

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

This Report summarizes developments relating to the 2010 ORA, and is shared with the public in accordance with the Longhorn Mitigation Plan (LMP) Section 2.3.14, “Longhorn’s Continuing Commitment.” Kiefner and Associates, Inc. (KAI), the ORA Contractor selected by Magellan Midstream Partners, L.P., and approved by the Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA)/Office of Pipeline Safety (OPS), performed the annual assessment for 2010 of the operational reliability of the Longhorn pipeline system.

The ORA Contractor analyzed the data collected by the Longhorn Pipeline System Integrity Plan (LPSIP) activities and integrity inspections conducted in 2010, evaluated the analytical results, and provided recommendations in its report to preserve the long term integrity of the Longhorn pipeline system.

I. Executive Summary

The ORA report of the Longhorn system assets addresses the following subjects:

- Threats and Potential Threats to the Pipeline
 - Pressure-Cycle-Induced Fatigue
 - Corrosion
 - Laminations and Hydrogen Blisters
 - Earth Movement and Water Forces
 - Third-Party Damage
 - Stress-Corrosion Cracking
 - Threats to Facilities Other than Line Pipe
- Technical Assessment of the effectiveness of the LPSIP

The analyses of operational pressure cycles to date show that the intensity of pressure cycles is relatively nonaggressive in relation to benchmarks established on the basis of typical liquid petroleum products and crude oil pipelines. If this continues to be the mode of operation, integrity reassessment from the standpoint of electric-resistance weld (ERW) seam anomalies will not be necessary until the year 2048. A TFI tool run, completed in 2007 and early 2008, is used to define a flaw size that will determine the reassessment interval. Seventy five (75) seam weld features were identified and remediated during the 2007 and 2008 program (75 is a number corrected from previous

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

ORA reports). Therefore, the reassessment interval uses the seam weld feature detection threshold value from the TFI tool vendor.

Corrosion is a time dependent threat that is periodically monitored using ILI, annual corrosion surveys, and close interval surveys. Ultrasonic (UT) wall measurement tools have been run from Galena Park to Crane and were completed in 2010. The UT data was used in conjunction with the previous MFL metal loss tools to assess corrosion growth on the pipeline. In addition, excavations were completed in 2010 for the ILI UT tool runs from Galena Park to Satsuma and Satsuma to Warda.

Laminations can be susceptible to the formation of blisters in the presence of hydrogen and can lead to failure. Using UT and deformation ILI data on the Galena Park to Satsuma and Satsuma to Warda pipeline segments, the location and condition of laminations was assessed. From 2,777 laminations identified in these two segments, 46 excavations were selected and no blistering of the laminations was identified.

From the standpoint of earth movement, the primary integrity concerns are soil erosion and scouring from floods and the ground movement from aseismic faults at specific points along the pipeline. Scour surveys on the Colorado River and its tributary Pin Oak Creek show little to no evidence of soil erosion or scouring. The remaining river crossings were inspected in 2010, as part of their 5-year reinspection requirement. As of 2010, 6 years of data of aseismic fault movements have been taken. The results show fault movement on three of the faults continues to be so small that ground movement will not be a threat to the pipeline and the fourth fault at the Hockley site is only a minor threat.

The Longhorn third-party damage (TPD) prevention program far exceeds the minimum requirements of federal or Texas state pipeline safety regulations, and it represents a model program for the industry. The aerial surveillance and ground patrol frequencies exceeded the frequencies set forth in the LMP. In our opinion, the damage prevention program is a major contributing reason why no hits occurred on the pipeline in 2010. Two near-misses occurred and were caused by third parties erecting fences who did not use the One-Call system. Both were found by aerial patrols, showing their value and demonstrating the need to perform ground patrols when the required aerial patrol frequency cannot be met.

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

No occurrence of stress-corrosion cracking (SCC) has ever been recorded on the pipeline, including the 449 miles of the Existing Pipeline. In accordance with the ORAPM, Longhorn performed investigative digs each year for the three years from 2005-2007 in areas potentially susceptible to SCC. No SCC was found. Magellan continues to carry out inspections as part of the normal dig program by performing an SCC examination program that uses magnetic particle testing at each dig site.

From the standpoint of facilities data acquired in 2010, one can conclude that pump station and terminal facilities had no adverse impact on public safety. Only one small DOT-reportable release of product (10 gallons) occurred which was contained onsite so there was no risk to public safety.

The technical assessment of the LPSIP indicates that Magellan is achieving the goal of the LPSIP, namely, to prevent incidents that would threaten human health or safety or cause environmental harm. In terms of activity measures, Magellan exceeded the goals of aerial surveillance and ground patrol frequency. In addition, public-awareness meetings were held, and right-of-way markers and signs were repaired or replaced where necessary. From the standpoint of deterioration measures, the number of anomalies found per mile requiring excavation is decreasing with the second and third ILI tool inspections. In terms of failure measures, there was one DOT-reportable incident (the above mentioned facility incident) and there were no known third-party hits.

II. Recommendations

A. Technical Assessment of LPSIP Effectiveness

The LPSIP contains twelve process elements. Seven of these elements are listed below along with an assessment of their effectiveness. These elements are most closely related to the threats addressed by the ORAPM and are summarized in detail with recommendations. The assessments for the remaining five elements can be found in the Annual LPSIP Self-Audit Report for Longhorn Pipeline System.

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

1. Longhorn Corrosion Management Plan

The corrosion management plan has been effective at preventing corrosion degradation in 2010. Internal corrosion coupon results show little to no corrosion. Although some inspections of the CP system were missed because of poor performance by the employee responsible, no stations fell below criterion when inspections were resumed.

2. In-Line-Inspection and Rehabilitation Program

Magellan completed the inspection of the existing pipeline (Valve J-1 to Crane) in 2010 thus completing the requirement of LMC 12. Other than the delay of completing this commitment by January 26, 2010 because of low flow on 2 of the 6 pipeline segments, Magellan continues to meet its ILI commitments and the program has been effective at fulfilling the integrity requirements in the LMP.

3. Damage Prevention Program

The absence of reportable incidents involving mainline pipe and the absence of third party contact with the pipe suggests the Longhorn proactive damage prevention and maintenance plans (including the aerial surveillance frequency) have been effective and are functioning as intended. Because fence contractors were responsible for two of the near misses to the pipeline in 2010, it was recommended that Magellan implement some additional measures to increase fence contractors' awareness of One-Call and why it is important to prevent damage to the Longhorn pipeline.

4. Encroachment Procedures

There were 106 encroachments recorded in 2010 of which 1 was unauthorized. The program's encroachment agreements have been effective at keeping authorized encroachments from damaging the pipeline. This is demonstrated because none of the authorized encroachments resulted in contact with the pipeline, while the 1 unauthorized encroachment did result in a near-miss. In addition, the absence of third party damage incidents also supports that the program has been effective.

5. Incident Investigation Program

Magellan is performing incident investigations on all DOT reportable incidents and on many more non-reportable incidents. Incident investigations were reviewed on all near-misses. KAI finds these incident investigations sufficient. This program is effective in helping Magellan determine the root cause of incidents on the pipeline in an effort to prevent future incidents.

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

6. Depth of Cover Program

A Depth of Cover (DOC) survey was last performed in 2007. The November 2010 aerial patrol for earth movement found 3 areas of exposed pipe that need to be integrated into the Depth of Cover Program in 2011. Section 5.4 and Section 7 cover this in more detail. The program has been effective in that no damage has occurred on the pipe because of exposed or shallowly buried pipe.

7. Fatigue Analysis and Monitoring Program

The 2010 fatigue analysis performed by KAI incorporated results from the 2007-2008 TFI tool runs and was effective at monitoring the potential of fatigue cracking failures from pressure-cycle-induced growth.

B. Recommended Intervention Measures and Timing

1. Pressure-Cycle-Induced Fatigue

For the threat of pressure-cycle-induced fatigue, a reassessment in the year 2048 was calculated based on the pressure cycles for 2008 through 2010 and using the results from the 2007-2008 TFI tool runs.

2. Corrosion

For the threat of corrosion, UT inspections for the Existing Pipeline were completed in 2010. Remediations were completed on two sections and the remaining four sections should be complete in 2011. Future ILI metal loss inspections are recommended 5 years after the UT inspections.

3. Laminations and Hydrogen Blisters

No instances of blistered laminations have been discovered to date from the excavations of anomalies selected from the UT and deformation tools on the Galena Park to Satsuma or the Satsuma to Warda pipeline segments. Magellan should monitor the lamination locations with ILI tools to verify that no blisters are forming. The monitoring frequency recommended should coincide with the metal loss reassessment schedule.

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

4. Earth Movement and Water Forces

The earth-movement analysis continues to show that any movement on the four faults that are monitored is an order of magnitude less than the assumptions used to justify the required monitoring program in the EA. KAI continues to recommend a five year reinspection program for these four faults rather than the current 6 month program. If the faults appear to become more active, then more frequent measurements can be implemented.

Inspections showed no signs of erosion or scour damage at stream crossings from storm water flooding. Stream crossing monitoring should continue every five years and after storm events for identified stream crossings. The scour inspection for the Colorado River and Pin Oak Creek should continue biannually and after every second standard flood as specified by studies referenced in LMC 19.

5. Third-Party Damage

For the threat of TPD, Magellan should continue both prevention and inspection activities. Prevention activities include ROW surveillance and public-awareness activities that continued to be successful in 2010. Inspection activities include almost all ILI inspections required as part of the ORA, including the MFL-geometry inspection carried out in 2004-2007, the TFI-geometry inspection in 2007-2008, and the UT-geometry inspection in 2009-2010. LMC 12A requires inspections with a “smart” geometry tool be carried out within three years of a previous inspection. The next two recommended ILI runs are a deformation tool within 3 years of the UT/deformation inspections to meet LMC 12A and a metal loss/deformation ILI run within 5 years of the UT/deformation inspection to meet ORAPM and PHMSA reinspection requirements.

6. Stress-Corrosion Cracking

As no evidence of SCC has been detected, it is not necessary to recommend an intervention measure. Magellan should continue to monitor for this threat through their current method, which consists of looking for evidence of SCC when maintenance excavations are performed.

7. Threats to Facilities Other than Line Pipe

Magellan should continue to carry out inspections and maintenance of facilities with the same diligence and frequency as performed in 2010.

Magellan Midstream Partners L.P. – Longhorn Pipeline System

Summary Report of 2010 Operational Reliability Assessment (ORA) Developments

C. Implementation of New Mechanical Integrity Technologies

No new technologies were implemented in 2010.

D. ORA Process Improvements

The ORAPM provides a method for determining corrosion rates by comparing two consecutive ILI runs. This method has not been effective for determining a corrosion rate because two different technologies were used to assess the metal loss. The average difference in external metal loss readings between the UT and MFL tool data divided by the difference in years was generally less than the default corrosion rate of 6 mils per year (from ASME B31.8S), however it is difficult to discern tool noise from actual corrosion growth. As a result KAI has used a corrosion rate of 6 mils per year for external metal loss features. In an attempt to improve this process, Magellan has contracted with Quest to perform an independent study on the three ILI runs since startup with the goal of determining an average corrosion growth rate for each segment. Results will be available in the 2011 ORA.