  15. Please provide specific requirements for any interfaces (power, air, internet connection?)
  16. Is the electrical equipment listed or labeled by an organization currently recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL)?

This is not a Request for Proposal, but a request for an expression of interest. WRPS will not award a contract(s) based on this expression of interest nor pay for information solicited.

Responses with details on the recommended technology must be received by WRPS no later than close of business on February 6, 2023 by 4:00 pm (PST) via email to: Marisa Struwe – [marisa\\_m\\_struwe@rl.gov](mailto:marisa_m_struwe@rl.gov)