

Underwater – Examine for External Corrosion

1.0 Task Description

This task is to verify whether external corrosion exists on the pipeline and to ensure proper documentation and reporting have occurred. This task is similar to Task 5.2 (Examine for External Corrosion on Buried or Submerged Pipe) but contains steps or equipment that are unique to an underwater environment.

2.0 Knowledge Component

An individual performing this task must have knowledge of the following.

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Terms applicable to this task are as follows.

General corrosion

An electrochemical reaction that takes place uniformly over the surface of steel, thereby causing general thinning of the component that could lead to eventual failure of the material.

Pitting

An electrochemical reaction that creates metal loss of the outer surface in small, crater-like depressions that have the potential to cause rapid wall loss.

Marine growth

The covering of marine plants, animals, and other organisms found on parts of man-made structures that are fully submerged in the sea or intermittently immersed during the tidal cycle. Marine growth can be described as either hard or soft; and can be categorized into different levels based on the thickness of the accumulated organisms.

Light fouling: Marine growth thickness is less than 300 microns (0.3 mm).

Moderate fouling: Marine growth thickness is between 300 microns (0.3 mm) and 1 mm.

Heavy fouling: Marine growth thickness is greater than 1 mm.

AOCs associated with the performance of this task include:

AOC Recognition	AOC Reaction
Evidence of release; Stream of bubbles, globules of oil, oil slick, or rainbow sheen.	Discontinue the task and make immediate notifications.
Pits, rust, and scale.	Implement mitigation measures per operator's procedures.

3.0 Skill Component

To demonstrate proficiency of this task, an individual must perform the following steps:

Step	Action	Explanation
1	Inspect area for evidence of a release. If the inspection identifies integrity issues that are not safe, discontinue the task and make immediate notifications	Helps ensure that the pipeline is safe for operation and continued task performance. Look for a stream of bubbles, globules of oil, oil slick, or rainbow sheen.
2	Visual or tactile inspection to verify that the pipeline surface has been prepared for the external corrosion inspection.	Proper surface preparation is critical to identifying and locating all types of external corrosion present on the pipe.

Step	Action	Explanation
3	Measure and classify marine growth.	Identify hard or soft growth and the percentage of coverage using visual or tactile inspection. Measure the thickness of marine growth using a probe, soft tape measure, or other appropriate equipment.
4	Examine the pipeline for any areas of external corrosion.	Visual or tactile inspection for external corrosion is critical to identify potential risks that need further assessment to avoid future leaks or failures.
5	Inspect the condition of support structures and the interface between the supports and pipeline.	Examine anchors and clamps for signs of corrosion.
6	Identify the type(s) and location(s) of external corrosion. There are a variety of methods to describe the location of the damage. One of the more common methods is to locate the damage circumferentially with respect to a clock face. The location of the seam weld and the longitudinal distance to the nearest girth weld are also typically reported.	The type(s) and location(s) of corrosion are used to determine later actions such as whether repairs are needed and, if so, what kind of repair is needed.
7	Document the findings and make notifications.	Follows the operator's policies/procedures for appropriate documentation, notification protocol, and actions required.

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