

Operations and Maintenance Procedures

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O&M Section # 6.4	SCUD Task # 35
Section: Maintenance	Revision Date: 09/06/16

Measurement of External and Atmospheric Corrosion

SCOPE AND PURPOSE

This procedure is to provide personnel with safe and effective activities necessary to measure and characterize external corrosion. It includes an investigation for determining the extent of corrosion to buried pipe and atmospheric corrosion to above ground pipe.

It describes practices required to comply with §§192.459, 192.481 and 192.487.

RESPONSIBILITY

The System Maintenance or Measurement Supervisor, or other designee, is responsible to ensure that measuring external and atmospheric corrosion is performed as described in this procedure.

PERSONNEL SAFETY (Where Applicable)

Every reasonable precaution shall be taken to protect employees and the general public.

EQUIPMENT AND MATERIALS

Pipe Pit Depth Gauge
Company Records
Hand Tools
Other Equipment and Materials as Needed

OPERATOR QUALIFICATION

This activity is a covered task under the Operator Qualification Plan and may only be performed by or directed and observed by an individual who is currently qualified to perform this task. Refer to the OQ Plan for specific qualification requirements.

INSTRUCTIONS

Maintenance and Operation of Equipment

All equipment shall be operated and maintained in accordance with the manufacturers' instructions.

Measurement Steps

- a. Examine pipe for evidence of external corrosion. Investigate both circumferentially and longitudinally along the pipe for a reasonable distance measured laterally beyond the corroded area. The strength integrity of the pipe is dependent on the longitudinal extent of the corroded area in relation to the maximum wall thickness loss. Check for corrosion at any damaged, deteriorated, or disbonded coating, soil to air interfaces, and pipe exposed to air, moisture and pollutants.
- b. Clean pipe removing dirt, scale, rust or other foreign matter as much as safely possible. Be careful not to encounter possible leaking gas.
- c. Take an external measurement of pipe wall thickness utilizing a pipe pit depth gauge.
 - i. General operating instructions for mechanical pipe pit depth gauge:
 - o Maintain pit gauge in good mechanical condition. Pit gauge should not be bent, misaligned, warped or damaged.
 - o Align the straight edge of the pit gauge along the uncoated surface of pipe or fitting being measured.

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- To measure individual pit depths, insert the tip of the depth probe to the bottom of the pit while keeping the straight edge of the pit gauge flat against original metal.
 - Determine depth by reading the top edge of the depth probe indicator. The depth reading should be read in decimal equivalent inches.
 - Determine the remaining wall thickness by subtracting the pit depth from the original wall thickness.
- d. Measurements that indicate that the pipe or fitting wall is reduced to less than 30 % of its original thickness is considered “unserviceable” and must be replaced.
- e. Perform remedial action based on remaining wall thickness.

REPORTING/NOTIFICATION

The SCUD employee shall complete documentation in accordance with the Operation and Maintenance Manual. SCUD utilizes electronic forms to record and maintain all external corrosion records. Any exterior corrosion shall be reported on the electronic Exposed Pipe Form. Engineering shall verify serviceability of any section of pipe found to contain corrosion pits.

ABNORMAL OPERATING CONDITIONS

AOC Main Category (Examples of Specific AOCs)	Reactions to AOC, as appropriate	
<i>Unplanned escape of product from a pipeline</i> <ul style="list-style-type: none"> Blowing/Escaping gas/Grade I leak 	<ul style="list-style-type: none"> ➤ Protect life & Property ➤ Prevent accidental ignition ➤ Notify appropriate personnel ➤ Notify Fire/Emergency Responders ➤ Initiate Emergency Plan 	<ul style="list-style-type: none"> ➤ Locate source/cause of AOC ➤ Use appropriate PPE ➤ Stop gas flow ➤ Make repairs/eliminate AOC
<i>Fire or Explosion</i> <ul style="list-style-type: none"> Fire on a pipeline Explosion 	<ul style="list-style-type: none"> ➤ Protect life & Property ➤ Prevent accidental ignition ➤ Notify appropriate personnel ➤ Notify Fire/Emergency Responders ➤ Initiate Emergency Plan 	<ul style="list-style-type: none"> ➤ Locate source/cause of AOC ➤ Use appropriate PPE ➤ Stop gas flow ➤ Make repairs/eliminate AOC
<i>Unplanned Status Change</i> <ul style="list-style-type: none"> Low structure-to-electrolyte potential Stray current on a pipeline 	<ul style="list-style-type: none"> ➤ Protect life & property ➤ Prevent accidental ignition ➤ Notify appropriate personnel 	<ul style="list-style-type: none"> ➤ Locate source/cause of AOC ➤ Make repairs/eliminate AOC
<i>Inadequate Odorization or Reports of Gas Odor</i> <ul style="list-style-type: none"> Low odorization Over odorization Odor complaint 	<ul style="list-style-type: none"> ➤ Protect life & property ➤ Prevent accidental ignition ➤ Notify appropriate personnel 	<ul style="list-style-type: none"> ➤ Locate source/cause of AOC ➤ Make repairs/eliminate AOC

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RELATED PROCEDURES

MAINT006 – Visual Inspection for Atmospheric Corrosion

MAINT008 – Visual Inspection of New and Exposed Pipe

MAINT004 – Visual Inspection for Internal Corrosion