



**2016 Annual System Integrity Plan
Self-Audit Report
For
Magellan Midstream Partners, L.P.
Longhorn Pipeline**

December 4, 2017

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1.0 Acronyms and Definitions

CMS	Compliance Management System
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
MMP	Magellan Midstream Partners L.P. (the asset operator and owner as of August 27, 2009)
MOCR	Management of Change Requests
Operator	Magellan Midstream Partners, L.P. (MMP)
ORA	Operational Reliability Assessment
PHMSA	Pipeline and Hazardous Materials Safety Administration
PSSR	Pre-Startup Safety Review
SBRMA	Scenario Based Risk Mitigation Analysis
SIP	Magellan Midstream Partners, L.P. System Integrity Plan

2.0 Introduction

The Longhorn Pipeline System (Longhorn) was initiated in the mid-1990s, with the intent of converting an existing West Texas crude oil pipeline into refined products service, and reversing the flow to take refined products from the Houston Gulf Coast area to markets in West Texas and the Southwest US. The 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 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.
Oct 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	Flow direction reversed and product transported changed to crude oil (East Houston to Crane).

Longhorn agreed to implement a Longhorn Mitigation Plan (LMP) as part of the original Environmental Assessment (EA) conducted. The LMP was supplemented twice, immediately after it was originally developed. The LMP includes 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 risk 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 2016 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, LPSIP, Management Commitments, Process Elements, and Operational Reliability Assessment are depicted in [Figure 1: LMP Organization](#). In this report, the 14 Management Commitments will be referred to sequentially as MCxx. Likewise, the 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 is 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 50 years of combined experience in the industry. The auditors' statements of qualifications are given in the appendix to this report. Auditors reviewed the LMP, the LPSIP and the SIP, as well as various documents from Longhorn as listed in the appendix, including 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 Austin, Tulsa, El Paso and Midland/Crane, including personnel in field operations and corporate management. A complete list of personnel interviewed is contained in [Appendix 10.3](#) to this report. If more than one person had held the same position during 2016, the auditors generally interviewed all those personnel at once. All the field activities for the audit occurred in February – June 2017.

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, and in Federal Pipeline Safety Regulations.

4.0 Significant System Developments in 2016

During 2016, Magellan continued to implement system integrity activities as required by Federal Pipeline Safety regulations and the LMP.

There were no significant system developments on the Longhorn Pipeline in 2016.

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 “core areas” of system integrity. Each of the five listed core areas is addressed below. Subsequent sections of this report address each of the fourteen Management Commitments and the twelve 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 system are addressed individually in the Management Commitments and Process Elements sections of this report. The activities and programs used to manage risk on the Longhorn system are mature, and the audit indicated that these programs are effective and appear to be functioning as designed. The [Recommendations](#) section of this report describes process improvements for the programs.

In 2014, two minor 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 2016, MMP continued the program to replace these valve stems based on a prioritization of drain up, location to HCAs, and severity of leakage. Until the valve stems are replaced, the affected valves are inspected weekly to ensure they are not leaking.

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

MMP issued five “Lessons Learned” bulletins and six “Coffee Talk” bulletins in 2016. None of the “Lessons Learned” bulletins issued were as a result of incidents that occurred on the Longhorn System. One of the “Coffee Talk” bulletins addressed issues from a 2015 incident on the Longhorn Pipeline.

For the Longhorn Pipeline, MMP conducted eight (8) incident investigations in 2016. The investigations indicated human error (third party, contractor or MMP employee errors) as a cause or contributing factor in the incident or near miss for five (5) of the incidents or near misses investigated. One (1) of these was the result of human error by MMP employees and three (3) of the incidents or near misses were the result of human errors by contractors working for MMP. The fifth incident with human error as a cause was a release at El Paso due to an error by a truck driver. A Human Errors tracking system was implemented in 2016 to ensure management led support for the reduction of human error through implementation of safe working practices, enhanced procedures, and/or training as determined from lessons learned. 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 2016.

5.3 Performance Measurement Results

The “scorecard” for 2016 is included in [Appendix 10.1](#) to this report. The scorecard indicated there were no DOT-reportable releases in 2016.

There were no One Call violations in 2016 and no ROW near misses.

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

New integrity management programs or significant improvements planned for 2017 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 will address the role of distractions at work and how to block out distractions and focus on tasks.

Additionally, a Depth of Cover Survey will be completed in 2017 and the Colorado River crossing will be replaced.

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 Management Commitments addressed in this section of this report commits Longhorn to implement a System Integrity Plan (SIP) consisting of twelve “process elements” that meet or exceed the federal and state regulatory requirements. The twelve 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 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 compiled and entered into the Longhorn risk model. This information is also forwarded to the ORA contractor, who performs their own evaluation of the data. MMP has also dedicated a full time Risk Engineer for the Longhorn system to work with all Subject Matter Experts (SMEs) related to the Longhorn system to evaluate risks and ensures compliance with the SIP, LMP and Federal Regulations.

MMP continued to perform Incident Investigations during 2016. There were eight incident investigations completed in 2016 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 results of these incident investigations are shared broadly throughout MMP. Likewise, MMP captures information concerning Incorrect Operations (IOs), and summarizes this information quarterly in a spreadsheet to identify trends and potential areas for improvement. Incorrect Operations data is drawn from Abnormal Operations (AOs), Incident Investigations (IIs), and Hazard Near Miss (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. Each Management of Change Request (MOCR) is 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 2016 and no issues were identified.

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 considered and evaluated on a routine basis.

A Mitigation Plan Scorecarding and Performance Metrics document is prepared and reviewed quarterly. Operations Directors, VP of Operations, and VP of Technical Services reviewed incidents on a quarterly basis.

Lastly, the Operational Reliability Assessment (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 (known as the “*probability of exceedance*”, or POE, review). The results of ILI tool runs are also sent to a third party to conduct seam and girth weld assessments.

6.5 MC5: Integration of New Technologies

Longhorn continues to incorporate new technologies for the operation of the system, and to evaluate the use of additional technologies as appropriate.

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 that are made to correct deficiencies in system integrity. This 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 five (5) “Lessons Learned” and five (5) “Coffee Talk” bulletins in 2016, addressing various issues. One of the Coffee Talk bulletins was the result of an issue in 2015 on the Longhorn Pipeline.

Several incidents on the Longhorn Pipeline in 2016 were at least partially due to contractor human errors.

MMP conducts monthly SIP meetings in Austin, El Paso, Houston, and Crane/Odessa, where SIP procedures, Hazard/Near Miss Reports (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 API/AOPL Pipeline Performance Excellence Team (PET), DOT’s Technical Hazardous Liquid Pipeline Safety Standards Committee (THLPSSC), Pipeline Information Exchange (PIX), API’s Environmental Health and Safety Group, the American Society of Safety Engineers, and the NE Oklahoma Damage Prevention Council.

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 (MCEMT), composed of the VP of Technical Services and the VP of Operations, reviews and approves discretionary expenditures

MMP uses a Project Assessment Tool (PAT) 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.

Training for field employees is primarily conducted by local Operations management. Supervisors prepare Individual Training Plans (ITPs) for their employees.

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 and 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 that all documents and files affected by the change be identified 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.

6.12 MC12: Performance Monitoring and Feedback

This management commitment is addressed in PE12.

6.13 MC13: Self Audit

The LPSIP self-audit has been prepared each year as required. This report is the result of the 2016 LPSIP self-audit. The “Recommendations” section of this report contains the auditors’ recommendations.

6.14 MC14: Longhorn’s Continuing Commitment

Longhorn continued to implement the programs required by the LMP in 2016. All personnel interviewed by the auditors indicated financial and personnel resources were adequate to ensure the integrity of the Longhorn pipeline.

7.0 Findings for the 12 LPSIP Process Elements

The 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 location at Galena Park was identified as needing repairs. Work to correct this will be completed prior to September 14, 2017.

There were no API 653 internal inspections and no API 653 in-service inspections conducted in 2016.

Internal corrosion is monitored using corrosion coupons, which are to be inspected three times a calendar year, not to exceed 4½ months. There were eight (8) location where coupons were removed after 12-31-2016 thus not meeting the required three (3) inspections per calendar year; three (3) locations were three (3) days late, one location was eleven (11) days late, and four (4) locations were twelve (12) days late. No locations exceeded the 4½ month requirement and the eleven (11) remaining locations met all inspection requirements. To prevent future exceptions related to coupon inspection, the removal date for the last of the triannual inspections has been changed in MMP's compliance management system from Dec 31 to Dec 15 of each year. Coupon results have not indicated any internal corrosion problems on the pipeline.

7.2 PE2: In Line Inspection and Rehabilitation Program

There were no ILI runs in 2016.

One hundred fifty-five (155) digs were performed for 2015 ILI runs. MMP applies HCA remediation timeframes even to Longhorn pipe segments outside of HCAs. All rehabilitation was conducted in the necessary timeframe.

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.

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

No new exposures were identified in 2016 during ROW assessments. Four (4) existing exposures being monitored were repaired after additional erosion occurred. No third party damage was found. The aerial patrol program is well organized, and surveillance occurs more frequently than required. 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 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.

An aerial photo survey is conducted every five (5) years to look for scouring at thirteen (13) water crossings. The most recent survey was conducted 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 locations previously identified as Areas of Concern (AOCs) appeared now to be Areas of Elevated Concern (AOECs), four previously identified AOECs appeared to worsen, and four new AOCs were identified. The report recommended a more detailed inspection of the AOECs which is currently being done.

There are locations of shallow pipe in agricultural areas, and no-till agreements obtained when possible for those areas. These agreements give a financial incentive to farmers not to use the ROW for farming activities. COMs (Coordinators of Operations and Maintenance) are reminded on an annual basis about the no-till agreements in their area, and they confirm and document that the land use has not changed. The agreements are renewed every five (5) years. There are a total of thirteen (13) no-till agreements for ten (10) tracts of land, and six (6) areas where they have been pursued but not obtained. The areas where no-till agreements were not obtained have been determined not to be at risk and are monitored on an annual basis. There were no new no-till agreements obtained in 2016.

The public awareness program for Longhorn was implemented as required by the LMP. The annual mailing was sent to residents and other establishments within two (2) miles of the pipeline in rural areas and ¼ mile of the pipeline in metropolitan areas on December 1, 2016. Annual mailings were sent to excavators and farmers within ten (10) miles of the pipeline, and emergency responders and public officials within the county plus twenty (20) miles plus one call violators, and one call centers. The total number of mailings was more than 96,000. 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 number of responses increased from 84 in 2010 to 638 in 2011 and have continued to increase each year until 2016, when the number dipped slightly from 789 in 2015 to 742 in 2016. The percentage of replies that state that they know how to identify a pipeline was very high at 90%. Those who claim that they were aware of the need to call One Call before digging increased very slightly from 91% to 93%. The percentage of respondents who indicated that they are confident in their ability to recognize a leak and know how to respond to a leak increased slightly from 83% to 84%. Respondents also believe that Magellan has done a good job of informing people about pipeline safety, with 89% agreeing with this statement and only 6% disagreeing.

Door hangers were distributed in 2016 in Tier II and Tier III locations from Harris County to El Paso County. The total number of door hangers distributed was 5,742.

Longhorn Damage Prevention Operators (DPOs) participated in group emergency responder and excavator meetings in 25 counties. Face-to-face meetings were conducted with 122 emergency responders, covering all 25 counties.

Longhorn continues to operate a school outreach program targeted at 4th and 5th grade students located within a 1-mile radius of the pipeline, but has had difficulty getting schools to participate. In the Austin area, 17 schools were contacted but only two accepted. The two Austin school presentations reached 244 students and 12 teachers. Four schools in the Houston area participated in the “Safe at Home” program reaching 425 students and 19 teachers.

MMP, placed ads in the Sweetwater, Big Spring and Midland newspapers and in the “Texas 811” magazine, and participated with a collaborative group on an 811 media day on 8/11/2016. The 811 media day also included market-specific advertising that targeted the Spanish-speaking community.

Magellan also participated in sponsoring “Call 811” messages in the Preakness race. Additionally, 811 banners were hung at all stations.

The farm store kiosk program was continued in 2016 with 24 stores targeted. New kiosks were provided at 21 locations. In addition, Magellan conducted an effectiveness survey. This survey indicated that the majority of the stores felt the kiosk information was useful.

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 57 encroachment agreements in 2016. There were two unauthorized encroachments in 2016, as compared to 3 in 2009, one in 2010, none in 2011, two in 2012, and none in 2013 and 2014, and two in 2015. Neither of the 2016 encroachments resulted 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 four (4) HNM reports in 2016, versus 5 for 2015, 2 for 2014, 4 in 2013, 3 in 2012 and 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 performed eight (8) Incident Investigations for facilities covered by the LMP in 2016, versus 18 in 2015, 10 in 2014, 8 in 2013, 9 in 2012 and 13 in 2011. Four of these investigations were for Hazard Near Misses. One (1) of the 2016 incidents or near misses was the result of human error by MMP employees and three (3) of the incidents or near misses were the result of human errors by contractors working for MMP. The fifth incident with human error as a cause was a release at El Paso due to an error by a truck driver. The remaining incidents/HNMs were caused by equipment failures and improper installation.

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 conducts a quarterly review of all incident data with the VP of Operations, the Operations Directors, and the VP of Technical Services. 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 (HAZOP, what-if, LOPA etc.)” The MMP MOCR form includes a yes/no checkbox to indicate whether a Process Hazard Analysis is required, and MMP’s procedures require the asset integrity engineer to determine the appropriate PHA methodology for change requests. MMP performed two Process Hazard Analyses (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.

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The SIP requires that Pre-Startup Safety Reviews (PSSR’s) occur 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.

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. The last depth of cover survey was conducted in

2007. A new survey will be 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

To date, in-line inspections have not identified any correlation between shallow pipe and excavation damage, which indicates that this threat is being adequately managed.

7.9 PE9: Fatigue Analysis and Monitoring Program

The fatigue analysis and monitoring program is conducted as part of the ORA. The results of this program are described in the 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 2015 operating year was performed in 2016.

No additional mitigative measures were required or 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, and uses an incorrect operations (IO) tracking spreadsheet which is updated and reviewed monthly. IOs include Abnormal Operations (AOs), IIs, and Hazard/Near Miss (HNM) reports. There were 14 AOs in 2016, as compared to 44 AOs in 2015, 75 AOs in 2014 and 110 AOs in 2013. Of the eight (8) Incident Investigations performed in 2016, four (4) were classified as HNM. There were two (2) HNMs in 2014, compared to four (4) in 2013. Action Items are also reviewed monthly.

Contractor error continues to be a contributing factor to incidents and near misses. In the eight (8) Incident Investigations performed in 2016, it was listed as a cause for three (3) of the incidents.

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 two unauthorized encroachments in 2016. There were no DOT-reportable releases in 2016. See [Appendix 10.1](#) for a description of key metrics on the system in 2016.

8.0 Recommendations

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

8.1 Recommendation – Contractor Errors

Contractor Training and Oversight: There were three (3) incidents due to errors by contractor personnel. This is a decrease from 2015, however, the increased complexity of the Longhorn pipeline operations and these human errors indicate that contractor oversight may need to be improved.

9.0 Conclusions

The SIP was effectively implemented in 2016, 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.

10.0 Appendices

10.1 Summary of Key Metrics for 2016

Category	Measure	2016 Results
Incident Data	Releases in each Tier (DOT-reportable only)	Tier 1 = 0
		Tier 2 = 0
		Tier 3 = 0
	Releases in sensitive & hypersensitive areas (DOT-reportable only)	0
	Releases by cause (DOT Reportable only)	TPD = 0
		Corrosion = 0
		Design = 0
		Incorrect Operations = 0
	Releases by volume (BBL) (DOT Reportable only)	Tier 1 = 0
		Tier 2 = 0
		Tier 3 = 0
	Facility Near Misses	Tier 1 = 0
Tier 2 = 0		
Tier 3 = 0		
Risk Awareness	Identification of new and/or previously unrecognized risks	0
	Number & type of projects completed that are not required by prescriptive code	0
Public Customer Service	Number of validated complaints on safety or environmental issues	3
	Number of landowner contacts related to pipeline safety and land use	31

Category	Measure	2016 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)	0
Unauthorized Encroachments	Number of unauthorized encroachments	2
Facility Inspections	Number of facility inspections	3
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	19
	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)	2
	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)	0
Number of Recordable Releases	Number of DOT Reportable releases experienced on the Longhorn system.	Zero (0)	0
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)	0
Number of Markers Repaired or Replaced		Actual Number	315
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)	2
Number of LMP Emergency Drills Conducted			2

10.2 Key documents reviewed for the 2016 SIP self-audit

2016 LPSIP Self Audit Backup Docs - Appendices

#	Doc. Name
	Magellan System Integrity Plan
	Magellan Organization Chart
	2016 Mitigation Plan Scorecarding & Performance Metrics
	2016 Mitigation Plan - Commitment Implementation Status Report
	Scenario Based Risk Mitigation Analysis (SBRMA) for 2015 (completed in 2016)
	Incorrect Operations Spreadsheet
	Hazard/Near Miss (HNM) Reports
	ROW near miss reports
	Asset Integrity Report (year-end for 2016)
	Action Item Spreadsheet for EOY 2016
	API 653 Inspections
	Abnormal Operating Condition (AOC) Report
	Incident Data Reports and Incident Investigation Reports
	Summary Report of 2015 ORA Developments
	Facility Inspection Forms
	Asset Integrity Report - 2016
	Public Awareness Summary Report - 2016
	Records of LEPC visits
	Management of Change Data, including <ul style="list-style-type: none"> • Selected MOCR Reports • Open MOCR list • Closed MOCR list • Pre-Startup Safety Reviews (PSSRs)
	Any PHAs or LOPAs done in 2016
	Lessons Learned and Coffee Talk Bulletins - 2016
	All correspondence to/from local, state and federal agencies regarding incidents, drills, inspections or other issues
	Encroachment Report - 2016
	Valve Inspection Report data - 2016
	Corrosion Control Records – 2016, including: <ul style="list-style-type: none"> • MPL Longhorn Rectifier Maintenance Activity Report • MPL Longhorn Test Point Exception Report • Atmospheric Maintenance Report

	<ul style="list-style-type: none"> • Close Interval Survey Results for Tier III • Coupon Test Results • NACE Rust Test Results
	Leak Detection System Report – December 2016
	CMS Summary Report – December 2016
	2016 Third Party Damage Prevention Program (TPDPP) Annual Assessment
	Damage Prevention Notebook (website monitoring statistics, non-emergency call log, etc.)
	Summary of any new ROW agreements, no till agreements; long and short form encroachment agreements
	Dig list (per Tulsa interviews)
	Aerial photogrammetry results (per Tulsa interview)
	PLM reports – explanation for > 5 disabled alarms/mo. (per Tulsa interviews)

Note: The auditors have performed this audit for many years, and also relied upon program descriptions and documentation from prior years when they also apply to this year’s audit. Those documents are described in our prior audit reports.

10.3 Personnel Interviewed

10.3.1 Austin Interviews

Name	Title
Danny Stokes	Area Supervisor
Buddy Cronk	Operations Manager
Lee Moore	Damage Prevention Operator
Darcy Madsen	Compliance Coordinator

10.3.2 Tulsa Interviews

Name	Title
Ryan Vratil	Supervisor, Longhorn console
Rick Wooldridge	Manager, Corrosion Control
Mark Lepich	Corrosion Supervisor
Clyde Clausen	Manager Asset Integrity
Dennis Vasicek	Supervisor Asset Integrity (Pipeline)
Dyan Gillean	Supervisor One Call
Kevin Howell	Manager of Engineering & Construction
Taylor Miller	Project Manager
Laura Hardy	Manager of Training & Staffing
Amber Kistler	Health & Safety Specialist

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
Roy Van Tine	Operations Supervisor East (2016)
Greg Melton	Damage Prevention Operator

10.4 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

Deborah J. Brunt, P.E. Executive Consultant

Executive Summary

Deborah Brunt has 25+ years of experience in natural gas utility operations and engineering. Her expertise is focused on gas distribution and transmission engineering, operations and compliance with PHMSA pipeline safety regulations. She is experienced in testifying before the New Mexico Public Regulation Commission (NMPRC), National Labor Relations Board (NLRB), and representing companies to the community and local governments.

Accomplishments/Experience

In Ms. Brunt's career in the natural gas industry, she has held the positions of: Director of Operations, Engineering, Gas Engineering & DOT compliance; member of a gas asset sale transition team; and manager for various operations functions. Some of her accomplishments in these roles, and as a Distribution Engineer, include:

- Directed/coordinated measurement, compression operations, environmental, right-of-way and GIS functions for gas transmission and distribution systems throughout New Mexico.
- Directed/coordinated engineering functions for gas transmission and distribution systems throughout New Mexico.
- Directed/coordinated the operation, maintenance, and construction of electric and gas distribution systems for Santa Fe, Las Vegas, Espanola and Taos, NM.
- Project management for new SCADA system installation.
- Worked on preparation of Descriptive Memorandum to describe assets to potential buyers of natural gas assets of Company. Assisted in presentations to potential buyers, prepared written responses to questions about the gas assets and provided tours of facilities. Once buyer was selected, work shifted to separating gas functions from electric functions, identifying all needs for stand-up gas-only company, and planning for physical moves.

Education

- Bachelor of Science – Mechanical Engineering, Oregon State University, Corvallis, OR, 1986
- B.S. Mechanical Engineering with Honors
- Tau Beta Pi Engineering Honor Society
- Pi Tau Sigma Mechanical Engineering Honor Society

Professional Awards and Accomplishments

- Registered Professional Engineer, New Mexico (#11369), 1991
- YWCA “Woman on the Move” Award, 1992
- Society of Women Engineers “Distinguished New Engineer” Award, 1996
- New Mexico Society of Professional Engineers “Engineer of the Year” Award, 2003