Pump Removal Mock-up Exercise:

**AW-02E Pump Removal Mock-Up**

The following lists equipment that will be supplied as Government Furnished Equipment (GFE) and what will be expected to be provided by the contractor. The contractor shall provide a mock-up environment that ensures the safety of all personnel, including observers.

The contractor will be responsible for providing any additional fasteners, fittings, fuel, etc... required to perform the following tasks.

**GFE (Supplied by WRPS):**
- Mock-up Vertical Turbine Pump (approximately 23 feet of 4-inch of column length and 4 feet of discharge head/motor above the base plate).
- Encapsulation Device (lower section), provided for Task 6
- PVC Vent and fasteners
- Sleevings
- Top Hat Assembly
- Harness/midpoint rigging

**Contractor:**
- Assemble and position equipment/components to support the mock-up as discussed in this write-up.
- Provide and connect a fan/blower system to provide the negative pressure to the underside of the work platform as discussed in this write-up.
- Provide below grade penetration matching the requirements contained in this write-up.
- Any additional utilities and equipment required to assemble and perform the mock-up outlined below. This may include but is not limited to: electricity, hoisting and rigging gear, crane (and operator), ductwork, etc. Hoisting and rigging gear, crane, signalman, crane operator shall be assumed to be utilized for three working days.

**Craft Mock-up Exercise**

The purpose of the exercise is to allow new work crews to become familiar and proficient at pump removal activities under simulated tank farm conditions (e.g. tank vacuum). This will include the following tasks:

- Sleevings installation/closure on the pump.
- Beta Shielding installation along the pump column during removal.
- Reinstalling the pump back into the riser due to an upset condition.
- Harness/midpoint rigging installation.
- Horsetail/cut/separate sleeving at the bottom of the pump.
- Riser closure after pump removal.
The mock-up exercise configuration shall include the following:

- Replicate the configuration of the pump removal tools as installed on AW-02E under a representative AW-Farm ventilation vacuum. This shall include the following items and features:
  - Equipment Setup:
    - Mock-up vertical turbine pump (GFE)
    - Work platform assembly (Task 7), additional work surface may be required to prevent tripping hazards, ply over pallets, etc.
    - Top hat assembly with tensioners
    - Encapsulation device (Task 6)
    - PVC vent (GFE).

The arrangement of the equipment shall placed to approximately match the graphic below:

- Below Grade Penetration - Setup shall utilize a lined penetration below grade to mimic the removal of a long piece of equipment from a tank riser. The penetration shall be at least 23 feet 6 inches in depth and a minimum of 14 inches in diameter. The upper portion of the penetration shall have a flat face located at grade which can safety bear a minimum of 1,800 lbs.
- Vacuum System – The equipment arrangement shall include the routing and connection to a fan/blower to provide a negative to the underside of the entire work platform assembly. The capacity/sizing of the blower shall be such that when the system is sealed (i.e. PVC vent damper is closed and the top hat sleeving is sealed) the vacuum can achieve 2.5 inches of water. The same blower at the same set point (i.e. without VFD or
control adjustment) shall allow a reduction of negative pressure of no less than 1.5 inches of water when the 8 inch PVC damper is fully opened. Prior to the mock-up, the contractor shall measure the negative with and without the damper open to ensure it complies with the requirements of this write-up. The fan/blower shall be located a minimum of 20 feet from the closest edge of the work platform plate to limit noise exposure to personnel during mock-up. A walking path must be provided around the parameter of the work platform (i.e.: no vacuum line to step over).

- Mock-up facility support (e.g. crane, rigging hardware, and operator(s)) shall be provided by the subcontractor to mobilize/demobilize the pump removal tools and manipulate the pump up and down within the grade penetration to support the crew. The crews will practice the use of the tools as the mock-up vertical turbine pump is being removed from the top hat via the crane.