2017 Annual System Integrity Plan

Self-Audit Report For
Magellan Midstream Partners, L.P.
Longhorn Pipeline

January 23, 2019

RCP

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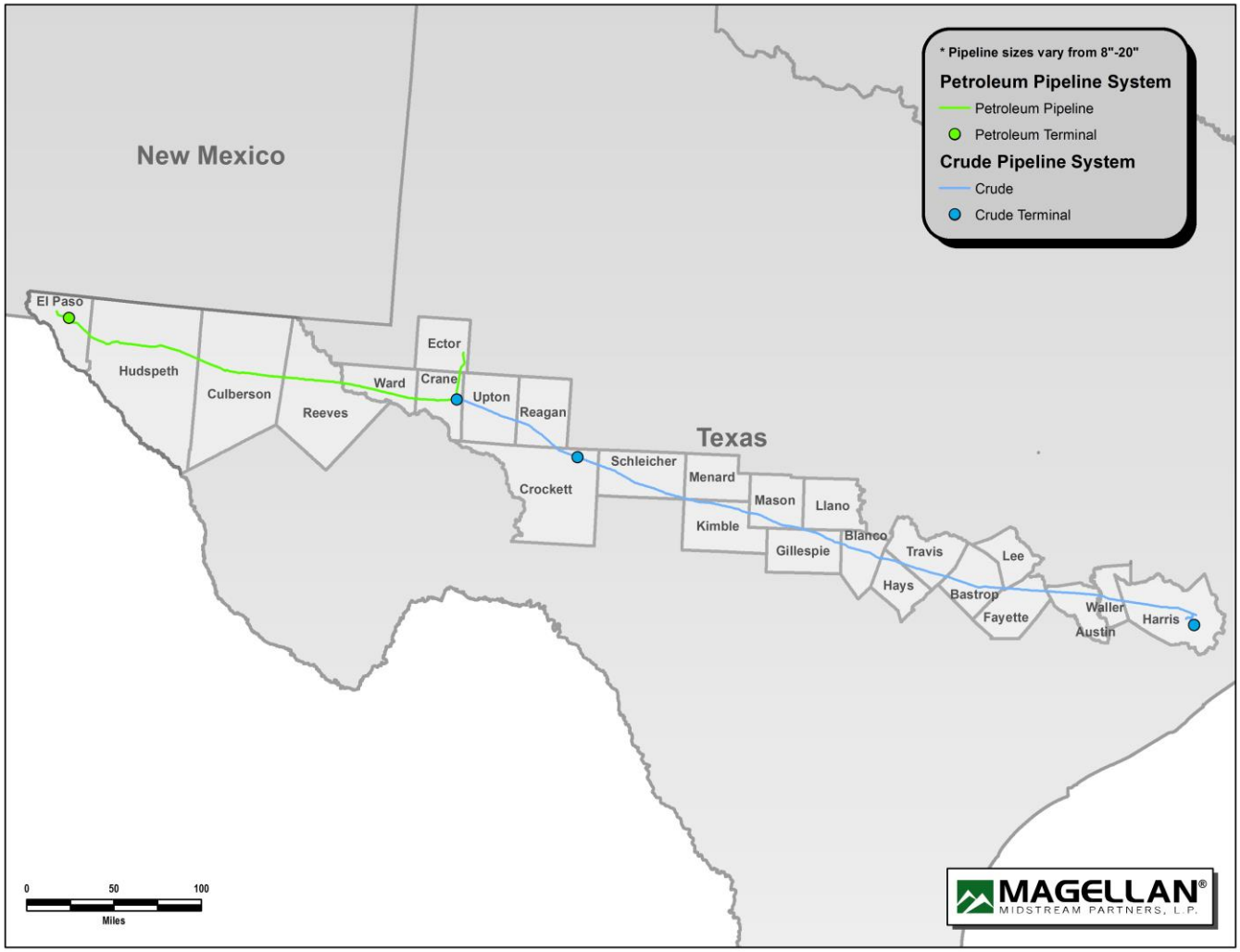
1.0 Acronyms and Definitions

AI	Asset Integrity or Action Item
API	American Petroleum Institute
AO	Abnormal Operations
AOCs	Areas of Concern
AOEC	Areas of Elevated Concern
AOPL	Association of Oil Pipe Lines
ASSE	American Society of Safety Engineers
ATPDPPA	Annual Third-Party Damage Prevention Program Assessment
BBL	Barrel
CFR	Code of Federal Regulations
CMS	Compliance Management System
COMs	Coordinators of Operations and Maintenance
DPOs	Damage Prevention Operators
EA	Environmental Assessment
EOY	End-Of-Year
HAZOP	Hazard And Operability Analysis
HCA	High Consequence Area
HNM	Hazard Near Miss
II	Incident Investigations
ILI	In-Line Inspection
IO	Incorrect Operations
ITPs	Individual Training Plans
LMP	Longhorn Management Plan
Longhorn	The entire pipeline system and all parties, including MMP (see below)
LOPA	Layer of Protection Analysis
LPSIP	Longhorn Pipeline System Integrity Plan

MC	Management Commitment
MCEMT	Maintenance Capital Expense Management Team
MMP	Magellan Midstream Partners L.P. (the asset operator and owner as of August 27, 2009)
MOCR	Management of Change Requests
NACE	National Association of Corrosion Engineers
Operator	Magellan Midstream Partners, L.P. (MMP)
ORA	Operational Reliability Assessment
PAT	Project Assessment Tool
PE	Process Element
PET	API/AOPL Pipeline Performance Excellence Team
PHAs	Process Hazard Analyses (using HAZOP, LOPA, or What-If Analysis)
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIX	Pipeline Information Exchange
POE	Probability of Exceedance
PSSR	Pre-Startup Safety Review
ROW	Right-Of-Way
SBRMA	Scenario Based Risk Mitigation Analysis
SIP	Magellan Midstream Partners, L.P. System Integrity Plan
SME	Subject Matter Expert
TPDPP	Third Party Damage Prevention Program Annual Assessment
THLPSSC	DOT's Technical Hazardous Liquid Pipeline Safety Standards Committee

2.0 Introduction

The Longhorn Pipeline System (Longhorn) project initiated in the mid-1990s. Originally the flow was all refined products from East Houston/Pasadena to El Paso. Refined products now flow from Crane to El Paso, having converted the existing remainder of the refined products service, and having reversed the flow, to take West Texas Crude from Crane to the Houston Gulf Coast area. The map below shows the overall distribution network for the combination of refined products and crude in their respective branches of service.



The Longhorn Pipeline project encountered opposition from various groups, resulting in a lawsuit and eventual settlement as described in *Table 1 - History of the Longhorn Pipeline*, below.

Table 1 - History of the Longhorn Pipeline System

Year	Comments
1949 – 1995	Exxon constructed the 18"/20" pipeline, Crane to Baytown, to transport crude oil; operated and maintained refurbished until pipeline was idled and purged with nitrogen.
October 21, 1997	Longhorn acquired the existing (idled) pipeline from Exxon.
April 1998	National Environmental Policy Act (NEPA) lawsuit filed in Federal Court in Austin.
1998/1999	Cleaning and refurbishment of the existing pipeline. Construction of new pump stations (Galena Park, Satsuma, Cedar Valley, Kimble County, Crane, and El Paso). Construction of El Paso Terminal. Construction of pipeline extensions: 18" Crane to El Paso; 8" Crane to Odessa; 20" GATX to Tie-In; and 8" and 12" pipelines from El Paso Terminal to tie-ins with other systems.
March 1999	Settlement Agreement requires Environmental Assessment, which ultimately leads to the Longhorn Mitigation Plan.
November 2000	Finding of No Significant Impact issued, and Longhorn Mitigation Plan published.
2001 – 2004	Pre-Startup Mitigation Commitment Activities performed.
January 27, 2005	Official startup date for the Longhorn Pipeline System.
August 2006	Flying J acquires Longhorn Partners Pipeline, L.P.
August 27, 2009	Magellan Pipeline Company, L.P. purchased the Longhorn pipeline.
March 2013	The flow direction was reversed, refined product service transported changed to crude oil (flows to East Houston from Crane).

Longhorn agreed to implement a Longhorn Mitigation Plan (LMP) as part of the original Environmental Assessment (EA) conducted. The LMP, immediately after it was originally developed, had two revisions. The LMP includes forty (40) "Mitigation Commitments" that address various integrity issues on the Longhorn System both before and after startup. The LMP also committed Longhorn to implement the Longhorn Pipeline System Integrity Plan (LPSIP), which includes three main elements:

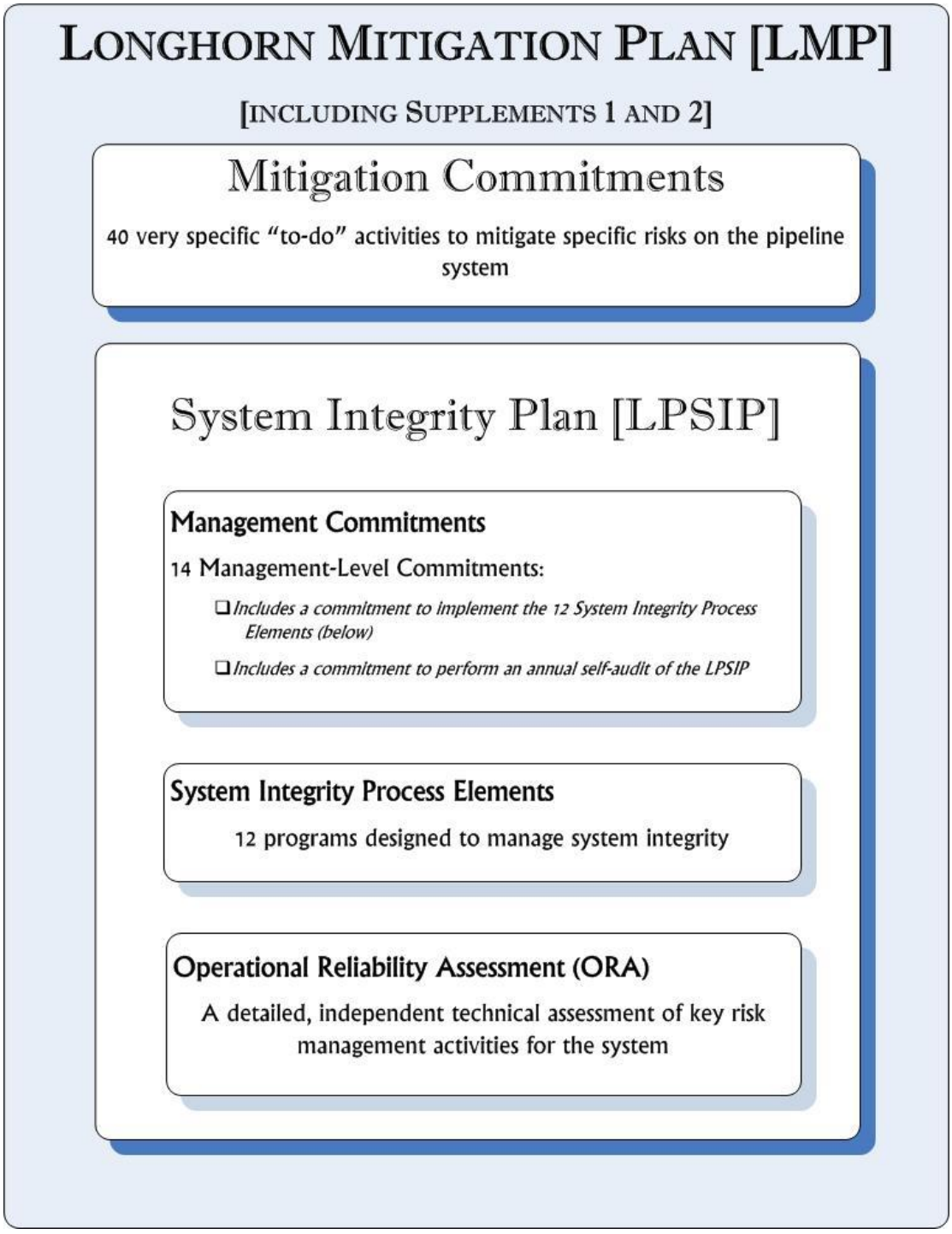
1. Management Commitments (14 total), addressing various integrity management programs for the pipeline system, including a commitment to conduct a self-audit of the LPSIP each year;
2. LPSIP Process Elements (12 total), addressing various operational management processes for the pipeline system; and
3. An Operational Reliability Assessment (ORA), providing an independent technical analysis of various integrity threats on the pipeline system.

Magellan contracted with RCP Inc., a regulatory and engineering consulting firm, to perform the Longhorn Pipeline System Integrity Plan annual self-audit. This 2017 self-audit complies with this requirement. Addressed in a separate reporting process and not included as part of this effort are the Mitigation Commitments and the Operational Reliability Assessment reports.

The overall structure of the LMP Mitigation Commitments and the LPSIP Management Commitments, Process Elements, and Operational Reliability Assessment is depicted in Figure 1: LMP Organization (see next page).

In this report, the fourteen (14) Management Commitments are referred to sequentially as MCxx. Likewise, the twelve (12) LPSIP Process Elements will be referred to sequentially as PExx. The Table of Contents for this document provides an easy reference, as the section numbers for the Management Commitments and Process Elements correspond with the appropriate MCxx or PExx number. For example, MC13 refers to the Management Commitment to perform a self-audit and is discussed in Section 13 of "Findings for the LMP Management Commitments". Likewise, PE7 refers to the Management of Change Process Element, and discussed in Section 7 of "Findings for the 12 LPSIP Process Elements," and so forth.

Figure 1 - LMP Organization



3.0 Self-Audit Methodology

The self-audit team was composed of two representatives from RCP Inc., both experienced auditors with over fifty (50) years of combined experience in the industry. The auditors' statements of qualifications are provided in Appendix D to this report. Auditors reviewed the LMP, the LPSIP and the SIP, as well as various documents from Longhorn as listed in Appendix B, including, but not limited to policies and procedures; work activity reports; agreements with third parties; performance tracking spreadsheets; and other relevant compliance documents. They also interviewed personnel from Magellan Midstream Partners (MMP) in El Paso, Midland/Crane, Austin, Houston, and Tulsa. Personnel from both field operations and corporate management were interviewed. A complete list of personnel interviewed is contained in Appendix C to this report. If more than one person had held the same position during 2017, the auditors generally interviewed all those personnel at once. All the field activities for the audit occurred the end of February 2018 and continued through May 2018.

The auditors developed the opinions and findings in this report based on the interviews and documentation, using their best professional judgment and experience. The auditors conducted a review with MMP of all interim findings to ensure findings were factually correct and considered all appropriate information. However, the findings and conclusions in this report are the independent work of the audit team based on requirements defined in the Longhorn Mitigation Plan, System Integrity Plan, the Texas Railroad Commission, and in PHMSA Pipeline Safety Regulations, as applicable.

4.0 Significant System Developments in 2017

During 2017, Magellan continued to implement system integrity activities as required by PHMSA pipeline safety regulations and the LMP.

There were no significant system developments on the Longhorn Pipeline in 2017. Actions were taken to strengthen the current LMP by the use of continuing improvement activities, MOCR software rollout, a new Human Error Report and distraction training, and other administrative actions.

5.0 Summary of Findings from the Self-Audit

As mentioned above, the LMP requires an annual self-audit of the LPSIP. The LMP specifically requires that the self-audit address five (5) "core areas" of system integrity. The Five (5) core areas are addressed below in this section. Subsequent sections of this report address each of the fourteen (14) Management Commitments and the twelve (12) Process Elements in the SIP.

5.1 Synopsis of Integrity Issues Being Addressed and Their Status

The activities and programs used to manage risk on the Longhorn Pipeline System are addressed individually in the Management Commitments and Process Elements sections of this report.

The 2018 audit of activities and programs used to manage risk are mature, functioning as designed and are well understood by employees. The Recommendation section of this report describes process improvements for the programs.

The 2018 self-assessment interviews also highlighted the Longhorn Pipeline System has rolled out an electronic, on-line, Management of Change Request (MOCR) system. The system allows for initiation, review, approval/rejection/revision of technical changes to the Magellan Midstream Partners, L.P. organization's pipeline organization. The MOCR system allows engineering/administrative controls, pipeline facilities, infrastructure, and personnel changes to be managed across the company with improved visibility. The MOCR system also provides clarity and insight into the justification and technical basis for the changes and the ongoing historical account of the evolution of the pipeline organization's functionality.

In 2014, two minor, non-DOT reportable release incidents occurred as the result of an issue with valve stems. The manufacturer of the valves had a problem with plating of the material and, as a result, corrosion can occur on the valve stems. In 2017, MMP continued to advance the program to replace these valve stems based on a prioritization of drain up, location to HCAs, and severity of leakage. The inspection of the affected valves will continue until all the defined scope of valve stems originally included are replaced as required.

5.2 Important Insights, Results and Lessons Learned from the Previous Year

MMP issued two (2) "Lessons Learned" bulletins and two (2) "Coffee Talk" bulletins in 2017. Human error has become a focal point of concern based on the majority of incidents are related specifically to the lack of actions or incorrect measures taken. To address some of the presence of employee shortfall, MMP has moved forward and pursued a new Human Error Report and distraction training in an attempt to offset the upward trend.

Magellan conducted twenty-four (24) incident investigations on the Longhorn Pipeline in 2017. These investigations indicate the following:

- Four (4) incidents were reportable to PHMSA. All of these incidents were the result of human error. One (1) error by Magellan employee and three (3) by contractor working for Magellan.

- Eight (8) incidents were Hazardous Near Misses. All of these incidents were the result of "Third-Party" actions that indicate a failure to follow One-Call requirements.
- Twelve (12) incidents were small volume releases or equipment failures non-reportable to PHMSA. Three (3) of these incidents were result of equipment failures. Seven (7) of these incidents were the result of human error by third party. Two (2) of these incidents were the result of human error by Magellan operator.

Summarizing:

2017 Incident Investigations and Incidents

	DOT Reportable	Human Error - All	Hazardous Near Misses	Human Error - DOT Reportable	Human Error Non-DOT Reportable	One-Call Violations	ROW Near Misses	Total Incidents
Employee	1	3	0	1	2	0	0	3
Others	3	10	8	3	7	4	8	21
							TOTAL	24

5.3 Insights from New Integrity Management Processes or Technologies, or Innovative Applications of Existing Technologies

No new integrity management processes or innovative applications of existing technologies were implemented in 2017.

5.4 Performance Measurement Results

The "scorecard" for 2017 is included in Appendix A of this report. The scorecard indicated there were four (4) DOT/PHMSA reportable releases in 2017.

There were four (4) One Call violations in 2017 and eight (8) Right-Of-Way (ROW) near misses.

5.5 New Integrity Management Programs or Activities That Will Be Conducted or Significant Improvements to Existing Programs and Activities

New 2017 integrity management programs or significant improvements implemented include a new Human Error Report and distraction training. Management personnel receive the weekly Human Error report and review for applicability to their operations. Distraction training addresses distractions at work, how to focus on procedures and block out distractions. Additional significant improvements were the replacement of the Colorado River Crossing and a Depth of Cover Survey completed in 2017.

There was a total of four (4) "*probability of exceedance"* (POE) digs completed related to a previous MFL In-Line Inspection recommended by the ORA. All four (4) digs were related to the 2012 run from Cottonwood to El Paso. 2017 ILI tool runs and required maintenance digs indicated no indication of 3rd-party damage.

In 2017 Magellan added an emergency phone # to the home page, hazardous quick guide, ER checklist, API/AOPL Shoulder to Shoulder videos, NASFM training info and ER info on each product type to the Emergency Response tab. Additionally, a pipeline safety training tab with links to training info and a pipeline awareness tab were incorporated into the website.

Based on interviews (both in field and in Tulsa offices) and records review, LPP has continued Public Awareness/Damage Prevention by dynamically engaging with:

- Public Officials;
- Emergency Responders and LEPCs;
- Schools; and
- The affected Communities.

6.0 Findings for the LMP Management Commitments

The fourteen (14) Management Commitments described in the LMP are addressed below.

6.1 MC1: Longhorn Pipeline System Integrity "Process Elements"

The first of the fourteen (14) *"Management Commitments"* addressed in this section of this report commits Longhorn to implement a System Integrity Plan consisting of twelve (12) "process elements" that meet or exceed the federal and state regulatory requirements. The twelve (12) SIP elements are addressed in the next section (Section 7) of this report.

6.2 MC2: Data Gathering and Identification and Analysis of Pipeline System Threats

There is a significant program in place to accumulate and integrate a wide array of information related to the operation and integrity of the Longhorn System, as described in the LMP Section 3.2.2. MMP has dedicated a full-time person to this task, who receives information from many different data sources; this data is entered into the Longhorn risk model. This data is also forwarded to the ORA contractor, who performs an evaluation. Magellan has also dedicated a full time Risk Engineer for the Longhorn System to work with all SMEs related to the Longhorn System to evaluate risks and ensures compliance with the SIP, LMP and Federal Regulations.

Magellan continued to perform Incident Investigations during 2017. There were twenty-four (24) incident investigations completed in 2017 for incidents that occurred on facilities subject to the LMP. These investigations are not limited to incidents that are reportable to government agencies, and include other types of operational incidents, such as near misses. The incident investigation results are shared broadly throughout MMP. Likewise, MMP captures information concerning Incorrect Operations, and summarizes this information quarterly in a spreadsheet to identify trends and potential areas for improvement. Incorrect Operation data is drawn from AOs, IIs, and HNM reports (described in item 11 of the SIP process elements). MMP manages changes to the Longhorn System through SIP process Element 11 – Change Management. All MOCRs are entered in a report, which is widely distributed

throughout MMP to personnel responsible for Longhorn operations. This report provides a quick reference as to whether the MOCR is open or closed.

The LMP also commits MMP to conduct an annual *"Third-Party Damage Prevention Program Assessment"* for the Longhorn Pipeline. The auditors reviewed this assessment for 2017 and did not identify any issues associated with the requirements of the LMP.

6.3 MC3: Integration of System-Wide Activities

Using information from the data gathering processes mentioned above and the data tracking and scorecard processes mentioned in PE12, Longhorn conducts system-wide reviews of activities to ensure that all relevant information about the operation and integrity of the system is evaluated on a routine basis.

A Mitigation Plan Score Carding and Performance Metrics document is prepared and reviewed monthly. Incidents are reviewed monthly by stakeholders, including Area Supervisors and Operations Managers.

Lastly, the ORA provides a comprehensive, independent technical review of all types of threats to the Longhorn System on an annual basis.

6.4 MC4: Incorporation of Engineering Analysis

Longhorn consistently obtains the assistance of engineering experts (both inside the organization, and from third parties) to help identify, manage, and resolve potential integrity issues on the pipeline system. The results of each in-line inspection are reviewed by independent pipeline assessment experts who perform an independent analysis and identification of any additional areas for physical inspection of the pipe based on statistical analysis of the results. The results of ILI tool runs are sent to a third party to conduct seam and girth weld assessments.

6.5 MC5: Integration of New Technologies

Longhorn continues to investigate system improvements, do research for new technologies, and to evaluate the use of additional technologies for future consideration.

6.6 MC6: Root Cause Analysis and Lessons Learned

This Management Commitment refers to the implementation of a formal incident investigation program for actual and near miss events, and for repairs made to correct deficiencies in system integrity. The program is described in PE6.

MMP uses a "Lessons Learned" program and a "Coffee Talk" program to share information and key learnings throughout the company. MMP issued four (4) "Lessons Learned" "Coffee Talk" bulletins in 2017, addressing various issues.

Several incidents on the Longhorn Pipeline in 2017 were at least partially due to MMP employee and contractor/third-party human errors. Training issues associated with procedure compliance appears to be a consistent contributing factor. The Company has moved forward and pursued a new Human Error

Report and distraction training in an attempt to offset the upward trend as a direct result of what they have learned through the investigation process learnings.

MMP conducts monthly SIP meetings in Austin, El Paso, Houston, and Crane/Odessa, where SIP procedures, Hazard/Near Miss (HNM) Reports, other accidents, Coffee Talk bulletins and lessons learned are reviewed with operating personnel.

6.7 MC7: Industry-Wide Experience

Longhorn continues to benefit from the industry-wide sharing received by participation in industry and governmental committees. MMP personnel, including senior executives, continue to participate in industry organizations and committees. These committees and organizations include those such as the American Petroleum Institute/Association of Oil Pipe Lines Pipeline Performance Excellence Team, DOT's Technical Hazardous Liquid Pipeline Safety Standards Committee, Pipeline Information Exchange, API's Environmental Health and Safety Group, the American Society of Safety Engineers and the Common Ground Alliance.

6.8 MC8: Resource Allocation

Funds and personnel are available as required to implement the requirements of the SIP. Allocation of resources is on an MMP-wide basis. The Maintenance Capital Expense Management Team, composed of the Vice-President of Technical Services and the Vice-President of Operations, reviews and approves discretionary expenditures.

MMP uses a risk-ranking process to risk-rank proposed projects for health, safety, environmental, and commercial risks. While there are no dedicated funds for Longhorn discretionary expenditures, all personnel interviewed during the auditing process expressed their belief that Longhorn has adequate resources from a financial standpoint. The Longhorn System still has dedicated resources, including a full-time integrity engineer and a full-time risk model and data/ORA coordinator.

6.9 MC9: Workforce Development

MMP continues to use their new employee "On-boarding" process. This process includes an orientation on the SIP, business processes, and safety procedures. Field employees also have a week of field based training that includes computer-based training modules and On The Job Training items with their immediate supervisor.

Field employee training is primarily conducted by local Operations management. Supervisors prepare Individual Training Plans for their employees. Discussion with the Lead Operating Technician in Houston and informal discussions with personnel at other locations indicated that the onboarding process is functioning well and making the LMP, LPSIP, and integrity programs a vital component of the on-boarding process.

6.10 MC10: Communication to Longhorn and Operations Management

This commitment is no longer relevant, since MMP both owns and operates the Longhorn Pipeline System; there is no separate Longhorn management structure with which to communicate outside of MMP itself.

6.11 MC11: Management of Change

This management commitment refers to the implementation of a Management of Change Program. The LMP requires identification of all documents and files affected by the change and modified on a timely basis. MMP's management of change process is described in SIP Element 11 and is addressed in section PE7 of this report. The new electronic MOCR software and reporting system is being rolled out and readily accepted as vital to the work process going forward.

6.12 MC12: Performance Monitoring and Feedback

This management commitment is addressed in PE12. Measures have been established and are being tracked as required, and the annual system integrity plan audit has been conducted each year as required. Longhorn has also established several other performance measures and tracking systems, including the *"Mitigation Plan Scorecarding & Performance Metrics"* report.

6.13 MC13: Self-Audit

The LPSIP self-audit has been prepared each year as required. This report is the result of the 2017 LPSIP self-audit. The Recommendations section of this report contains the auditors' recommendations. Prior Self-Assessment Reports are posted on Magellan's website under the heading *"Library of Published Longhorn Self-Audits" (https://www.magellanlp.com/WhatWeDo/LonghornInfo.aspx).*

6.14 MC14: Longhorn's Continuing Commitment

Longhorn continued to implement the programs required by the LMP in 2017. All personnel interviewed by the auditors indicated financial and personnel resources were properly budgeted and adequate to safeguard the integrity of the Longhorn pipeline.

7.0 Findings for the 12 LPSIP Process Elements

The twelve (12) process elements described in the LMP are addressed below.

7.1 PE1: Longhorn Corrosion Management Plan

Atmospheric corrosion inspections were performed as required. One (1) location at the inactive Galena Park location was identified as needing repairs. Work to correct this was completed prior to September 14, 2017.

There were no API 653 internal inspections and three (3) API 653 external inspections conducted in 2017.

Internal corrosion is monitored using corrosion coupons, which are to be inspected three (3) times a calendar year, at intervals not to exceed 4 ½ months. No locations exceeded the 4 ½ month requirement and all locations met inspection requirements. The triannual inspections have been revised for 2017 from Dec 31 to Dec 15 of each year. This revision will prevent the exceedance of the 4 ½ month requirement. Coupon results have ***not*** indicated any internal corrosion problems on the pipeline. The March 2017 ORA report results explain in greater detail the internal corrosion monitoring program and inspection criteria.

7.2 PE2: In Line Inspection and Rehabilitation Program

MMP follows recent industry standards to ensure the quality of ILI runs, and uses conservative methods to re-calibrate ILI results when determining what ILI indications to dig. The ORA contractor performs a statistical analysis of the ILI data to identify any additional areas for physical inspection, beyond those that would normally be inspected, as an extra precaution. The ORA process provides a detailed, independent analysis of all ILI data. The schedule for recent ILIs has been driven by the mitigation commitments and has not been altered by ORA technical analysis. The ILI tool runs, and subsequent maintenance digs, showed no indication of third-party damage in 2017. Further discussion is included below.

ORA Process Manual 7.4 clarifies that an ILI tool capable of detecting TPD will be run in any 25-mile pipeline segment in the event that three (3) or more One Call violations occur within a 12-month time period. Based on this requirement, an ILI inspection was required on the Buckhorn to Satsuma segment. There were three (3) One Call violations one (1) located at MP51 and (2) separate events at MP42. The required inspection was completed September of 2017. Additionally, there was one (1) One Call violation at MP531.1. None of the One Call violations resulted in third-party damage to the pipeline.

There were four (4) ILI tool runs in 2017, three (3) Deformation tool (DEF) runs and one (1) Magnetic Flux Leakage (MFL) tool.

Fifty-one (51) digs were performed in 2017 related to 2015 Transverse Field Inspection (TFI) tool runs. MMP applies HCA remediation timeframes even to Longhorn pipe segments outside of HCAs. All rehabilitations addressed were conducted in the necessary timeframe. The ILI tool runs, and maintenance digs did not indicate any third-party damage.

In 2014 a Spiral Magnetic Flux Leakage (SMFL) tool was run between Satsuma and Speed Jct. Six (6) digs were completed in 2017 related to these ILIs. Five (5) on the Satsuma to East Houston segment and one (1) on the East Houston to Speed Jct. segment.

In 2014 an MFL tool was run from Warda to Satsuma. Eight (8) digs were completed in 2017 related to these ILIs, including four (4) digs each on the Warda to Buckhorn and Buckhorn to Satsuma segments.

In 2015, Magellan electively chose to run a TFI tool between all eleven (11) segments from Crane to Satsuma. Fifty-one (51) digs were completed in 2017 related to these TFI In-Line Inspections (ILI). Three (3) digs were located on the Texon to Barnhart, seven (7) on the Eckert to Cedar Valley, seven (7) on the Cedar Valley to Bastrop, nine (9) on the Bastrop to Warda, fourteen (14) on the Warda to Buckhorn, and eleven (11) on the Buckhorn to Satsuma segments.

A 2016 SMFL tool run between Odessa and Crane resulted in two (2) completed digs in 2017. An MFL tool was run from Cottonwood to El Paso in 2017, resulting in two (2) digs.

There was a total of four (4) POE digs completed, related to a previous In-Line Inspection recommended by the ORA. All four (4) digs were related to the 2012 run from Cottonwood to El Paso. No UT runs were required or completed in 2017.

Summarizing:

Historical Tool Use and Outcomes

	2017	2016	2015	2014	2012	Totals
"Smart" ILI Tool Runs[1]	4	2 (SMFL & MFL*)	1 (TFI)	2 (SMFL & MFL)	MFL	9
2017 Resultant Digs	2	4	51	12	4	71

7.3 PE3: Key Risk Areas Identification and Assessment

The Longhorn System is regulated under the PHMSA "Pipeline Integrity Management Regulations" in 49 CFR 195.452, which includes requirements for the identification and management of High Consequence Areas, including populated areas. The populated area information and resulting pipeline integrity management programs are updated as required by this regulation.

7.4 PE4: Damage Prevention Program

The aerial patrol program is well organized, and surveillance occurs more frequently than required. Patrol flights are conducted by contract pilots in both directions (up the pipeline one day, and back in the other direction the next). That gives the aerial patrol observer the ability to spot potential issues from both perspectives on a regular basis. An MMP operations person flies with the pilot annually to

[1] *tool runs completed prior to 2017 had associated dig issues that were completed prior to 2017.*

make sure the flight is taking the correct path and audits the pilot's notes to ensure they are identifying items as expected by MMP.

Aerial patrol data indicated that agricultural activity was observed twenty-nine (29) times (7.1% of non-company observations) in 2017, five (5) times (1.7% of non-company observations) in 2016, and seventeen (17) times (3.6% of non-company observations) in 2015. This data correlates with the fact that only a small percentage of the Longhorn Pipeline crosses agricultural areas. While there was an increase in agricultural activity observations, after further investigation most were determined to be outside the Longhorn ROW and/or not a threat to the pipeline. As ongoing monitoring, landowners are being contacted annually to reaffirm that cultivation techniques and/or land use has not changed.

MMP conducts an aerial photo survey every five (5) years to look for scouring at thirteen (13) water crossings. The most recent survey conducted was in 2015. Results of the survey showed that there were several new features identified as well as signs of erosion at previously identified sites. Two (2) locations previously identified as Areas of Concern (AOC) appeared now to be Areas of Elevated Concern (AOEC), four (4) previously identified AOECs appeared to worsen, and four (4) new AOCs were identified. The report recommended a more detailed inspection of the AOECs which was accomplished during the 2017 DOC survey.

Pipeline Performance Tracking System (PPTS) identified Other Pipeline/Utility Operators as the second largest damaging party after farming. This continues to be the case for the Longhorn Pipeline in 2017, accounting for ~34% of non-company activities reported by aerial patrol (foreign line crossings and industrial activity). In 2017, 2016, and 2015, 15%, 14%, and 25% respectively, of non-company activities were classified as "no activity found". Other than emergency observations, line locators are expected to complete investigations within a 48-hour window. Depending on the aerial sighting it is reasonable to understand this percentage; i.e., the observation may simply be a truck, backhoe or other equipment in the vicinity of the ROW; however, no evidence of any soil disturbance was discovered.

MMP conducted a depth of cover survey in 2017 and identified forty-six (46) exposure sites for inspection and remediation. Four (4) existing exposures being monitored from 2016 were repaired after additional erosion occurred. No third-party damage was found.

There were eight (8) incidents were Hazardous Near Misses without any recorded pipeline damage. All of these incidents were the result of "Third-Party" actions that indicate a failure to follow One-Call requirements.

The public awareness program for Longhorn was implemented as required by the LMP. For 2017 the Longhorn Mitigation Plan (LMP) and 49 CFR 195 (which incorporates by reference API Recommended Practice 1162, Public Awareness Programs for Pipeline Operators), require Magellan to communicate with the affected public adjacent to its right-of-way (ROW) and facilities through targeted mailings on an annual basis. Magellan distributes bilingual brochures annually to the affected public, general businesses and schools within a two-mile radius either side of the pipeline ROW in rural areas; a one-quarter mile radius either side of the ROW in metropolitan areas; to farmers and excavators within a 10 mile radius either side of the pipeline ROW; to emergency and local public officials within the county plus a 20 mile radius; to any internal database of one call violators, landowners, excavators etc.; and all

of the one call centers in the state. These brochures contain information detailed in RP1162 regarding awareness of the pipeline, damage prevention and response to an emergency with a bounce back card and a magnet to keep. Response cards have been included in the mailings since 2007. Since 2011, the mailings have been in envelopes, which have resulted in a larger number of returned response cards.

The annual mailing was sent out on 12/14/17; 99,576 pieces were mailed. In 2011, Magellan began mailing the brochures in envelopes instead of self-mailers; we've seen an increase in BRC's returned compared to pre-2011 mail outs without envelopes. (2010 = 81, 2011 = 638, 2012 = 824, 2013 = 669, 2014 = 608, 2015 = 789, 2016 = 742, 2017 = 733).

The LMP requires door-to-door visits with the public in areas adjacent to the pipeline in Tier II and Tier III areas every two (2) years, not to exceed thirty (30) months. In this program, door hangers are distributed to residents located in Tier II and III areas and who are directly adjacent to the pipeline. The objective is to reach stakeholders who back up to the ROW on a more frequent basis than those that only receive annual mailings and to educate them about pipeline safety, damage prevention and emergency preparedness.

This program now runs every other year. In 2016 Magellan provided a communications program (via door hanging) in Tier II and Tier III class pipeline locations from Houston to El Paso (Harris to El Paso Counties); 5,742 door hangers were distributed and scheduled again for 2018.

Longhorn Damage Prevention Operators (DPOs) participated in group emergency responder and excavator meetings. The LMP and 49 CFR require Magellan to contact emergency response agencies within each county that the pipeline passes through. In addition, it stresses the importance of excavator education to promote cooperation and awareness with this stakeholder group. The objective here is to reach emergency responders with information regarding their actions during an emergency and providing information to excavators regarding the use of the one call system. This is accomplished through participation in a series of meetings that take place on a county-by-county basis along the ROW. In most cases, the Coordinators of Operation and Maintenance (COMs) participate in these meetings and are available to answer any questions these groups may have about Magellan operations.

- Magellan completed 100% of the meetings scheduled for all 25 counties in 2017 by 10/11/17.
- Meetings have been conducted in the following counties: Austin, Bastrop, Blanco, Crane, Crockett, Culberson, Ector, El Paso, Fayette, Gillespie, Harris, Hays, Hudspeth, Kimble, Lee, Llano, Schleicher, Menard, Mason, Reeves, Travis, Upton, Waller, Ward and Reagan.
- Magellan participated in 16 meetings:
    - Sealy 11am and 6pm included Fayette, Austin, Waller counties
    - Midland 9:30am and 11am included Ector, Crane, Upton Reagan counties
    - Austin 9am and 10:15 included Travis, Bastrop and Lee Counties
    - Pecos 11am and 6pm included Culberson, Ward and Reeves counties
    - Ozona 11am and 6 pm included Crockett and Schleicher counties
    - Kerrville 10am and 11:15am included Menard, Mason, Llano and Kimble counties

- Vinton (El Paso) 9:30am and 11am included El Paso and Hudspeth counties
- Pasadena 11 am included Harris county
- San Antonio 11am included Blanco and Hays counties

Emergency Responders and LEPCs are an essential part of the damage prevention program. When managing an emergency, protecting lives and the environment requires a concerted team effort with local emergency responders. This program targets emergency responders and non-emergency response government agencies to provide them with information on how to best work together to maintain public safety.

- Magellan targeted 148 locations and conducted face to face meetings with emergency responders along our ROW. Magellan met this requirement for all 25 LMP counties scheduled by November 22, 2017.
- Meetings have been conducted in the following counties: Austin, Bastrop, Blanco, Crane, Crockett, Culberson, Ector, El Paso, Fayette, Gillespie, Harris, Hays, Hudspeth, Kimble, Lee, Llano, Mason, Menard, Reagan, Reeves, Schleicher, Travis, Upton, Ward and Waller.

Public Officials are a fundamental part of the damage prevention program. Magellan informs public officials of the location of the pipeline and the dangers associated with development and encroachments adjacent to the pipeline. Magellan works within the local network of public officials, city and county planning departments, zoning and building permit offices and agricultural agencies to ensure safe development near the pipeline. The LMP states that Magellan must reach non-emergency response government agencies that are exempt from one-call mandates to provide them with maps of the system and inform them of the presence of the pipeline in order to maintain public safety.

- Magellan included the LEPCs and non-emergency response government agencies in MMP annual mail out program.

The Magellan school program is designed to reach students and their households who are located in close proximity (within a one (1) mile radius) to the pipeline, to educate them about pipeline safety, damage prevention and emergency preparedness. The program is currently targeted at 4th and 5th grade elementary students in Houston and Austin.

Austin/Magellan Program:

- In 2017 school year, Magellan targeted 17 elementary schools in the Austin area for the program.
- The following 3 schools received a presentation: Boone Elementary presentation was completed on 1/6/17 and Kiker Elementary presentation was on 10/26/17 and Palm Elementary presentation was on 11/8/17 (3 schools, 17 teachers, 355 students).
- A total of 14 schools either declined participation, cancelled or were unable to schedule, or did not respond to the repeated requests for a presentation during the 2017 school year.
- Magellan will continue to contact schools for the 2018 school year.

Houston/Safe at Home Program:

- In 2017, the "Safe at Home School Program" for the Houston area received participation from Carroll Academy, Eiland Elementary, Fonwood Elementary, Gleason Elementary and Nitsch Elementary, (5 schools, 19 teachers, and 447 students, 20 classroom kits). Safe at Homes plans to continue to offer additional stipends and incentives to increase participation.

Texas Statewide School Pipeline Safety Outreach:

- In the 2016/2017 school year, there were 16 outreach conferences and hundreds of school administrators, teachers, bus drivers, school law enforcement officers and school professionals participated throughout the state. The program also sent a spring and winter newsletter to 56,223 recipients.

Magellan has committed to distribute pipeline safety and damage prevention information to the public through various events, such as county fairs, trade shows, agricultural shows, feed and seed stores, home and garden shows, and equipment rental companies. The goal of this program is to reach out to nearby neighbors to educate them about pipeline safety, damage prevention and emergency preparedness.

- A follow-up on the Kiosk Program was completed in December 2017. The goal of this follow up is to resupply the 21 stores with kiosk promotional materials.
- An effectiveness survey was conducted to these store owners or managers regarding their experience with the program. Magellan provided new Kiosks refills to 17 of the 21 targeted stores.

Magellan has committed to use the mass media through radio public service announcements. In addition, Magellan targets the general public who live near the pipeline through printed ads in local community newspapers. The goal is to provide them with damage prevention messages and communicate with them regularly about the importance of calling before you dig. Communications include many ads, public service announcements, community event sponsorships and participation, and even an interactive app communicating pipeline safety and awareness.

7.5 PE5: Encroachment Procedures

Operations personnel are keenly aware of the need to prevent unauthorized encroachments and to properly manage authorized encroachments. An encroachment agreement is executed for every authorized encroachment. MMP uses two different encroachment agreements: a "short form" that is used for routine activities, such as installing utility lines across the ROW, and a "long form" that is used for more complex situations, such as land development. The land representative is informed of every encroachment agreement and reviews them to ensure that they are appropriate. These are retained permanently in the TRACT land files.

There were eighty-one (81) encroachments and seventy-six (76) have short form agreements in 2017. There were five (5) unauthorized encroachments identified in incident investigations for 2017, as compared to three (3) in 2009, one (1) in 2010, none (0) in 2011, two (2) in 2012, none (0) in both 2013

and 2014, two (2) in 2015, and two (2) in 2016. The 2017 unauthorized encroachments did not result in damage to the pipeline. MMP gathers ROW near miss and unauthorized encroachment data in the *"Mitigation Plan Scorecarding & Performance Metrics"* report. Although unauthorized encroachments are not uncommon for any pipeline, near misses and unauthorized encroachments reinforce the need for an active ROW patrol program, in addition to the public awareness programs.

7.6 PE6: Incident Investigation Program

To promote awareness of hazards and to ensure "near misses" are identified, MMP uses a hazard/near miss (HNM) report (note that these operational "near misses" are not the same as the ROW "near misses" described in PE4). All operations employees are encouraged to complete these reports. There were eight (8) HNM reports in 2017 versus four (4) HNM reports in 2016, five (5) for 2015, two (2) for 2014, four (4) in 2013, three (3) in 2012 and seven (7) in 2011.

The LPSIP requires that Incident Investigations (IIs) be performed for accidents, incidents, repairs, and near misses (*"close calls"*). The Incident Data Report form (13-FORM-1301) includes checkboxes to identify the event as Minor, Serious, or Major. MMP had a marked increase in Incident Investigations conducted in 2017. MMP performed Twenty-four (24) Incident Investigations for facilities covered by the LMP in 2017, versus eight (8) in 2016, eighteen (18) in 2015, ten (10) in 2014, eight (8) in 2013, nine (9) in 2012 and thirteen (13) in 2011.

Historical Incident Investigation Breakdown

	2017	2016	2015	2014	2013	2012	2011
Hazardous Near Misses	8	4	5	2	4	3	7
Incident Investigations	24	8	18	10	8	9	13

The 2017 Incidents included four (4) incidents reportable to PHMSA. All of these incidents were the result of human error. One (1) error by Magellan employee and three (3) by contractor working for Magellan. Eight (8) incidents were Hazardous Near Misses. All of these incidents were the result of "Third-Party" actions that indicate a failure to follow One-Call requirements. Twelve (12) incidents were a result of human error, small volume releases or equipment failures non-reportable to PHMSA. Three (3) incidents were result of equipment failures. Seven (7) incidents were the result of human error by third party. Two (2) incidents were the result of human error by Magellan operator. There were five (5) Unauthorized Encroachments in 2017. These excavators were educated on the requirements for completing a one call, added to the Damage Prevention annual mailings, and received a letter from the ROW department explaining the importance of the one call program. A notification to the Texas Railroad Commission Oversight and Safety Division – Damage Prevention was made for one repeat one call violator.

In 2017 there were eight (8) ROW Near Misses.

Regardless of an actual One Call violation, excavators and/or landowners associated with a ROW Near Miss are added to the Damage Prevention annual mailing distribution list. There were four (4) other incident investigations along the Longhorn pipeline. Three (3) involved contractors working on Magellan projects. The remaining incident was the installation of a new power line crossing the right of way; however, the electric poles were bored outside of the ROW.

There were twelve (12) additional Incident Investigations of incidents that occurred inside the stations on the Longhorn system but did not pertain to Third Party Damage.

Note that IIs for the Longhorn System are reviewed on a monthly basis. Incident Investigations and Hazard/Near Miss reports are analyzed and Lessons Learned and Coffee Talk bulletins (see MC7) are generated if any lessons learned can be applied globally.

MMP distributes a weekly scorecard of all incident data (including reportable releases, human error events and compliance issues). The Vice President (VP) of Operations, Operations Directors, and the VP of Asset Integrity are included in this distribution. The auditors did not investigate the level of detail or trending that is reported to management or the outputs that may come from these reviews.

MMP has an action item (AI) tracking process that tracks IIs, HNM reports, and SIP meeting action items. The AI tracking process excludes action items that are performed immediately. The Safety Specialists participate in Hazard/Near Miss Action Item meetings with the Manager of Operations, Area Supervisors, Asset Integrity personnel, and the Compliance Coordinator. They modify the Action Items as needed and trend Hazard/Near Misses company-wide.

7.7 PE7: Management of Change

MMP's management of change process is described in SIP Element 11. The LMP requires that all documents and files affected by the change be identified and modified in a timely basis.

The LMP requires that all changes on the Longhorn System "be evaluated using an appropriate hazard analysis (e.g., *"What-If", "HAZOP",* and/or *"LOPA"*)." The MMP MOCR form includes a "Yes or No" checkbox to indicate whether a *"Process Hazard Analysis"* (PHA) is required, and MMP's procedures require the asset integrity engineer to determine the appropriate PHA methodology for change requests. MMP performed two (2) PHAs pertaining to the Longhorn facilities in 2016. Recommendations from these PHAs, one for the Crane condensate-Tank 60 project and the other for the *"Magellan - El Paso - Holly"* project, were developed and are in progress.

The SIP requires that a post-installation inspection for safety and technical completeness of the project, called a *"Pre-Startup Safety Review"* (PSSR), be conducted prior to bringing new equipment into operation or prior to bringing modified equipment back online. The MOCR form includes a section in the MOCR Closure Approvals section that confirms whether a PSSR was completed.

An online electronic MOCR program was implemented in 2017. The MOC system also provides clarity and insight into the justification and technical basis for the changes and the ongoing historical account of the evolution of the pipeline organization's functionality.

7.8 PE8: Depth of Cover Program

The depth of cover program is tracked as part of the *"Asset Integrity"* (AI) report and is included in the *"Third Party Damage Program Assessment"* report. The last depth of cover survey was conducted in 2007. A new survey was completed in 2017. Three (3) locations on the Longhorn Pipeline were noted in the 2016 AI report as exposed with repairs on all three conducted in 2016.

A depth of cover survey was completed in 2017 on the crude section of Longhorn from Crane to East Houston. All concern areas were analyzed by the Pipeline Integrity Group that identified six (6) possible areas in ranch road crossings with shallow pipe. Two (2) of the locations were mitigated in 4th Quarter 2017 and four (4) locations were mitigated in 1st Quarter 2018. Forty-six (46) exposed locations were noted on the report. All sites will be actively managed under the Outside Forces Damage Prevention Program in accordance with SIP. There was no third-party damage found. There were no new shallow areas found in cultivation.

7.9 PE9: Fatigue Analysis and Monitoring Program

The fatigue analysis and monitoring program is part of the 2017 ORA. The results are described in the 2017 ORA report.

7.10 PE10: Scenario Based Risk Mitigation Analysis

The *"Scenario Based Risk Mitigation Analysis"* (SBRMA) is conducted annually, after the results of the *"Annual Third-Party Damage Prevention Program Assessment"* (ATPDPPA) and the results of the relative risk model are available. In 2013, the risk model used by MMP was enhanced by developing a new probabilistic risk model. The SBRMA for the 2016 operating year was performed in 2017.

No additional mitigative measures were recommended.

7.11 PE11: Incorrect Operations Mitigation

MMP has found that, in the past, operator error has been a significant contributing factor to incidents and near misses on the Longhorn System. MMP has taken steps to address that issue as well as uses an Incorrect Operations (IO) tracking spreadsheet. The spreadsheet is updated and reviewed monthly. IOs include Abnormal Operations (AOs), IIs, and Hazard/Near Miss reports. The following table summarizes the historical incorrect operations and hazardous near misses.

Historical Incorrect Operations/Near Miss Breakdown

	2017	2016	2015	2014	2013	Totals
Abnormal Operations	12	14	44	75	110	255
Hazardous Near Misses	4	--	--	2	4	8

Contractor error continues to be a contributing factor to incidents and near misses. In the twenty-four (24) Incident Investigations performed in 2017, contractor error was listed for ten (10) of the incident investigations.

7.12 PE12: System Integrity Plan Scorecarding and Performance Metrics Plan

This element commits Longhorn to establish and track general program performance measures, specific program performance measures, and to conduct an annual system integrity plan audit. These measures have been established and are being tracked as required, and the annual system integrity plan audit has been conducted each year as required. Longhorn has also established several other performance measures and tracking systems, including the "*Mitigation Plan Scorecarding & Performance Metrics"* report and incorrect operations scorecard. The scorecard metrics are reviewed monthly.

There were five (5) unauthorized encroachments in 2017. There were four (4) DOT PHMSA-reportable releases in 2017. See Appendix A for a description of key metrics on the system in 2017.

8.0 Recommendations

The LPSIP is being implemented effectively, however there are opportunities for continued process improvement in the opinion of the auditors.

8.1 Recommendation – Contractor Errors

There were three (3) incident investigations in 2017 due to *"errors"* by contractor personnel; one (1) of these incidents was reportable to DOT PHMSA. One (1) HDD line strike, with no release, was not reportable. One (1) HDD release during a tie-in, was not reportable. One (1) Bastrop line strike, was reportable. The increased complexity of the Longhorn pipeline operations and these human errors indicate that contractor oversight may need to be improved.

- Recommend a review of SIP Element 9 – Operations and 9.04 – Job Planning. This review should consider additional training for all personnel involved in the performance of SIP Element 9.04 – Job Planning with emphasis on section 3.1.3 Conduct a pre-job meeting with affected personnel to review the Job Plan (or Procedure) prior to starting the job. In addition to Magellan Employees, affected contract personnel involved with the project should be included. The review should ensure that each affected contractor understands the procedure being used.
- MPP is required by the SIP to complete six (6) audits of contractors working on the LPP every year. Consideration should be given to prioritize any contractor that contributed to any incident that was investigated from the previous year, with a focus on their efforts to mitigate human error and enhanced communications prior to beginning work on the LPP.

9.0 Conclusions

The SIP was effectively implemented in 2017 and served its function of managing risks on the Longhorn System. Personnel at all levels of the organization are aware of and committed to comply with the requirements of the SIP. Comprehensive programs are in place to manage risks on the pipeline system and to implement the commitments in the SIP. These programs are mature and are being improved on a continual basis. Recommendations for additional improvement have been identified for further consideration by Magellan L.P.

10.0 Appendices

10.1 Appendix A: Summary of Key Metrics for 2017

Category	Measure	2017 Results
Incident Data	Releases (DOT-reportable only)	Four (4) Total
	Releases in sensitive and hypersensitive areas (DOT-reportable only)	0
	Releases by cause (DOT Reportable only)	TPD = 0
		Corrosion = 0
		Design = 0
		Incorrect Operations = 4
	Releases by volume (BBL) (DOT Reportable only)	Tier 1 = 0
		Tier 2 = 0
		Tier 3 = 1
	Facility Near Misses	Tier 1 = 0
		Tier 2 = 4
		Tier 3 = 4
Risk Awareness	Identification of new and/or previously unrecognized risks	0 - See 2016 ORA
	Number and type of projects completed that are not required by prescriptive code	0
Public Customer Service	Number of validated complaints on safety or environmental issues	0
	Number of landowner contacts related to pipeline safety and land use	81

Category	Measure	2017 Results
Operator Resources and Innovation	Number of new technologies, alternative methodologies and innovative approaches to control risk	0
Damage Prevention Program	Number of third-party damage incidents due to One Call Process not being practiced (One Call Violations)	8
Unauthorized Encroachments	Number of unauthorized encroachments	9
Facility Inspections	Number of facility inspections	12
Corrosion Management Plan – Smart Pig Results	Dents with any of the following: metal loss, corrosion, exceeds 6% of the outside diameter, or located on the longitudinal seam or girth weld	0
	Remaining strength of the pipe results in a safe operating pressure that is less than the current MOP at the location of the anomaly using a suitable pressure calculating criterion (e.g. B31 G, modified B31 G, RSTRENG or LAPA)	0
	Casing shorts with associated metal loss	0
	Girth weld anomalies	0
	Corrosion with 3” of either side and/or across girth welds	See ORA Report
	Preferential corrosion of or along seam welds	See ORA Report
	Gouges or grooves greater than 50% of nominal wall thickness	0
	Cracks located in the pipe body, girth weld, and longitudinal seam that are determined to be injurious to the integrity of the pipe	See ORA Report

Leading Measure	Definition	Standard	Score
Number of Releases	Number of Releases from company assets or projects that are managed by area employees in quantities exceeding 1 Gallon.	Zero (0)	4
Number of Recordable Releases	Number of DOT Reportable releases experienced on the Longhorn System.	Zero (0)	4
Number of Line Hits	Number of contacts with pipeline by first, second or third parties. Contact with pipeline includes coating contact or damage.	Zero (0)	0
Number of ROW Near Misses	Number of events that in slightly different circumstances could have resulted in damage to the pipeline by first, second or third parties.	Zero (0)	8
Number of Markers Repaired or Replaced		Actual Number	1945
Number of Unauthorized Encroachments	Number of activities that resulted in a structure being placed on the ROW that was not authorized by Longhorn Pipeline.	Zero (0)	9
Number of LMP Emergency Drills Conducted			2

10.2 Appendix B: Key Documents Reviewed for the 2018 SIP Self-Audit

2017 LPSIP Self-Audit Backup Docs - Appendices

#	Document Name
	Magellan System Integrity Plan
	2017 Mitigation Plan Scorecarding & Performance Metrics
	2017 Mitigation Plan - Commitment Implementation Status Report
	Incorrect Operations Spreadsheet
	Hazard/Near Miss (HNM) Reports
	ROW near miss reports
	Asset Integrity Report (year-end for 2017)
	Action Item Spreadsheet for EOY 2017
	API 653 Internal and 653 External inspections in 2017 and issues identified
	Abnormal Operating Condition (AOC) Report
	Incident Data Reports and 2017 Incident Investigation Reports and actions
	Facility Inspection Forms
	Asset Integrity Report – 2017
	Public Awareness Summary Report – 2017
	Management of Change Data, including • Selected MOCR Reports • Open MOCR list • Closed MOCR list • Pre-Startup Safety Reviews (PSSRs)
	Lessons Learned and Coffee Talk Bulletins – 2017
	2017 *Scenario Based Risk Mitigation Analysis* and any issues associated with the report
	All correspondence to/from local, state and federal agencies regarding incidents, drills, inspections or other issues
	Valve Inspection Report data – 2017
	Operational Reliability Assessment Reports and related actions summary

#	Document Name
	Corrosion Control Records – 2017, including: • MPL Longhorn Rectifier Maintenance Activity Report • MPL Longhorn Test Point Exception Report • Atmospheric Maintenance Report • Close Interval Survey Results for Tier III • Coupon Test Results • NACE Rust Test Results And other maintenance requirements
	Leak Detection System Report – December 2017
	CMS Summary Report – December 2017
	2017 Third Party Damage Prevention Program (TPDPP) Annual Assessment
	2017 Longhorn Mitigation Plan – Annual Commitment Implementation Status Report
	Damage Prevention Notebook (website monitoring statistics, non-emergency call log, etc.)
	Dig list (per Tulsa interviews)
	Aerial photogrammetry results (per Tulsa interview)
	PLM reports – explanations. (per Tulsa interviews)

10.3 Appendix C: Personnel Interviewed

(In each case, Jamie Graves was in attendance and supported the interview process.)

10.3.1 Austin Interviews

Name	Title
Danny Stokes	Area Supervisor
Randy Earnest	Damage Prevention Operator
Darcy Madsen	Compliance Coordinator

10.3.2 Tulsa Interviews

Name	Title
Brad Kindle	Supervisor, Ops Control
Rick Wooldridge	Manager, Corrosion Control
Mark Lepich	Corrosion Supervisor
Clyde Clausen	Manager Pipeline Integrity
Dennis Vasicek	Supervisor Asset Integrity (Pipeline)
Dyan Gillean	Supervisor One Call

Name	Title
Brandon Cox	Manager of Engineering & Construction
Ryan Wade	Project Manager E&C
Laura Hardy	Manager of Training & Staffing
Amber Kistler	Health & Safety Specialist
Pat McKenzie	Director of Operations
Joe Butler	Director Technical Services
Jason Smith	Director Asset Integrity
Zach Howard	Director Facility Integrity (effective June 1, 2018

10.3.3 Crane Interviews

Name	Title
Mike Blankendaal	Area Supervisor, Odessa Area (2016)
Danny Lampe	Operations Supervisor, Crude

10.3.4 El Paso Interviews

Name	Title
Charles Bishop	El Paso Area Supervisor
Brad Martin	El Paso Senior Technician
Greg Melton	Damage Prevention Operator

10.3.5 Houston Interviews

Name	Title
Buddy Cronk	Operations Manager
Thaddeus Willison	Area Supervisor
Rusty Holman	Area Supervisor – Operations
Ricky Hall	Lead Operations Technician

10.4 Appendix D: Statements of Qualifications for the Auditors

Stephen E. Gilliam
Senior Advisor III

Executive Summary

Mr. Gilliam brings a wealth of detailed knowledge and experience in the area of pipeline regulatory and operational requirements. He has developed and implemented programs that have delivered outstanding performance improvements including cost reduction, spill reduction, and process system improvements.

Accomplishments/Experience

With over 30 years of experience in the oil and gas industry, Mr. Gilliam has established a significant list of achievements and accomplishments. During his tenure with RCP, his accomplishments include:

- Performed gap analysis of regulatory compliance programs for numerous pipeline operators.
- Performed regulatory compliance pre-audit inspections for numerous pipeline operators.
- Assisted in the development of DOT required Operations and Maintenance Manuals for pipeline operators.
- Coordinated and performed a detailed Corrosion Compliance audit for pipeline operators.
- Conducted detailed Maximum Allowable Operating Pressure analysis for gas transmission pipeline operators.

Other Industry Experience:

- Ensured that procedures, performance documents and physical assets complied with State and Federal Regulatory Codes.
- Developed Internal Audit protocols and managed the internal audit process.
- Developed a Regulatory Compliance database to provide guidance for document control, compliance tracking and establishment of RAA (Responsibility, Authority, and Accountability).
- Assisted the Office of Pipeline Safety and the National Transportation Safety Board (NTSB) as the Company representative during lab investigations of failed pipe at the NTSB lab in Washington, D.C.
- Responsible for documentation provided to the Office of Pipeline Safety, NTSB in response to compliance actions/recommendations.
- Coordinated, planned and assisted in compliance inspections by the Office of Pipeline Safety.
- Tracked compliance issues and developed response documents to resolve issues in an expedited time frame.
- First responder member of the Emergency Response Team as DOT Coordinator during pipeline accidents. Facilitated communication with regulators.
- Reduction of compliance violations issued by the Office of Pipeline Safety.

- Supervised the development of the Integrity Management Plan.
- Managed the development of the Damage Prevention Program.
- Performed due diligence for regulatory compliance documents for a pipeline acquisition.
- Developed a computerized maintenance tracking program.
- Developed procedures for the performance of preventative maintenance.
- Ensured that required preventive maintenance was completed and documented.
- Development of Sequence Control wiring diagrams for pipeline control systems.
- Development of fabrication drawings for Control Consoles, including the graphic control panels and wiring diagrams.
- Coordination with vendor fabrication of systems to ensure quality and scheduled delivery.
- Oversaw the field installation of control systems and control consoles.

Military Experience

U.S. Army 1968 to 1971 – Chemical Staff Specialist – Viet Nam 1968 to 1969

Honors and Awards

Eagle Scout

Colonial Pipeline Company – 25-year service award without injury

Education

Associate Degree, Mechanical Technology – South Georgia Technical School

B.A., Business Management – Georgia State University

Jonathan R. Barber

Executive Consultant I

Executive Summary

Mr. Barber has 35+ years of experience in the Pipeline, Petro-Chemical, Chemical, ceramic, and mining industries; this includes operations, process safety, health and safety, security, oil & gas production, and risk management responsibilities in the last 30+ years of assignments. His diverse background includes key positions in operations, process engineering, project engineering, project management, team investigation leadership/facilitation, and marketing/technical support. He has been responsible for the success of all facets of the process of safety, health & safety, and risk management programs for chemical and petrochemical organizations, including global responsibilities for risk management, security, and compliance strategy integration, such as:

- DOT/PHMSA Regulatory Auditing and Implementations
- OPS/OSHA/USEPA/USCG program development, including PSM/RMP efforts
- Process Hazard Analysis (PHA) studies
- Operating procedure reviews
- Catastrophic incident investigations
- Safety Instrumented Systems Analyses (ISA S84.01)
- Management of Change (MOC) process management systems
- Electronic document management systems for PSM compliance
- USCG, DOT, and Manufacturing Facility Security
- Auditing
- Litigation support
- Mitigation of alleged violations

Accomplishments/Experience

Mr. Barber has developed program standards and management systems for hydrocarbon processing plants handling both toxic and flammable highly hazardous chemicals. Specifically, he has developed, audited, and enhanced:

- Management Systems for the identification and tracking of action items developed from Management of Change, PHA, mechanical integrity, incident investigation, and environmental/multimedia project reviews. Mr. Barber was recognized as a leading corporate resource on PSM, RMP, ISRS (International Safety Rating System), OSHA safety and ACC/SOCHMA SVA Security program requirements for applicability and methodology.
- PHA Management Processes for a variety of chemical manufacturing process units. Reviews included, but were not limited to, Safety Instrumented Systems (SIS), burner management systems, process chemical operating units, storage and tank farm units, flare systems, pipelines

and off-sites. The review methods used included HAZOP, "What If", "What If"/Checklist, and SIS analysis incorporating ISA S84.01 requirements.

- Operating Procedures for PSM/RMP, OSHA, and DOT compliance including:
  - continuous and batch processes for the manufacture of:
    - polymers,
    - oxygenates, and
    - straight and branched-chain hydrocarbons,
  - storage and transfer requirements.
  - Fundamental OSHA safety compliance programs such as:
    - hearing conservation,
    - PPE guidance & directives,
    - emergency response,
    - excavation, and
    - other key operational elements.
- USCG Maritime Security Act guidance, facility / ship security plans for multiple dock handling facilities including on-site implementation, successful USCG registration inspections, and onsite support during inspection processes directly with USCG personnel.
- Incident Investigations and root cause analyses for the mitigation of unacceptable risks as both the facility incident, investigation team leader and corporate major event incident, investigation team leader. Mr. Barber also developed a major chemical corporate standard for incident investigation.
- Training for program overview, security, incident reporting, change communication, management of change systems, safety programs, and ISA/NFPA/CCPS/API Recommended Practices.
- Auditing for chemical, petro-chemical, refining, and marine facilities covering:
  - DOT/OPS HVL, liquid, gas, and LPG requirements;
  - USCG Marine Security;
  - OSHA Health, Safety, and Process Safety programs;
  - USEPA and State facility response and RMP programs; and
  - Security Vulnerability Analysis and Security Risk Analysis.

Mr. Barber's past areas of responsibility in the petro-chemical, refining, pipeline, chemical and mining industries include the following:

- Direct oversight for all Health, Safety, Risk Management, Security, and TSCA/Product stewardship responsibilities for a batch and semi-continuous fine/specialty chemicals location with 65 employees. Accomplishments include the management/execution of PSM, auditing, industrial hygiene, medical program, security, and other program requirements for the safe and environmentally responsible use of water-reactive, highly hazardous, and DEA/cGMP regulated pharmaceutical active ingredients.

- Specific, integrated interpretation and application of API RP 80 "Guidelines for the Definition of Onshore Gas Gathering Lines," one of the largest natural gas fields in the United States, which extends over more than a 1,000 square mile area, and includes more than ~1,000 miles of production, gathering, and transmission pipelines.
- Project work related to process risk and safety management services. Areas of responsibility include performing PSM system assessments, developing and implementing management systems, compliance programs, leading hazard analysis studies, performing compliance audits, and serving as training course instructor on related topics.
- Process/project engineering for an expandable polystyrene facility, and capital projects safety and technical department coordination for both the MTBE and Polyols areas. Capital projects included plant de-bottlenecks increasing throughout by 30% and significant progress towards a zero-discharge waste water treatment project.
- PSM and RMP program management for a major multinational petrochemical organization. As both the chief staff member on PSM and plant RMP coordination, Mr. Barber enhanced existing systems with follow up and infrastructure to facilitate PSM and overall OSHA compliance. He also was a member of the Technical and Communications committees for EHCMA. His activities included conducting a Safety Instrumented System review for a major capital project to monitor and produce a controlled safety interlock shutdown for any potential undesirable risk/consequence scenarios. Responsibilities included PSM program development and implementation, PHA preparation, development and facilitation, management of change coordination, HAZOP action item closure including follow-up verification, incident investigation follow-up, documentation and closure, employee safety program follow up and accountability, and Quantitative Risk Analysis item closure with appropriate documentation. This included the successful, fast track implementation of a major plant-wide retrofit for PSM, and safety and risk mitigation as part of an OSHA settlement following a major fatality incident. These follow up activities received a positive grade from OSHA's PetroCET officers.
- Responsibility for employee behavioral programs (E. I. DuPont STOP® and TAKE-TWO®). Also included were implementations of behavior-based safety programs.
- Production supervision for a specialty ceramic components and ceramic radiant heater production facility, directing all production and safety activities for the facility.
- Unit supervisor, lab supervisor, and engineer accountable for the daily operation of the fine grind unit, assurance of proper execution of lab standards for the quality control of all outgoing product and checks on incoming raw materials. Responsible for the proper intake, treatment, and discharge of 2.3 MM to 2.7 MM gallons of water per day. He aided the plant manager with special projects for the safe storage, handling and process use of hydrofluoric acid, and with successful direct interaction with the U.S. Environmental Protection Agency.

Associations/Affiliations

- Center for Chemical Process Safety (CCPS):
  - Peer Reviewer for the CCPS, as part of the American Institute of Chemical Engineers (AIChE) – 2015
  - AIChE – Committee Member, January 1998 – March 1999 with PrimaTech Inc®
  - AIChE – Lifetime Member – 1982 to present

- AIChE – Environmental Division Member – 1982 to present
- AIChE – Process Safety Division Member – 1996 to present

- National Fire Protection Assoc. Member – 1996 – 1998 and 2002 to present
  - Active Voting Member NFPA 30 Flammable & Combustible Liquids Committee – 2010 to present
  - Education/Training Section Member – 2002 to present
- East Harris County Manufacturers Association Technical and Communications Subcommittees, April 1996 – January 1998 with elf Atochem N.A.
- Greens Bayou Community Advisory Panel Committee Member, September 1996 – January 1998 with elf-Atochem N.A.
- Member of Document Management Committee Chemical Industry Consensus Standards at the University of Texas/Austin, TX, April 1996 – January 1998 with elf-Atochem N.A.
- Member International Corporate Process Safety Management Focus Steering Committee, May 2000 – March 2003

Certifications/Training

- Process Hazard Analysis Leader certification – Det Norske Veritas Training Institute®, 1991
- Process Safety Excellence – National Safety Council Safety Training Institute and E. I. du Pont de Nemours and Company, Philadelphia, PA, 1991
- Technician Level HAZWOPER Certification, 1991 – 1993
- API Safety – Pressure / Vacuum Relief Valve Course, 1994
- Advanced Tap-Root® Incident Investigation Leader Certification, 1996
- Advanced Process Hazard Analysis Leader Certification, PrimaTech Training Institute®, 1998
- Industrial Hygiene Instrumentation and Monitoring, 2001
- Process Security Management Professional, PrimaTech Training Institute®, 2002
- Modern Safety Management Course – ISRS (International Safety Rating System) Certification, Det Norske Veritas Training Institute®, 2002
- Dale Carnegie Effective Speaking & Human Relations Course, 1989
- Ohio Safety Council Effective Executive Safety Management Training, 1990
- Successful Customer Relations Training – Padgett Thompson Training, 1986

Awards & Recognition

- President's Recognition Award for Project Construction, Rome Georgia, December 1989
- Recognition for Achievement from Rome, Georgia POTW for Exemplary Base Line Monitoring Report meeting NPDES Guidelines – April 1990
- Commendation from ARCO Chemical on Fairport Harbor, Ohio Chemical Facilities' Open House, Painesville, Ohio successes, July 1991

- Co-Recipient – ARCO Chemical Manufacturing Excellence Award for Quality & Customer Service – North America for operations & safety procedures development including ISO 9002 certification for Channelview, Texas facility, May 1994
- Habitat for Humanity Partners Council Certificate of Appreciation for contribution to the project successes in Texas, June 1997

Education

B.S., Chemical Engineering – University of Rhode Island, 1982