

The petroleum pipeline industry has undertaken a voluntary environmental performance tracking initiative, recording detailed information about spills and releases, their causes and consequences.

The pipeline members of the American Petroleum Institute and the Association of Oil Pipe Lines believe that tracking and learning from spills will improve performance, thus demonstrating the industry's firm commitment to safety and environmental protection by its results.

This is one of a series of fact sheets about the Pipeline Performance Tracking System, "PPTS," its evolution and its lessons.

## **PPTS OPERATOR ADVISORY: REPORTING INTEGRITY MANAGEMENT PROGRAM ACTIVITY IN THE INFRASTRUCTURE SURVEY**

### **Understanding IMP activity is crucial**

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The oil pipeline industry deepened its focus on integrity management in the late 1990s, with risk-based system evaluations and accelerated schedules for in-line inspection. The commitment to integrity management was institutionalized by the Office of Pipeline Safety's regulations on "Pipeline Integrity Management in High Consequence Areas," implemented for large operators in 2001. The regulations (49 CFR 195.452) require that each operator develop an integrity management program that addresses the risks associated with pipeline segments and facilities that could affect a "High Consequence Area" (HCA). The program must include the identification of each segment or facility that could affect an HCA, a plan for assessing those segments, criteria for remediating integrity issues, and a process for continual integrity assessment and evaluation.

The PPTS infrastructure survey was changed to collect information about IMP activities and the industry's progress in implementing the program. The survey now captures the number of pipeline miles that could affect an HCA, the number of miles with completed baseline assessment<sup>1</sup>, the miles of pipe inspected by various methods during the year, and the actions taken based on those inspections.

The information on IMP activities is useful to operators in assessing their progress and their results against other operators. It also allows the industry, its regulators and the public to understand the impact of the IMP programs. However, the questions on IMP activities have not been clear to all operators, leading to inconsistent responses. Inconsistent information undermines the data integrity and credibility. Making sure that the data are well-understood and clearly interpreted is all the more important with the advent of the new OPS Annual Report, which will bring the operator-by-operator detail into the public domain.

This PPTS Operator Advisory addresses the IMP activity questions on the infrastructure survey form and provides guidance on answering them correctly, including specific examples.

### **The PPTS infrastructure survey's questions on IMP-related actions**

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The questions that have generated the highest number of questions relate to "actions taken in response to inline inspections," Questions 33-37 of the PPTS infrastructure survey. It was the framers' intent to capture the number of anomalies that were excavated as a result of the run log and separately, to track the repair of both those anomalies and any minor "collateral" conditions that were not on the dig list but were repaired because the pipeline was exposed. As a practical

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<sup>1</sup> "Baseline assessment" is one of the early steps in the overall integrity management process. A segment's baseline assessment is complete when all inspections specified in the operator's plan have been completed. For inline inspection, "completed" means that the tool has been retrieved and data have been confirmed as usable. The completion of the baseline assessment triggers the timeline for the re-inspection interval.

matter, however, many operators do not track these “collateral” conditions – freebies – and instead track only those anomalies that are reflected on the dig list. Operators also posed numerous questions about how to treat a minor imperfection that did not meet the operator’s repair criteria, but were nonetheless buffed and re-coated along with nearby anomalies that did meet the operator’s repair criteria.

The Data Mining Team has now simplified these questions as shown below. The question numbers come from the infrastructure survey form.

### **Actions Taken Based on In-Line Inspection (conducted in calendar year)**

*Question 33. Total # of anomalies excavated. [Help Text: Based on ILI data, how many anomalies were excavated because they met the operator’s criteria for excavation.]*

Comment: Question 33 refers to anomalies on the operator’s dig list; there may be multiple anomalies exposed with each excavation. The location of the anomaly – not on a “could affect” segment, on a “could affect” segment, actually within an HCA – is irrelevant.

*Question 34 **REVISED**. Total # of ~~conditions~~ anomalies identified and repaired or otherwise mitigated in calendar year [Help Text: ~~Include conditions identified only as a result of excavating another (different) targeted anomaly, but exclude conditions that did not require repair or mitigation~~] **NOTE: STRIKETHROUGH TEXT IS NOW DELETED. Underlined text has been added, i.e., the word “anomalies” has been substituted for the word “conditions.”***

Comment: Operators found several ambiguities in the old wording of this question. For instance, the phrase “otherwise mitigated” was initially inserted because the IMP regulations allow mitigation measures such as pressure reductions as an alternative to mechanical repair. However, simple sandblasting and recoating may also “mitigate” an imperfection in the pipe wall. Furthermore, the Help Text’s clause “exclude conditions that did not require repair or mitigation” was another sticking point. Some operators excluded anything that fell below the operator’s criteria for repair, others did not.

The revised language has removed the ambiguities, and will be much easier for operators to track. As a practical matter, it may mean that some operators report fewer anomalies repaired than they formerly would have, but the data will be consistent from operator-to-operator. For this purpose, the operator can use its own definition of “repaired,” but for most, it will include a mechanical fix of some kind – a sleeve or clamp, for instance – that restores the pressure-containing capability of the pipe. Like Question 33, this question is *not* limited to a pipeline segment that was identified as one that could affect an HCA or one that is actually within an HCA.

*Question 35. Total number of anomalies within an HCA segment confirmed as meeting the definition of “immediate repair condition” [195.452(h)(4)(i)]*

Comment: This question explicitly references the definitions of the IMP regulations. It applies only to anomalies on a segment identified as one that “could affect” an HCA.

*Question 36. Total number of anomalies within an HCA segment confirmed as meeting the definition of “60 day condition” [195.452(h)(4)(ii)]*

Comment: This question explicitly references the definitions of the IMP regulations. It applies only to anomalies on a segment identified as one that “could affect” an HCA.

*Question 37. Total number of anomalies within an HCA segment confirmed as meeting the definition of “180-day condition” [195.452(h)(4)(iii)]*

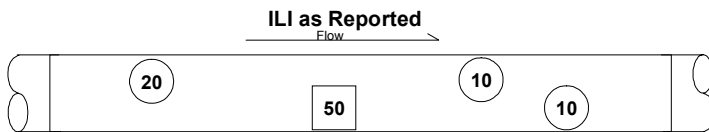
Comment: This question explicitly references the definitions of the IMP regulations. It applies only to anomalies on a segment identified as one that “could affect” an HCA.

**Examples of how to report**

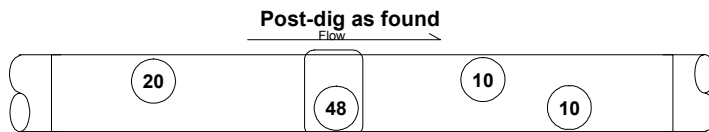
The next three illustrations involve answers to Questions 33 (number of anomalies excavated) and 34 (number of anomalies repaired). These scenarios are based on the revised Q34. For each of these scenarios, it is assumed for the sake of simplicity that the operator’s dig criteria is a 50% wall loss and its repair criteria is also 50% wall loss. These criteria would in fact vary from operator to operator, and some operators may have more stringent criteria than our illustration. What falls into a respondent’s dig or repair criteria should be based on the individual operator’s integrity management program or other operator-specific guidelines. Questions 33 and 34 are not limited to activities driven by IMP regulations, or to activities undertaken in HCAs or on segments identified as ones that could affect HCAs.

In **Scenario 1**, the ILI report identifies a total of four anomalies in this particular pipe joint, but only one – the 50% wall loss -- met the operator’s criteria for a dig. The answer to Q33 is available from the ILI report, before the dig. **The answer to Q33 is 1.**

**Scenario 1:** The ILI report shows four anomalies, one of which meets operator’s criteria. **Answer to Q33 is 1.**



Once dug, the joint shows that the target anomaly does not meet repair criteria of 50%. The dig was difficult, however, so the operator repairs it anyway. **Answer to Q34 is 0.**



- xx % Wall Loss; Does not meet operator criteria
- xx % Wall Loss; Meets operator criteria

When the excavation exposes the pipe, the target anomaly (50% wall loss called out in the dig report) was found to have only 48% wall loss. Because the dig was difficult, and the wall loss is close to the operator’s repair guidelines, the operator repaired the anomaly with a sleeve. **The answer to Q34, however, is 0,** because the repaired anomaly did not meet the operator’s criteria.

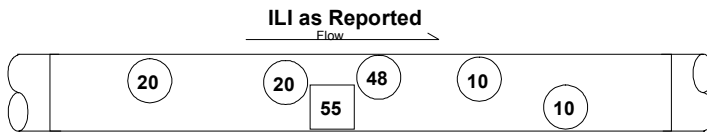
Both the dig report and exposed pipeline showed three anomalies that did not meet the operator’s dig or repair criteria. These lesser anomalies were cleaned using abrasive blasting and were recoated before backfilling.

Because they did not meet the operator’s repair criteria, however, they are not included in the answer to Q34.

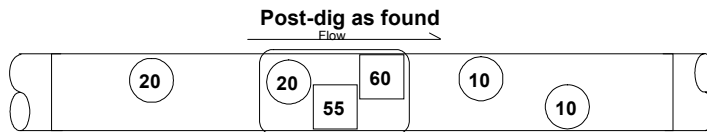
In **Scenario 2**, the ILI report identifies a total of six anomalies, one of which – the 55% wall loss – met the operator’s dig criteria. **The answer to Q33 is 1.**

When the anomalies are examined after excavation, it becomes apparent that the ILI report underestimated the wall loss on one of the anomalies. The anomaly shown as a 48% wall loss in the ILI report – lower than the operator’s dig or repair criteria – turns out to be a 60% wall loss, which meets the criteria. The operator puts a repair sleeve on the location, repairing the target anomaly (the 55% wall loss), the undercalled anomaly (the now-60% wall loss) – both of which meet the operator’s criteria – and the nearby 20% anomaly which does not meet the operator’s

**Scenario 2:** The ILI report shows four anomalies, one of which meets operator’s criteria. **Answer to Q33 is 1.**



The ILI report undercalled one anomaly. The target anomaly (55%), the undercalled anomaly (60%), and an anomaly not meeting criteria (20%) are repaired. **Answer to Q34 is 2.**



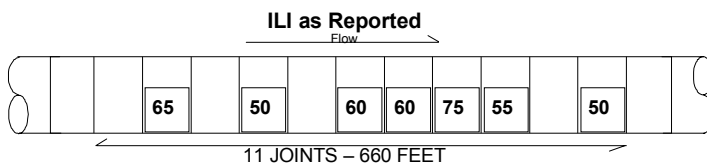
- xx % Wall Loss; Does not meet operator criteria
- xx % Wall Loss; Meets operator criteria

repair criteria. *The answer to Q34 is 2.* The “collateral” repair to the 20% wall loss anomaly is excluded from the answer to Q34.

Again, all anomalies not covered by the sleeve are cleaned using abrasive blasting and are recoated before backfilling the ditch.

In **Scenario 3** below, the ILI report shows a series of anomalies meeting the operator’s criteria in adjacent pipe joints. In the 11-joint section of pipe, there are seven anomalies with wall loss ranging from 50% to 75%. *The answer to Q33 is 7.*

**Scenario 3:** The ILI report shows seven anomalies on 11 joints that meet the operator’s criteria. **Answer to Q33 is 7.** It may be more efficient to replace all 11 segments with one cutout. In this instance, the operator may choose not to evaluate and document each of the actual anomalies. **Answer to Q34 is also 7.**



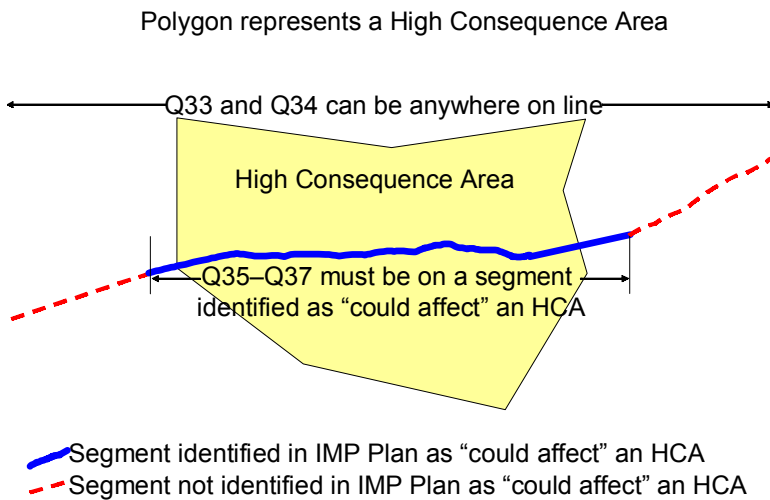
- xx % Wall Loss; Does not meet operator criteria
- xx % Wall Loss; Meets operator criteria

The operator judges that the most efficient avenue to “repair” is in fact replacement of the 660 feet in the 11-joint segment. In this circumstance, the operator may further decide that evaluating and documenting each anomaly is not cost-efficient. *The answer to Q34 is also 7.*

The illustration below addresses reporting for Q35-Q37 as well as the role of HCAs in reporting the IMP information in the PPTS infrastructure survey.

Q33 and Q34, the questions discussed above, apply to any pipeline segment. The answers are not related to the IMP regulations. They are focused on the operator’s dig and repair criteria, not

regulatory mandates. Thus, whether a segment was identified as one that “could affect” an HCA, or even falls within an HCA polygon is irrelevant in answering Q33 and Q34.



In contrast, Q35 (immediate repair conditions), Q36 (60-day conditions), and Q37 (180-day conditions) are explicitly related to the IMP regulations. These questions ask about anomalies that have been confirmed as meeting specific definitions put forward in the HCA regulations, and they only apply to conditions occurring on a segment identified as one that “could affect” an HCA.

### Operator Considerations

- ❖ *PPTS Advisory for Operators: Building Quality into the Numbers* (PPTS Advisory 2003-5), made a variety of recommendations on PPTS reporting. Only with high quality reporting can the industry benefit fully from the PPTS system and the insights it provides.
- ❖ These recommendations included:
  - *Communicate within the company the commitment of senior management* for accurate and complete reporting, and resources sufficient to assuring its success.
  - *Understand the information required and designate a data source* within the company for each PPTS and OPS data field. Make sure that the data source understands the importance of the input provided. There is no area where this is more important than the IMP activity reporting, since the employee or operating department with the best knowledge of ILI and IMP activities is almost always different from the department that supplies the information on releases.
  - *Consider technical quality review of all PPTS submittals* prior to the annual PPTS reporting deadline (typically the end of February).

