

## 1. Project & Equipment Identification

### 1.1. Project Name:

- 1.1.1. Mountaineer Plant, Unit 1 FGD System
- 1.1.2. Project No. 24002
- 1.1.3. Owner: American Electric Power (AEP)
- 1.1.4. Purchase Order: 24002046
- 1.1.5. Equipment Description: Multi-Flex™ Hot Tap Insertion Plug System

### 1.2. Equipment Description:

- 1.2.1. Multi-Flex™ Hot Tap Insertion Plug System Parts List
  - 1.2.1.1. 12" Blind Flange Assembly
  - 1.2.1.2. #12-4540EBHX 54" Multi-Flex™ Plug, Heavy Duty
- 1.2.2. Multi-Flex™ Pipe Plug is made of multiple plies of very high tensile strength ballistic nylon, polyurethane and outer cover of EPDM. Provides a combination of high flexibility, strength, and excellent long term durability. The Multi-Flex™ Plug will provide long service by following industry safety standards and the below instructions.
  - 1.2.2.1. Hose 200 lb, ¾" x 24' long with ½" quick connect connections
  - 1.2.2.2. Inflation controller 0-15 psig with ½" quick connect connections



### 1.2.3. Handling & Storage:

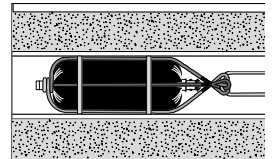
- 1.2.4. **Do not open packing materials with a knife.** The Plug is fabricated from very strong fabric with an inner bladder that may be damaged if cut or pinched between two hard objects.
- 1.2.5. Clean with soap and water then store in a clean dry area out of direct sunlight.

## 2. Installation General:

- 2.1. **Safety Warning! Failure to comply may result in property damage, serious injury or death! SAFETY IS EVERYONE'S RESPONSIBILITY!** Very high forces are involved in many pipeline-plugging situations. Forces increase dramatically as pressure and pipe diameter increase. Extreme care must be taken to assure the safe use of any Pipe Plug or Flusher. Maximum inflation pressure and backpressure limits for plugs are affected by many factors including pipeline debris, fluid, and surface condition. If you do not understand these instructions or how to calculate the forces involved, consult a qualified professional engineer to advise you. These instructions must be available to all Petersen® Plug users. All workers on the job must be trained for proper use.
- 2.2. **Personnel:** Keep personnel out of area in line with plug ends during use. This is any area near a line of sight to any part of the plug. Petersen® Inflatable Plugs are not approved pressure vessels and there are many unknown variables that determine pressure characteristics in the pipeline and plug including pipeline debris, temperature, and coefficient of friction of pipe surfaces, especially when slippery substances are involved. Never use where failure may result in injury or property damage. Inflation with water is normally much safer than inflation with compressed air.
- 2.3. **Inspect the product before and after each use.** Fabric must not be torn, frayed or abraded. End clamps must not protrude over the end of fabric. No structural damage should be apparent. Test air retention by inflating plug inside a pipe.
- 2.4. Do not use Plug with temperatures over 200° F or with chemicals that may attack EPDM.

## 3. Hot Tap Plug Insertion:

- 3.1. Attach Plug Harness to Tether connected to 12" flange anchor point setting the insertion distance to position the plug just downstream of the insertion point.
- 3.2. Connect the Plug inflation hose to the bottom of the provided 12" flange inflation connection.
- 3.3. Attach inflation pressure source to the upper side of the provided 12" flange but do not apply pressure to the plug.
- 3.4. Connect the Integral Harness to the provided 12" flange to anchor Plug to prevent slippage. Anchor the Harness with a long enough tether to allow the plug to fully enter the pipeline and short enough to prevent stress on the inflation system. Use a tether strong enough to hold the head pressure.
- 3.5. Connect the Plug inflation hose between the Plug and provided 12" Flange.
- 3.6. Insert the Multi-Flex™ Plug into the insertion nozzle with the Directional Shoe and the bow of the plug pointing in the direction the plug should go into the pipeline.
- 3.7. Push the Multi-Flex™ Plug into the pipeline positioning the end of the plug down stream on the insertion point.
- 3.8. Install the 12" flange on the Plug insertion nozzle.
- 3.9. Insert plugs completely into the pipeline. The maximum inflation and backpressure on the pressure ratings assume plugs are fully inserted in a clean pipe and are only estimates. Pressures are



influenced by many factors including the pipe diameter, fluid in the pipe, temperature, and the condition of the pipe surface.

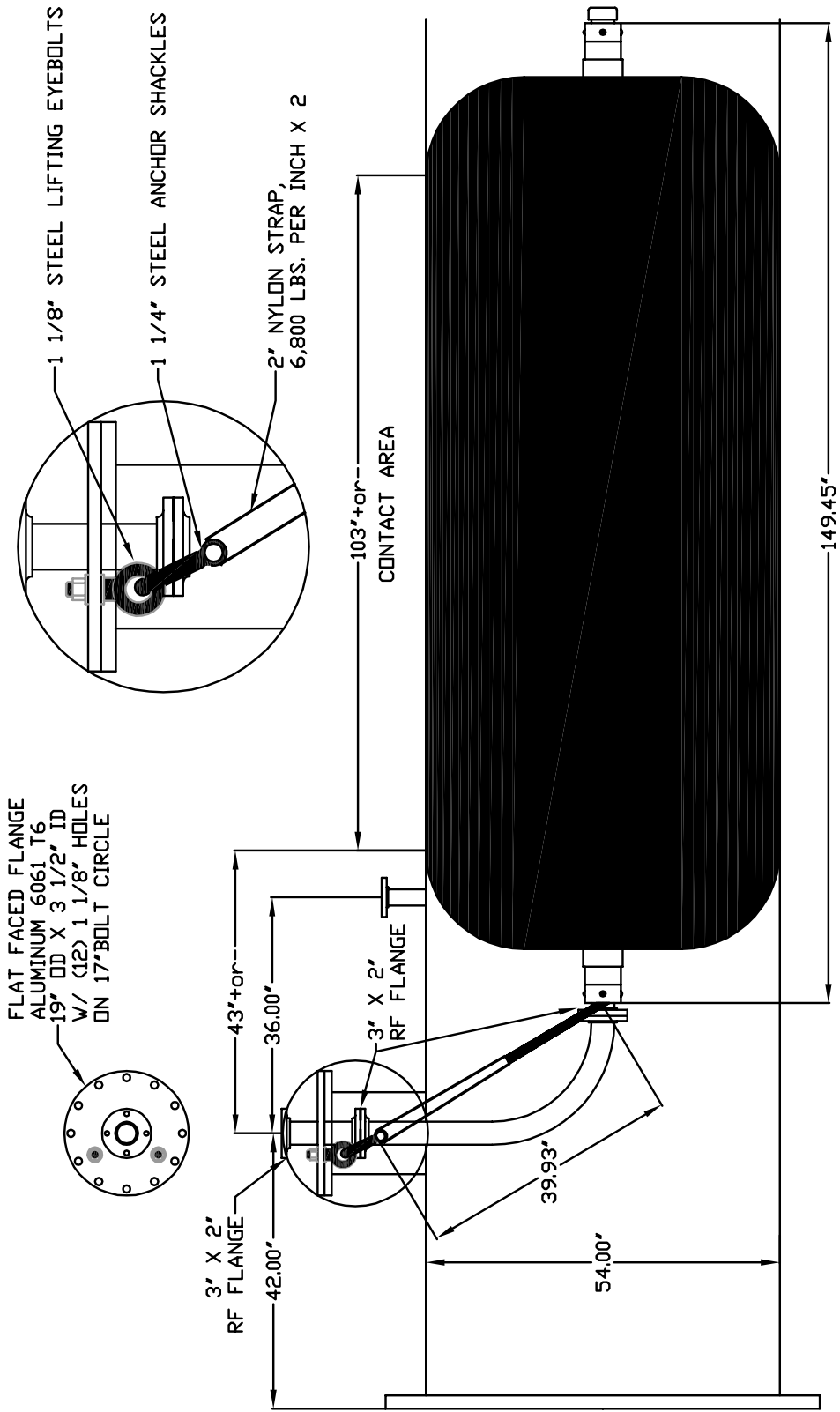
- 3.10. Always position the plug where there are no sharp edges or protrusions that may puncture the plug.
- 3.11. Completely Support the plug within the pipe so the entire expanded plug surface diameter is supported. When not supported in a pipe, the plug will rupture at a much lower pressure.
4. **Operation:**
  - 4.1. **Inflate the plug using a relieving style pressure** regulator or pressure relief valve to maintain proper inflation pressure. Never inflate more than the maximum pressure rating for the plug. Changes in temperature, pipeline pressure, atmospheric pressure, and fabric stretching can dramatically change the plug pressure. Check the calibration of the pressure gauge before using. A relieving style pressure regulator and/or pressure relief valve must compensate for these factors and prevent over-inflation that could rupture the plug. When a pressure source is removed, check the pressure at least every fifteen minutes the first hour and every two hours thereafter.
  - 4.2. **Use an approved back-flow preventive** device when a potable water source is used as an inflation pressure source.
  - 4.3. **Head pressure seepage** past the plug will vary depending of the pipe ID seal surface. Where plugs are used to isolate an area for welding, an inert purge gas must be introduced to overcome slight seepage of flammable gases into weld area. Gas monitors should be used to when detect hazardous gas or liquids may seep past the inflated plug.
5. **Removal:**
  - 5.1. **If possible equalize the pressure** on both sides of the plug before deflation. Deflate the Multi-Flex $\gamma$  Plug quickly. Caution, the plug may break away from Inflation Positioning Tube if there is a high head pressure and it is not anchored securely.
  - 5.2. **Pull the Multi-Flex $\gamma$  Plug back** into the insertion pipe after it is deflated completely.
  - 5.3. **Examine Multi-Flex $\gamma$  Plug** for any damage.
  - 5.4. **Deflate the plug after the backpressure is relieved** or pressure equalized on both sides of the plug. If a plug is deflated while under pipeline head pressure, the head pressure will propel it down the pipeline with tremendous force if not securely anchored.
6. **Maintenance and Care:**
  - 6.1. **Clean with detergent and water** after each use, disinfect if necessary. Never clean with solvents or petroleum products!
  - 6.2. **Carefully inspect before and after each use** for abrasions, tears, movement of clamps, air leaks or any other sign of deterioration or defect. Large plugs may be leak-tested in smaller diameter pipes.
  - 6.3. **Repair small leaks and cuts** with Petersen<sup>®</sup> Repair Kits or return to Petersen for repair. Destroy the product if there are more than minor punctures, tears or abrasions that are not easily repairable.
  - 6.4. **For maximum durability**, store in clean dry area, away from direct sunlight and in a manner that allows plug to remain dry.



Contact Petersen with any questions or suggestions relating to the use of any Petersen product.

**Petersen Products Co.**

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TITLE 54" HOT TAP PLUG WITH  
FLANGE ASSEMBLY

TOLERANCES		REVISIONS	
DECIMAL	FRACTIONAL	No.	Date
±	±	1	
±	±	2	
±	±	3	
±	±	4	
±	±	5	

Drawn By R J F Scale 25:1  
Checked Date 1 SEPT 05  
W.O.# 1441, 1442 App'd

Material 12-4540-EBHX  
Drawing # 93-HTBF12

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