

2008 Annual  
System Integrity Plan  
Self-Audit Report  
For  
Longhorn Partners Pipeline, L.P.  
May 18, 2009





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## Definitions

ATPDPPA: Annual Third Party Damage Prevention Program Assessment

CMS: Compliance Management System

HMI: Human Machine Interface

Longhorn: the entire pipeline system and all parties including LPP and MPL

LPP: Longhorn Partners Pipeline (the asset owner and its direct employees / contractors, excluding MPL)

LPSIP: Longhorn Pipeline System Integrity Plan

MPL: Magellan Pipeline Company, L.P. (the asset operator)

MPLSIP: Magellan Pipeline Company, L.P. System Integrity Plan

Operator: Magellan Pipeline Company, L.P. (MPL)

PLC: Project Lifecycle

PMI: PMI Services North America, Inc

SBRMA: Scenario Based Risk Mitigation Analysis

SIP: System Integrity Plan



## 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 System, below.

**Table 1: History of the Longhorn System**

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	<ul style="list-style-type: none"><li>• Cleaning and refurbishment of the existing pipeline;</li><li>• Construction of new pump stations (Galena Park, Satsuma, Cedar Valley, Kimble County, Crane, and El Paso)</li><li>• Construction of El Paso Terminal</li><li>• 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.</li></ul>
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.
2006	High Resolution Magnetic Flux Leakage (HRMFL) in-line inspections completed for Galena Park to Crane.
August 2006	Flying J acquires Longhorn Partners Pipeline, L.P.
2008	High Resolution Magnetic Flux Leakage (HRMFL) in-line inspections completed for Crane to El Paso.
2008	Transverse Field MFL Inspection (TFI) in-line inspections completed on Galena Park to Crane.
December 22, 2008	Parent company Flying J Inc., Longhorn Partners Pipeline, L.P. and affiliated companies file for voluntary protection under Chapter 11 of the U.S. Bankruptcy Code, allowing for continued pipeline operation during financial reorganization.



As described above, Longhorn agreed to implement a Longhorn Mitigation Plan (LMP) as part of the Environmental Assessment (EA) conducted pursuant to the NEPA lawsuit settlement. The LMP was supplemented twice, immediately after it was originally developed. The LMP includes 40 (actually 41, if items 12 and 12A are counted separately) “Mitigation Commitments” that addressed 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.

This report is the result of the annual LPSIP self-audit for 2008, and addresses the first two items listed above. LPP contracted with RCP Inc., a regulatory and engineering consulting firm, to perform the 2008 self-audit. There is a separate reporting process for the Mitigation Commitments, and they are not addressed in this report. The ORA has its own reporting process which is conducted separately from this report.

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.

The Longhorn Pipeline system is owned by Longhorn Pipeline, who has contracted with Magellan Pipeline Company, L.P. to operate the system (MPL, or “the operator”). Capital projects are frequently managed by employees and contractors directly employed by LPP, independent of the operator. In this report, “MPL” will refer to the asset operator, “LPP” will refer to the asset owner and its employees / contractors (excluding MPL), and “Longhorn” will refer to the entire system and all parties.

# LONGHORN MITIGATION PLAN [LMP]

[INCLUDING SUPPLEMENTS 1 AND 2]

## Mitigation Commitments

40 very specific “to-do” activities to mitigate specific risks on the pipeline system

## System Integrity Plan [LPSIP]

### Management Commitments

14 Management-Level Commitments:

- Includes a commitment to implement the 12 System Integrity Process Elements (below)
- Includes a commitment to perform an annual self-audit of the LPSIP

### System Integrity Process Elements

12 programs designed to manage system integrity

### Operational Reliability Assessment (ORA)

A detailed, independent technical assessment of key risk management activities for the system

Figure 1: LMP Organization



## Self-Audit Methodology

The self-audit team was composed of 2 representatives from RCP Inc., both experienced auditors with over 50 years of combined experience in the industry. The auditor's statements of qualifications are given in the appendix to this report. They reviewed the LMP and the LPSIP, 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 documents. They also interviewed 25 personnel from LPP and MPL in Houston, Tulsa, and El Paso, including personnel in field operations up through corporate executives, and inspected the facilities at the El Paso terminal. All the field activities for the audit were performed in March, 2009. The auditors developed the opinions and findings in this report based on the interviews and documentation, using their best professional judgment and experience. Interim audit findings were reviewed with LPP and MPL to ensure that they were factually correct and considered all appropriate information – but the findings and conclusions in this report are the independent work of the audit team.

## Significant System Developments in 2008

2008 was a year of significant activity throughout the Longhorn Pipeline system. The year began with the recent (late 2007) discovery of corrosion in relatively new pipe (installed in 1998) between the Crane and Cottonwood valve stations, and later, to a lesser degree between Cottonwood and El Paso. This caused LPP to replace approximately 42 miles of pipe, mostly adjacent to and upstream of the Pecos River isolation valves. Pending replacement, the operating pressure from Crane to Cottonwood was reduced to account for the predicted internal corrosion growth rate as calculated by Kiefner & Associates. A temporary pump was installed at Cottonwood in order to reduce backpressure on the upstream pipeline segments while maintaining system volumes. The pipe replacement was completed and full operating pressure was restored by October, 2008, and the temporary pump was removed from service.

System volumes continued to increase over historical volumes throughout 2008. To accommodate these increases in volume, Drag Reducing Agent (DRA) skids were commissioned at the Satsuma, Cedar Valley, Kimble, and Crane pump stations. This allowed greater volume to flow through the system with no increase in pressure. The Longhorn system achieved record high daily throughput on December 2.

Because volumes were steadily increasing and were expected to continue to increase in the future, several capital expansion projects were underway during 2008. This included the construction of four product storage tanks at El Paso terminal (not yet commissioned), manifold modifications at the El Paso terminal (in progress), and the beginning of



engineering and procurement for four new pump stations at Warda, Eckert, Barnhart, and Cottonwood, to provide a capacity increase to 125 MBPD. LPP also began conceptual engineering to increase the pumping rate to the Kinder Morgan connection at El Paso to 6,500 BPH (156 MBPD). LPP also reached a preliminary agreement with PMI Services North America, Inc (PMI) for a pipeline connection to the Longhorn El Paso Terminal.

During 2008, Longhorn continued to implement system integrity activities as required by Federal Pipeline Safety regulations and the LMP. This included in-line inspections (ILI) of the pipeline system.

There were three personnel changes of note in 2008. The supervisor of the El Paso terminal resigned to take a position at a different firm, and a new supervisor was hired at the end of 2008. The person filling the operations supervisor position at El Paso was re-assigned into an operator role, leaving that position vacant. A new Regulatory Affairs manager was hired in LPP late in 2008.

Lastly, on December 22, 2008, LPP's parent company, Flying J Inc., faced financial difficulties which caused both Flying J and Longhorn Partners Pipeline, L.P. to file for voluntary protection under Chapter 11 of the U.S. Bankruptcy Code. The filing allowed for continued operation during the financial reorganization, and the Longhorn system has continued to operate since the filing. As of the time of this report, the Longhorn system was being offered for sale, and it was likely that another owner (and potentially a different operator) would take over the system by the end of 2009.

## Summary of Findings from the Self Audit

As mentioned above, the LMP requires that Longhorn conduct a self-audit of the LPSIP each year. The LMP specifically requires that the self-audit address 5 "core areas" of system integrity. Each of the 5 listed core areas is addressed below. Subsequent sections of this report address each of the 14 Management Commitments and the 12 Process Elements in the SIP.

### **1. A synopsis of the most important integrity issues being addressed on the Longhorn Pipeline System and the status of activities and programs used to manage these risks.**

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 revealed that these programs are functioning and are effective. For example, the ILI program (PE2) had significant activity in 2008, with both TFI and MFL tool runs and follow up activities. Areas for improvements in the programs are described in the Recommendations section of this report.

The most important integrity issues that were addressed in 2008 included five near-miss encroachments that could have resulted in damage to the pipeline system (see PE4 and 5), tank

bottom damage that was discovered in relatively new tanks (see PE1), and management of the system operating pressures and limitations during replacement of 42 miles of damaged pipe (see MC4).

In addition, there were other integrity-related events and situations that, while not as significant as those above, were of note in 2008:

- Several spill events (all minor), some related to new tank pump installation and vibration at El Paso Terminal (see Summary Finding #4),
- Several instances of human error, mostly due to the failure to follow procedures (see PE11),
- Continued study and mitigation of induced alternating currents (AC Mitigation) inside a powerline corridor (see PE1),
- Investigation of and modifications to El Paso tank pumps and piping to resolve vibration issues and associated failures (see MC4)
- Maintenance activities and baseline vibration monitoring due to vibration on two mainline pumps (see MC4).

Finally, there are some potential integrity-related activities that will require continued management in 2009, as discussed in the Recommendation section.

## **2. Important insights, results, and lessons learned from the previous year.**

Several insights were gained in 2008 related to the integrity of the Longhorn system. Debris can still be found in the line after more than 600 cleaning pigs have been run. This emphasizes the importance of the cleaning program to the continued effectiveness of in-line inspections. Human error, specifically not following procedures, was revealed as one of the more prevalent contributors to incidents. This is being investigated through the incorrect operations (IO) process, which is described more fully in MC9 and PE11, and addressed as part of Workforce Development (see MC9). Pump case erosion detected at the Kimble County station revealed the need to establish minimum acceptable flowrates for each pump station, to avoid excessive recycling within the pump units (see PE6). It also reinforced the benefits of using periodic vibration monitoring to monitor the health of rotating equipment. Inspection of a relatively new tank bottom at the Crane station revealed external corrosion due to poor backfill during construction. Subsequent investigations revealed similar conditions in other tanks at Crane. None of the tank bottoms had corroded to the point of leaking. An unrelated incident occurred in one of the repaired tank bottoms due to a minor weld defect resulting in a small leak (see p).

There was a significant amount of capital expenditure (CAPEX) activity on the Longhorn system in 2008, most of which was managed by LPP. This included the 42 miles of pipe replacement, Drag Reducing Agent (DRA) skid installation, expansions to tanks, manifolds, and truck rack capacity at El Paso, new pump station design, and design work for a connection with PMI at El Paso. This high level of “extra” work activity related to the Longhorn system resulted in some work coordination issues between LPP and MPL, including Management of Change and Process Hazard Analysis processes and sign-offs of Pre-Startup Safety Reviews (see PE7). MPL and LPP agreed that they needed to treat construction (even when managed by LPP) like all other



third party projects, including issuing Authorization To Work (ATW) permits. Land issues (i.e. coordination with landowners) during some of these CAPEX projects were complicated since LPP used separate land representatives than MPL. The coordination issues had been largely resolved toward the end of 2008, and are largely irrelevant to-date in 2009 due to the pause in CAPEX project activity.

The damage prevention and public awareness programs (see PE4), while already exemplary, continue to develop new insights for improved effectiveness. A survey of emergency responders revealed that they would prefer to receive communication electronically, that they would prefer to have simplified “cheat sheets” for their vehicles, and that they would like to have more detailed system maps. The supplemental public awareness program mailout that was conducted in areas affected by hurricane Ike was effective, and there was no excavation damage to the system in spite of enormous construction activity in that area after the hurricane. However, it was recognized that a small percentage of encroachers will not follow procedures, even when aware of them, and Longhorn must continue to take proactive measures to deter those parties from damaging the pipeline.

### **3. Insights from new integrity management processes or technologies, or innovative applications of existing technologies.**

Longhorn continues to explore new processes and technologies related to integrity management. The TFI in-line inspection tool was completed on the Longhorn system for the first time in 2008. It found that cracking of the long seam of the pipe was not an integrity issue. However, the tool is a different technology and detects different types of wall loss than the prior HRMFL inspections, and gave indications of additional corrosion that the HRMFL did not identify. Subsequent field inspection revealed that the TFI tool indicated more severe corrosion than actually existed at many of these locations (also known as “over-calls”). The ILI program is described in PE2.

As recommended in a previous audit report, MPL developed a more formal program in 2008 to track and report on incorrect operations (IO), in order to identify trends of incidents and near misses, and identify root causes for prevention of recurrences (see PE11). MPL has also taken special efforts to get employees more engaged in the risk management processes, by implementing a “gold star” program for employees submitting Hazard / Near Miss cards, leading training, and performing similar types of activities.

MPL began using an automated system in 2007 to remotely track cathodic protection information (Bullhorn), which was fully implemented for 2008 (see PE1). MPL also installed an auto-dialer on the sump high level alarm at the remote pig trap location at Fort McKavett, in order to ensure that any sump high level alarms were quickly reported.



#### 4. Performance measurement results.

The “scorecard” for 2008 is given in an appendix to this report. There were three DOT-reportable spills inside facilities in 2008, all in Tier I (the least sensitive) areas. Five other non-DOT-reportable releases occurred inside facilities in 2008 (all minor). There were no releases in sensitive or hyper-sensitive areas in 2008, and no releases along the pipeline outside of facilities. Although the number of incidents was up from 2007, when there was only 1 incident (in a Tier I area), the volume released was down from 5.7 barrels in 2007 to 1.31 barrels in 2008. There were four “near misses” in Tier I areas, and one in a Tier II area, in 2008.

Longhorn continued to identify new or previously unidentified risks, to perform projects that are not required by prescriptive regulatory requirements, and to identify new, alternative, and innovative approaches to risk management in 2008 as described elsewhere in this report, such as the Bullhorn system implementation and induced AC corrosion study described in PE1, and the no-till agreements, kiosk program redesign, and special outreach after hurricane Ike described in PE4.

The applicable government agencies also exercise oversight over the Longhorn system. The Texas Railroad Commission performed an audit on June 23, 2008, of the portion of the Longhorn system that is regulated by the State of Texas. That audit was favorable, and determined that “No action is required”. The Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a final order on May 23, 2008, related to findings from inspections conducted in 2005. This included a “Warning Item” that mainline valves should be adequately protected from vandalism, and which noted that fencing was being installed around these valves. PHMSA also issued a Warning Letter on April 10, 2008, related to an inspection performed in 2007, for exceeding the time allotted for reviewing employee performance in meeting the objectives of the emergency response training program. No penalty was proposed, indicating that this was not considered to be a serious violation of their regulations. The SIP procedure has since been revised to address this issue.

#### 5. New integrity management programs or activities that will be conducted, or significant improvements to existing programs and activities.

In 2009, Longhorn will conduct an Ultrasonic (UT) in-line inspection tool for the first time, to check for laminations and other defects in the pipe wall as required by Mitigation Commitment #12. They will also complete the mitigation actions from the HRMFL tool inspection conducted in 2008. A study of an area of alternating current (AC) induced corrosion and interference with the cathodic protection system was completed in 2008, and additional mitigation actions may be required in 2009. MPL is in the process of establishing a system-wide vibration standard for all mainline pumps, and will compare vibration levels on a regular basis versus the baseline levels established in 2008. MPL also plans to perform a “systems equipment review” (a checklist hazop style review) in Crane, Satsuma, and Galena Park stations (El Paso terminal was done in 2008), looking at safety devices, manifolds, TSVs, setpoints, CP, overfill devices, deadlegs,



vibration, relief tanks, etc. to identify potential integrity issues. MPL also intends to perform a deadleg review in El Paso in 2009, looking for piping that does not regularly have flow and might therefore be more susceptible to internal corrosion. MPL is also performing safety culture assessments in 2009, addressing procedure adherence as well as other subjects, in Longhorn as well as the rest of the Magellan pipeline systems, as described in MC9: Workforce Development.

MPL is continuing to improve the leak detection system and performance (the leak detection system is mitigation commitment #13, and isn't expressly part of the LPSIP). Additional temperature and pressure monitoring locations were installed in 2008, which improve accuracy of the system. MPL is continuing to train control center operators to use the information gathered by the leak detection system for diagnostic purposes.

Longhorn initiated the development of a more robust facility preventive maintenance program and independent engineering standards for use during CAPEX projects. These improvement activities have been identified, but are on hold pending resolution of the Chapter 11 filing and potential system sale.

## Findings for the LMP Management Commitments

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

### MC1: Longhorn Pipeline System Integrity "Process Elements"

The first of the 14 Management Commitments addressed in this section of this report commits Longhorn to implement a System Integrity Plan (SIP) consisting of 12 "process elements" that are "over and above" the federal and state regulatory requirements. The 12 SIP elements are addressed in the next section of this report.

### 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. Longhorn's operator, MPL, has dedicated a full time person to this task, who receives information from 54 different data sources that is compiled and entered into the Longhorn risk model on a monthly basis. This information is also forwarded to the ORA contractor, who performs their own evaluation of the data. MPL has also dedicated a full time Risk Engineer to the Longhorn system, who works with all SMEs related to the Longhorn system to evaluate risks and ensures compliance with SIP, DOT and the LMP.

The operator also performs a significant number of Incident Investigations (IIs) each year (there were 27 conducted in 2008). These 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 IIs are shared broadly throughout Longhorn and MPL. Likewise, Longhorn captures information concerning Incorrect Operations (IOs), and analyzes this information on a quarterly



basis to identify trends and potential areas for improvement. IOs include Abnormal Operating Conditions (AOCs), IIs, and Hazard / Near Miss (HNM) cards (described in item 11 of the SIP process elements).

The LMP also commits Longhorn to conduct an annual Third Party Damage Prevention Program Assessment. The assessment for 2008 was conducted and reviewed as required.

### **MC3: Integration of System-Wide Activities**

Using information from the data gathering processes mentioned above and the data tracking and scorecard processes mentioned in PE 12, 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. LPP and MPL conduct weekly staff meetings where operational and incident data are reviewed.

An Operations Scorecard is compiled and reviewed monthly. This information is compiled and reviewed at the LPP and MPL headquarters levels on a quarterly basis.

Incidents are reviewed on a quarterly basis by MPL's Operations Directors, VP of Operations, and VP of Technical Services.

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.

### **MC4: Incorporation of Engineering Analysis**

Longhorn consistently obtains the assistance of engineering experts (both inside the MPL organization, and from third parties) to help identify, manage, and resolve potential integrity issues on the pipeline system. MPL's engineering experts provided on-going analyses to ensure that system operating pressures and limitations were not exceeded during replacement of the 42 miles of damaged pipe. MPL also provides technical support related to tank construction / repair. MPL had a contractor perform baseline vibration monitoring for all mainline pumps. Four separate, independent technical studies were performed related to the 42 mile replacement project root cause analysis. Independent and highly technical vibration analyses were conducted for the pump vibration issues at the El Paso Terminal. An independent study of potential AC-induced corrosion issues was completed in 2008. The results of each HRMFL 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 each ILI tool are also sent to a third party to conduct seam or girth weld assessments, depending on the type of assessment tool used.

### **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. The compliance management system



(CMS) and the remote monitoring system for cathodic protection readings (Bullhorn) were both fully utilized for the first time in 2008. A TFI in-line inspection was completed for the first time on parts of the Longhorn system in 2008. An Ultrasonic ILI tool (UT) will be run in 2009 for the first time on the Longhorn system.

Other new technologies that are being evaluated for future use include Guided Wave Ultrasonic inspections for station piping.

### **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.

### **MC7: Industry-Wide Experience**

Longhorn continues to benefit from the industry-wide sharing received by both MPL's and LPP's participation in industry and governmental committees. LPP's Vice President sits on the API/AOPL Pipeline Performance Excellence Team (PET), which investigates liquid pipeline issues and develops programs and recommendations for improvements throughout the industry. He also sits on the executive committee of the Association of Oil Pipe Lines (AOPL). LPP's Regulatory Affairs Manager is a member of the API/AOPL Data Mining Team (DMT), which analyses liquid pipeline incident data throughout the US, and develops advisories and recommendations based on that information. Longhorn's Public Affairs Manager (an MPL employee assigned full time to Longhorn) participates on the Common Ground Alliance (CGA) Education Committee as well as on the API RP 1162 Review Committee, both of which work on damage prevention issues. MPL's VP of Technical Services is the chair of the API Pipeline Operations Technical Committee (OTC), the primary US industry forum for technical issues for liquid pipelines. Both MPL and LPP have managers that are members of the US Federal Government's Technical Hazardous Liquid Pipeline Safety Standards Committee (THLPSSC), which is the primary governmental forum for all types of liquid pipeline issues.

Representatives of LPP and MPL also participate in various internal and external meetings and events. Several representatives participate in a Pipeline Information Exchange (PIX) workshop in 2008, and MPL made a presentation at that event. All MPL land representatives have meetings and share information concerning land and landowner issues throughout the Magellan system.

### **MC8: Resource Allocation**

Funds and personnel are made available as required to implement the requirements of the SIP. All personnel who were interviewed during the auditing process expressed their belief that the LPP bankruptcy filing had not had an adverse impact on system integrity or the implementation of necessary risk mitigation activities. The Longhorn system has a high level of dedicated resources, including a full time integrity engineer, full time Public Affairs coordinator, full time risk model and data / ORA coordinator, and two full time site engineers, and all of these



positions have been maintained since the bankruptcy. There are some open operations positions in El Paso that have not been filled and will likely not be filled pending sale of the company (since it is unknown what personnel the potential system purchaser / operator may desire to put in place). System volumes have decreased and major project work is on hold, and there is sufficient staffing for routine operations, so this is not seen as a current issue. However, the current supervisor at the El Paso terminal was hired for his supervision and leadership skills, not his terminal or pipeline operations expertise. If operations of the El Paso terminal were to become more challenging in the future, the open Operations Supervisor position would be filled by an experienced terminal operations person.

### **MC9: Workforce Development**

Longhorn has a mixture of very experienced personnel with decades of pipeline experience along with newer personnel who have relatively little pipeline experience (even though they may have a significant amount of non-pipeline experience). For example, there is a new supervisor at El Paso with no pipeline industry experience. In addition, turnover in the workforce is presenting additional challenges – such as two employees in the El Paso terminal who were dismissed for work performance issues. Thus, workforce development is an on-going priority for Longhorn.

The new supervisor at El Paso is performing OJT-style walk-through and redlining of P&IDs and procedures with operators. This is a good initiative, and will be beneficial to both the operators and to the supervisor. This process is currently conducted on an ad-hoc basis, and the supervisor has no experience himself with pipeline or terminal operations which results in his reliance upon the experienced local engineer and experienced technicians and operations personnel to ensure any deficiencies in procedures are identified.

MPL initiated a team in late 2008 to evaluate training programs and needs. One of the outputs of that team was a new operations employee “on boarding” process which should help with the assimilation of the operations employees. Starting in June 2009, new field employees will be hired in groups and will attend a week-long “boot camp” in Tulsa, conduct another week of orientation with their supervisor addressing specific topics in the field, attend another week of training in Tulsa, and then complete a training curriculum in the field.

MPL is also performing safety culture assessments in 2009, addressing procedure adherence as well as other subjects, in Longhorn as well as the rest of the Magellan pipeline systems. The deliverables from this process will include identification of areas or activities where employees feel safety processes are working as intended; identification of areas or activities where opportunities exist to improve safety processes; and identification of potential gaps where immediate action is needed to enhance safety processes.

MPL has also conducted additional training for control room personnel in Tulsa on the use and interpretation of information provided by the leak detection system.



### **MC10: Communication to Longhorn and Operations Management**

Robust communication mechanisms are in place between LPP and MPL. There are weekly staff meetings, monthly budget reviews, and quarterly management meetings involving LPP and MPL personnel. The weekly meeting reports, monthly asset integrity reports, IO spreadsheet, operations scorecards, and mitigation scorecards are all transmitted from MPL to LPP. Frequent communication also occurs between MPL and LPP during in-line inspections.

### **MC11: Management of Change**

This management commitment refers to the implementation of a Management of Change Program, which is addressed in PE7.

### **MC12: Performance Monitoring and Feedback**

This management commitment is addressed in PE12.

### **MC13: Self Audit**

The LPSIP self-audit has been prepared each year as required. This report is the result of the 2008 LPSIP self-audit. Recommendations from the 2007 self audit are being tracked to completion, although there are some follow-up items from that audit that are still in progress as listed below:

- The 2007 LPSIP Self Audit recommended that MPL revisit the LMP/LPSIP requirements to assure the required activities and the intent are incorporated in the MPL SIP. A new comparison of the LPSIP and the current version of the MPLSIP has been completed, and MPL is evaluating what additional procedure modifications may be required. Any necessary changes will be made as part of the annual MPLSIP review and update.
- Improvements to the management of change request (MOCR) and process hazard analysis (PHA) processes for LPP-managed projects have been initiated, but are currently on hold pending the potential sale of the pipeline system. These improvements will incorporate PHAs in the conceptual and actual design phases for projects, prior to design and construction.
- Specific goals for items in the LMP scorecard have not yet been established, but are being developed for the 2009 scorecard.
- An additional performance measure (incorrect operations) has been identified for 2009. MPL is considering tracking additional measures such as the number of incident investigations (IIs), overtime, contractor incidents, and overdue CMS tasks, and will select the appropriate ones to include in the 2009 metrics.

### **MC14: Longhorn's Continuing Commitment**

Longhorn continued to implement the programs required by the LMP in 2008. All personnel interviewed by the auditors indicated that financial and personnel resources had not been adversely affected by the bankruptcy filing at the end of 2008, and confirmed that no integrity related items had been affected.



The “continuing commitment” also discusses the potential need to revise the risk management programs over time. The LMP was developed nine years ago. Much has changed in the pipeline industry and in the regulatory environment during that time. There are now federal and state regulations concerning Integrity Management Programs, High Consequence Areas, Public Awareness Programs, Operator Qualification, etc. that are applicable to the Longhorn system, in addition to the LMP. The programs within the LMP have also evolved during this time, and the operator and the pipeline industry as a whole have developed ever-more sophisticated programs and processes in these areas.

## Findings for the 12 LPSIP Process Elements

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

### PE1: Longhorn Corrosion Management Plan

The corrosion control programs for Longhorn are well designed and implemented, and the auditors noted no problems. Close interval surveys were performed as needed in the higher-tier areas, including 100% of the tier III locations. Cathodic protection related repairs were made at 93 locations in 2008, including five cathodic protection groundbeds and one casing repair. An automated system for monitoring rectifier performance (Bullhorn) was initiated in 2007, and was fully operational in 2008. This system enables real-time monitoring of the cathodic protection system rectifiers.

A corrosion issue potentially caused by AC-induced current was identified for a nine mile segment of pipe in a power line corridor prior to 2008, and initial mitigation actions were taken at that time. During 2008, a theoretical study of AC-induced corrosion was performed (which did not account for the mitigation activities already performed). The results of that study were received in December, 2008. At the time of the LPSIP self-audit, Longhorn was evaluating the results of the study to determine if any additional mitigation actions would be appropriate.

During an API 653 tank inspection, external corrosion damage was detected in the tank bottom of a relatively new tank at Crane station. An investigation determined that, while cathodic protection was in place, the corrosion was caused by improper backfill that was installed during tank construction which prevented the cathodic protection from effectively protecting some locations. Similar tanks were subsequently inspected to determine if they were also experiencing corrosion. The bottoms of 3 tanks were repaired as a result of these inspections, using new, higher-quality backfill. None of the tank bottoms had corroded to the point of leaking.

### PE2: In Line Inspection and Rehabilitation Program

Longhorn conducted a HRMFL inspection from Crane to El Paso (and re-ran that section because data from the first run was incomplete), completed a TFI inspection from Galena Park to Crane, and performed subsequent rehabilitation. MPL 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. MPL doesn't rely on the use of previous ILI results to determine if the current ILI run was statistically valid (although industry standards would allow



that practice), and performs physical inspections instead. The ORA contractor also 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. This will change over time, as the mitigation commitment ILIs are accomplished.

### **PE3: Key Risk Areas Identification and Assessment**

The risk model is being maintained, and is updated with new data on a monthly basis. The tier-based segmentation of the pipeline has not been revised since the model was created. The factors that affect the tier segmentation change rather slowly, so annual updates should not be required, but an update of the segmentation based on current population densities should be considered. It should be noted that 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 periodically updated as required by this regulation.

### **PE4: Damage Prevention Program**

The damage prevention program for Longhorn is very robust and well-executed. Longhorn has committed to install and maintain a high number of pipeline markers, and 545 markers were replaced or added in 2008. The aerial patrol program is well organized and executed, and surveillance occurs more frequently than required. Flights are conducted 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 operations person flies with the pilot annually to make sure the flight is taking the correct path.

The Operations scorecard is used to track ROW “near misses”. The patrol program identified 5 near-miss excavations on the ROW in 2008:

- A person digging holes for trees on the Odessa 8” ROW
- A person digging postholes for a fence near MP 157
- A retention pond encroaching on the ROW at MP 165.2; with construction traffic over the pipeline
- A person digging postholes for a fence at MP 223.7
- A road grader cutting a ditch at a road crossing near MP 240.

These near misses reinforce the need for an active ROW patrol program, in addition to the public awareness programs.

There are locations of shallow pipe in agricultural areas, and no-till agreements are obtained when possible for those areas, which give a financial incentive to farmers to not use the ROW for farming activities. There were ten new no-till agreements executed in 2008. MPL follows up on these agreements annually to ensure they are not overlooked by the farmer.



The public awareness programs for Longhorn are exemplary, and are tracked in quarterly public awareness summary reports. These include special outreach programs for schools, radio and print advertising, and a kiosk program that distributes pipeline safety materials at stores frequented by excavators. There were 20 stores participating in 2007, and 42 in 2008. LPP and MPL participate in numerous damage prevention initiatives, including special emphasis for “dig safely” in April of each year.

A phone survey was conducted to identify areas for improvement in working with emergency responders. The survey contacted 417 locations, of which 196 responded to the survey. It identified the following areas for potential improvements in communicating with emergency responders:

- Better maps
- After hours contact information
- Laminated safety information cards to carry in vehicles (not implemented yet)
- Use of electronic communication

The annual mailout program used better geo-coding to target the mailings in 2008, which eliminated addresses outside of the target area. As population growth continues along the pipeline, the public awareness program is being expanded appropriately. A supplemental mailing was performed after hurricane Ike (“rapid response program”) to remind those affected by the hurricane to use the one call system. The public official program was expanded in 2008 to include non-emergency response officials. Additional targeted mailings were sent to people involved in near misses or unauthorized encroachments, those who have declined to sign no till agreements, and people identified as new inhabitants along the ROW.

### **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. MPL 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 in Austin is informed of every encroachment agreement, and reviews them to ensure that they are appropriate. These are retained permanently in the TRACT land files. A total of 67 encroachments were recorded in 2008, three of which were unauthorized (one was related to a retention pond, and two were related to fence installations). Unauthorized encroachments are tracked in the Operations scorecard. The other two ROW “near misses” were not counted as unauthorized encroachments, since they did not result in any structures remaining on the ROW.

To avoid inadvertent encroachments of construction equipment on the ROW, MPL has established a policy of installing temporary fencing along the ROW during adjacent construction projects. This serves as a visual reminder that the ROW is “off limits” to the construction equipment.



## **PE6: Incident Investigation Program**

The LPSIP requires that incident investigations be performed for accidents, incidents, repairs, and near misses (“close calls”). There were 27 IIs documented in 2008 on the Longhorn system. Incident investigations (IIs) are performed routinely for both true “incidents” and other abnormal situations such as near misses. The MPL safety group in Tulsa matches up incident and accident reports to ensure IIs are done for all of these. The auditors found that IIs are performed for most events that might require one. However, there was no II performed related to the pipe movement in the pipe rack to Tank 13 at El Paso. MPL conducts a quarterly review of all incident data with the VP of Operations; the Operations Directors; and the VP of Technical Services. The II process for 2009 will be expanded to include premature equipment failures and maintenance issues.

The LPSIP describes a “three-tiered approach for investigating all incidents”. In practice, the extent of investigation for an II depends on the significance of the incident (as an extreme example, there are 4 different studies / failure analyses being conducted related to the 42 mile replacement root causes, which was a major “incident”), but there isn’t a formalized three-tiered investigation process in place. Most IIs are designed to “capture the event” without a significant amount of investigation. MPL does not follow TAP Root or any other formalized root cause investigation process, and there are no specific training or qualification requirements for individuals leading an II.

To promote awareness of hazards and to ensure “near misses” are identified, MPL uses a hazard / near miss (HNM) card (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 cards (a lot of HNM cards is better than just a few), and in 2008 there were 135 HNM cards for the Longhorn system. MPL has an action item (AI) tracking process that tracks IIs, HNM cards, and SIP meeting action items. The AI tracking process excludes action items that are performed immediately. Recommendations from the IIs may be applied system-wide as appropriate. For example, following a pump vibration related failure, baseline vibration surveys were performed for all pumps in 2008 and station HMIs were set up to automatically trend the past 30-days of vibration readings.

Analysis of incident investigation findings has revealed that a significant source of operational incidents and near misses can be attributed to operator error and failure to follow procedures. This situation is being addressed in part by the safety culture activities that are being conducted in 2009, as described in MC9.

## **PE7: Management of Change**

During weekly operations staff meetings, MPL field operations personnel discuss projects underway or planned that might need Management of Change Requests (MOCRs). All MOCRs are reviewed on a monthly basis, and a status update is provided for each one. MPL’s management of change process is described in MPLSIP Element 11. While the described process may be sound, it is only as good as its implementation. While the process includes the provision that additional technical detail may be attached to the MOCR, many MOCRs approved



in 2008 did not include detailed technical information as an attachment. The auditors were informed that the sign off of the MOCR may just indicate that the person is “aware” of the change. A few changes occurred in the field during project implementation in 2008 that did not follow the MPLSIP Element 11 MOC process. Once MPL and LPP became aware of this issue, they took additional steps to communicate that requirement to potentially affected parties.

The LMP requires that all changes on the Longhorn system “ be evaluated using an appropriate hazard analysis (HAZOP, what-if, etc.)”. The MPL MOCR form includes a yes / no checkbox to indicate whether a Process Hazard Analysis is required, and MPL’s procedures provide that the asset integrity engineer should determine the appropriate PHA methodology for change requests. The MPL Asset Integrity engineer reviews all MOCR forms and reportedly performs some type of hazard analysis for each one, but these reviews are undocumented and their adequacy could not be verified by the auditors. Only about 10% of the MOCR forms for work performed on the Longhorn system in 2008 indicated the need to conduct a PHA. The auditors noted that MPL changed their SIP / PHA procedure in 2008 to specify that PHAs were required for all changes “on a Longhorn Pipeline System”, and the PHA process was updated to provide two options: a what-if/checklist, or a full HAZOP. The future performance of PHA reviews for each MOCR for the Longhorn system should ensure that a separate hazard analysis is performed for each change, but the MPL procedures still do not require detailed documentation of each review if the “what-if/checklist” PHA is conducted.

MPL follows a project lifecycle (PLC) process that includes five phases of project development: Conceptual, Preliminary, Definitive, Implementation and Improvement. The “implementation” phase (phase 4) is very broad, and covers everything from design of the project all the way through construction, testing, commissioning, and start-up of the facilities. Deliverables from phase 4 include the MOCR and the PHA (if required). There is no requirement that the MOCR or PHA occur at any specific stage within phase 4, or that multiple PHAs be conducted at various stages of design or implementation for major projects. As referenced in MC13 this has been recognized as an area for improvement and improvements have been initiated. In mid-year 2008, LPP in cooperation with MPL defined when and to what level the PHAs would be conducted for the new pump station projects, to include a design HAZOP and pre-construction HAZOP.

MPL has implemented a tracking process for all open MOCRs, PHAs, and pre-startup safety reviews (PSSRs). The PSSR process is designed to ensure that all important items related to a project have been completed (or are being completed, as appropriate, such as compilation of technical documentation) prior to startup. In reality, PSSRs for some changes have been approved prior to full project completion. For example, PSSRs for some modifications in 2008 were approved and portions of the change placed in operation even though technical documentation for the changes had not been forwarded to operations. Documentation for in-service changes has since been received by operations.

### **PE8: Depth of Cover Program**

The depth of cover program is tracked as part of the Asset Integrity (AI) report. Regular depth of cover surveys are performed as required, results are evaluated, and remediation is performed



as appropriate. No new exposures were identified in 2008. The 2007 DOC survey identified 11 new exposures of which 5 were mitigated in the first quarter of 2008, the remaining 6 were risk assessed and classified as monitor.

### **PE9: Fatigue Analysis and Monitoring Program**

The fatigue analysis and monitoring program is conducted as part of the ORA, which is functioning as planned. The results of this program are described in the ORA report.

### **PE10: Scenario Based Risk Mitigation Analysis**

The scenario based risk mitigation analysis (SBRMA) is conducted annually as required, after the results of the Annual Third Party Damage Prevention Program Assessment (ATPDPPA) and the results of the relative risk model are available. The MPL risk engineer, operations supervisor, corrosion manager, corrosion supervisor, and LPP Manager of Operations meet as a group to review the risk model output data and the ATPDPPA report, and discuss potential mitigation activities that could be performed to reduce risk on the highest risk segments. The ORA contractor receives the results of the SBRMA review, but does not participate in the SBRMA process.

The SBRMA for the 2007 operating year was performed as required, and identified the need for additional close interval surveys. The SBRMA for the 2008 operating year had not been conducted as of the time of this audit.

### **PE11: Incorrect Operations Mitigation**

MPL has found that operator error has been a significant contributing factor to incidents and near misses on the Longhorn system. Longhorn has taken steps to address that issue, and uses an incorrect operations (IO) tracking system. IOs include Abnormal Operating Conditions (AOCs), IIs, and Hazard / Near Miss (HNM) cards. In 2008, the system engineer in Austin developed an IO tracking and analysis spreadsheet known as the Incorrect Operations Mitigation Summary. Each IO is reviewed with the district leadership team to identify the root cause, and trends in root causes are reviewed on a quarterly basis. The IO report only allows ONE root cause to be selected, which limits its ability to identify trends in related root causes.

Failure to follow procedures has been identified as a recurring issue. MPL had an outside technician walk through each procedure for the Longhorn system with a local site technician for every procedure in 2008 to ensure they were accurate. MPL began managing their local operating procedures in-house in 2008, which has improved their ability to modify local procedures quickly.

MPL has also taken special efforts to get employees more engaged in the risk management processes, by implementing a “gold star” program for employees submitting Hazard / Near Miss cards, leading training, and similar efforts.



See MC9 for additional information about steps that are being taken to improve the “on-boarding” process for new operations employees. MPL has an Individual Training Plan spreadsheet that can be customized as appropriate to ensure basic operations, maintenance, safety, operator qualification, and other topics are addressed with new employees. This process uses on-the-job training, and does not incorporate a formal classroom or craft training program. The auditors did not receive documentation that this process has been followed for the employees hired for the Longhorn system in 2008.

MPL does have an operations control center simulator specifically for LPP, which is used to train and to re-qualify board operators in the Tulsa control center. This helps to ensure that they can rapidly recognize and effectively respond to abnormal operating conditions on the Longhorn pipeline system.

### **PE12: System Integrity Plan Scorecarding and Performance Metrics Plan**

This element commits Longhorn to establish and track general program performance measures, specific programs 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 an asset integrity scorecard and incorrect operations scorecard.

An additional performance measure (incorrect operations) has been identified for implementation in 2009. See summary finding #4 – Performance measurement results, for a description of releases and other key metrics on the system in 2008.

## **Recommendations**

While the LPSIP is being implemented effectively, there are several opportunities for continued improvement in the opinion of the auditors. These have been grouped into the following categories (in no particular order of importance):

### **CAPEX Project Management**

LPP and its contractors should be trained in and follow the MPL Project Lifecycle process (note that this has already improved during the course of 2008). There should be more advanced notice given to ensure shared service personnel from MPL can appropriately review documents and / or participate in LPP / their contractor’s technical reviews. Project managers should ensure that records are updated as required (60 days from startup) and are sent to the operations organization. CAPEX projects with land / ROW issues should be coordinated with the Operator’s land contact.

## Engineering Standards and SIP Documentation and Processes

The existing policy regarding temporary fencing for construction projects adjacent to the Longhorn Pipeline has been shown to be effective, and should be formally incorporated into the SIP. The vibration monitoring procedures for mainline pumping equipment should be officially incorporated into station maintenance procedures, and tracked using CMS, and a vibration standard should be established for all critical rotating equipment (in progress). Both MPL and LPP depend heavily on the expertise of third party engineering contractors during capital projects, without much in the way of additional technical criteria or requirements. They should continue to expand their engineering guidelines and standards to address all types of construction activities.

LPP should complete their planned improvements to the MOCR and PHA processes (for CAPEX projects under their control). LPP and MPL should both be given adequate opportunity to review and comment on MOCs for any significant system changes, and the MOCR process should require a detailed review and critical analysis of the project by the appropriate parties, not just signify their “awareness” of the change. The PLC process should be revised to clarify that PHAs should be conducted early in the design process, and to state that multiple PHAs may be appropriate for significant projects. The MPLSIP also needs to clearly define trigger points and appropriate PHA level for all types of changes in the Longhorn system, and ensure that there is some form of PHA for all MOCR changes.

The “Action Item” tracking process indicates whether the MOCs, PHAs, and PSSRs for any given project are open or closed. However, each MOC, PHA, or PSSR may contain multiple internal action items of their own, and these internal action items are not tracked individually in a centralized process. Some internal action items may take a long time to complete, and may not be fully complete at the time that the MOC, PHA, or PSSR that identified them is “closed” in the AI tracking process. The AI tracking process should be expanded to allow tracking of any internal MOC, PHA, and PSSR action items that may linger after the MOC, PHA, and PSSR itself is “closed”.

The relative risk assessment model should be re-evaluated and updated as described in sections 3.2.2.4 and 3.2.14 of the LMP to incorporate more modern risk assessment protocols and to utilize current sources of information such as the TPD annual assessment report. The SBRMA process should include participation from the ORA contractor. The evaluation methodologies and action criteria should be established prior to running the UT ILI in 2009.

## Incident Investigations

The three-tiered II process described in the LMP should be formally established and incorporated into the MPLSIP. Additional emphasis should be placed on the II process, to ensure that investigations explore all potential root causes and corrective actions. Additional training may need to be provided to certain personnel in this regard. LPP should have more opportunity to review and have input in draft IIs, and should receive a copy of all II reports.



## Workforce Development

A more formalized training and professional development plan should be implemented for operations and engineering staff, including the new engineer in Austin and the new supervisor in El Paso. The OJT-style training being performed for operators at the El Paso terminal should be more structured, to ensure that all procedures are reviewed by all operators and that each operator clearly understands and can effectively implement each procedure.

## Vigilance During System Divestiture / Transition

At the time of this report, the Longhorn system was being offered for sale. Longhorn will need to keep a close eye on SIP implementation activities and commitments during asset divestiture and transfer to new owner, so that LPSIP commitments continue to be fulfilled during the transition. The transition to a new operator, if it occurs, could require development of new operating procedures, SIP language, etc., since the information that has been developed by the current operator may not be given to the new owner / operator. The current supervisor at the El Paso terminal is not experienced in pipeline and terminal operations, and may require additional, knowledgeable, assistance with designing and implementing any system operations changes that may be associated with a change in owner / operator.

A number of encroachments have been identified that will occur in 2009. These must be actively managed, regardless of who owns or operates Longhorn and how it is being operated at the time:

- Austin – Davis Lane
- Houston – Houston hike and bike trail
- Houston – housing and commercial developments around Barker Cypress; Fry, and Greenhouse roads
- Queenstown Blvd - Harris County Public Works 42” water main crossing and road expansion
- Bastrop – state park road crossing

Several facility modifications at the El Paso terminal are incomplete (new tank exterior painting, new tank cathodic protection systems, and manifold modifications and painting). Care should be taken to ensure that integrity issues don't develop pending ultimate completion of these projects, and that no necessary activities are overlooked when the projects are resumed. The tank pump skid vibration issues at the El Paso terminal still need to be resolved and may involve skid anchoring and grout modifications, recycle valve modifications (or elimination), and pipe support modifications. Only 2 of the 15 pump skids have been modified as of the date of this report, and the modified pump skids may require additional modification. There is also evidence of pipe movement in the rack at the El Paso Terminal that may need to be addressed. The mainline cleaning pigging program should be resumed as soon as practicable, to ensure good ILI runs in the future. Project book data for projects that are still in progress (but on-hold as of the date of this report) should be sent to operations upon project completion. Lastly, some in-service projects still have punch list items that need to be addressed.

Longhorn (both LPP and MPL) should work with the ORA contractor to review the recommendations of the AC Mitigation study to determine if any additional mitigation activities are required, and implemented as appropriate. Likewise, Longhorn should work with the ORA



contractor to determine what type of monitoring program should be implemented for the eroded case on the #1 pump unit at Cedar Valley.

## Conclusions

The SIP was effectively implemented in 2008, 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. Several recommendations for additional improvement have been identified for further consideration by Longhorn.



## Appendices

### Summary of key metrics for 2008

Category	Measure	2008 Results
Incident Data	Releases in each Tier (DOT Reportable only)	Tier 1 = 3
		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 = 3
	Releases by volume (BBL) (DOT Reportable only)	Tier 1 = 1.3
		Tier 2 = 0
Tier 3 = 0		
Near Misses	Tier 1 = 4	
	Tier 2 = 1	
	Tier 3 = 0	
Risk Awareness	Identification of new and/or previously unrecognized risks	5
	Number & type of projects completed that are not required by prescriptive code	5
Public Customer Service	Number of validated complaints on safety or environmental issues	6
	Number of landowner contacts related to pipeline safety and land use	173
Operator Resources and Innovation	Number of new technologies, alternative methodologies and innovative approaches to control risk	9



Leading Measure	Definition	Standard	Score
Number of Unit Lockouts	Number of events that cause the system to shutdown or delay startup as indicated by a unit lockout.	Actual Number	74
Unit Lockout Duration	Total duration for unit lockouts from the time of lockout to return to remote control by Tulsa Control Center.	Actual Number	105.5
Number of Emission Events	Number of Emission events that exceed a permitted limit and require a report to TCEQ.	Zero (0)	0
Number of Releases	Number of Releases from company assets or projects that are managed by area employees in quantities exceeding 1 Gallon.	Zero (0)	8
Number of Recordable Releases	Number of DOT Reportable releases experienced on the Longhorn system.	Zero (0)	3
Number of Recordable Injuries/Illnesses for Employees	Number of OSHA Recordable Injuries experienced by area employees	Zero (0)	0
Number of Motor Vehicle Accidents	Number of Motor Vehicle Accidents experienced by area employees in Company Vehicles.	Zero (0)	2
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 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)	5
Number of Markers Repaired or Replaced		Actual Number	545
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)	3
Number of Emergency Drills Conducted			13
Number of Facility Inspections Completed			7



## Key documents reviewed for the 2008 SIP self-audit

### 2008 LPSIP Self Audit Backup Docs - Appendices

#	Doc. Name
1	Longhorn Support Organization Chart
2	MMP Technical Services Organization Chart
3	2009 MMP SIP Council Roster
4	2008 Operations Scorecard
5	03/23/2009 Weekly Mtg. Report
6	2008 Mitigation Plan Scorecarding & Performance Metrics
7	2008 Mitigation Plan - Commitment Implementation Status Report
8	Jan. 2009 Longhorn Pipeline - Asset Integrity Monthly Report
9	ILI Tool Run Dates
10	2008 Houston Office Call Center Log
11	CMS Printout – Monthly Safety Checklist Tasks
12	Example MOCR Report
13	2008 - Open MOC List
14	2008 - Closed MOC List
15	MMP Pre-Startup Safety Review Form (PSSR)
16	2008 Hazard Near Miss (HNM) - Closed List
17	2008 Hazard Near Miss (HNM) - Open/New List
18	Closed Action Items (AI)
19	Open Action Items (AI)
20	2008 Q4 Incorrect Operations Mitigation Report & Data
21	Abnormal Operating Condition (AOC) Report
22	Repair/Incident Investigation Decision Tree
23	Incident Investigation Reports
24	2008 LPSIP Release Table
25	2008 Updated Operations Scorecard (4/20/09)
26	2008 Updated Mitigation Plan Scorecarding & Performance Metrics (4/20/09)
27	4/17/09 Email – WRB & Mike Stackhouse
28	PHMSA Violation Notice and Longhorn Check Receipt
29	MPP Lessons Learned 2008 Advisories 1-14
30	2008 EHES Training List
31	MPP Facility Inspection Form
32	MPP Depth of Cover (DOC) Procedure
33	ROW Fencing Memo
34	Encroachment Agreement w/ Form
35	February 16-28 & March 1-15, 2009 Leak Detection Systems Report
36	Info for Risk Model Inputs
37	List of Risk Model Data Sources
38	2007 Scenario Based Risk Mitigation Analysis (SBRMA)
39	Filter Operations Procedure & Change Log
40	2008 Final Maintenance Reports Summary
41	2008 Final Encroachment Reports Summary
42	Encroachment Agreements w/ Accompanying Maintenance Reports
43	2008 Third Party Damage Prevention Program (TPDPP) Annual Assessment
44	MMP Encroachment Process Management System
45	MMP General Encroachment Requirements
46	MMP Pre-Startup Safety Reviews (PSSR)



47	MMP PSSR Form
48	MMP Action Item Resolution Initiative
49	MMP Asset Integrity Form – Mainline Pipe and Jurisdictional Piping Within Facilities
50	MMP Pipeline - Scope, Codes, Standards, and General Requirements
51	MMP Facility - Checkout and Startup Procedures
52	MMP Plants and Stations – Structural Steel Introduction
53	MMP Pipeline – Fencing
54	MMP Specifications for Foundation, Regrout and Foundation Repairs
55	Status for PHA Recommendations
56	MMP – Crane Station – Monthly External Tank Inspection Reports (2008)



## Statements of Qualifications for the Auditors

### W.R. (Bill) Byrd, P.E. President

#### Executive Summary

As founder and principal of RCP, Mr. Byrd enjoys a solid reputation for working with the public, corporate executives, legal representatives, and regulatory agencies to resolve complex regulatory, integrity management, safety, and compliance management issues. He combines exceptional analytical and communication skills with a broad background in engineering, operations, management, economics, and regulatory affairs, yielding excellent professional judgment and capabilities that can be applied to intractable problems. He is a widely respected public speaker, and is routinely called upon to make presentations to industry associations and other groups at the national level. He is a licensed Professional Engineer in five states, and graduated with honors from Georgia Institute of Technology for both his M.S. and B.S. in Mechanical Engineering.

#### Accomplishments/Experience

- Serving as the consulting expert to the API / AOPL Pipeline Performance Excellence Team, a permanent team composed of pipeline executives dedicated to improving the safety of the liquid transmission pipeline industry.
- Serving on the INGAA Foundation with other pipeline company and contractor executives to identify, prioritize, and fund research projects for the gas transmission industry.
- Serving as a consulting expert during the first criminal prosecution under the Pipeline Safety Act.
- Serving as an expert witness during the first class action lawsuit brought against a pipeline company under the citizen suit provisions of the Pipeline Safety Act.
- Serving as an expert witness / consulting expert on several other pipeline accidents and lawsuits, including those of national significance.
- Chairing the Offshore Corrosion Surveillance Subcommittee for a major pipeline company.
- Leading the development and implementation of a corrosion control strategy for oil and gas operations on the North Slope of Alaska in response to congressional investigations.
- Leading the development of a multi-skill progression program for a major pipeline company with a unionized workforce.
- Developing a new approach for H<sub>2</sub>S contingency planning in large sour oil and gas production areas, and co-authored two papers based on that work at the first annual EPA/SPE Joint Exploration and Production Environmental Conference. This revised planning approach has since been adopted throughout the oil and gas industry for use in production operations.
- Developing solutions for produced water toxicity issues on the Outer Continental Shelf, NORM sampling and testing procedures for oil field wastes, and asbestos exposure issues.

#### Associations/Affiliations

- American Gas Association
- American Petroleum Institute
- American Society of Safety Engineers
- American Society of Mechanical Engineers
- Interstate Natural Gas Association of America Foundation
- Texas Gas Association
- Houston Pipeliners Association
- Gulf Coast Environmental Affairs Group



**Chris Foley, CSP**  
**Vice President, Consulting Services**

**Executive Summary**

Mr. Foley has extensive engineering and senior management experience in a broad range of industrial sectors, including energy services, power generation, pulp and paper, and petrochemical. He has a strong background in operations & maintenance, project management, systems safety engineering, environmental compliance, and construction engineering. Board Certified Safety Professional and B.S., Industrial Engineering – Texas A&M University.

**Accomplishments/Experience**

In his 18 years of industrial experience, Mr. Foley has developed comprehensive regulatory compliance programs for pipelines, air, water, waste, emergency response, hazardous materials and processes, and occupational safety management for Fortune 500 companies. Specific accomplishments include:

- Directed due diligence efforts for several crude and HVL pipeline acquisitions. These efforts included comprehensive phase I environmental assessments, jurisdictional determination reviews, permit transfers, remediation project assessments, integrity management assessments, operator qualification transition, and regulatory program development, including O&M, Integrity Management, Operator Qualification, Oil Spill Response Plan, One call, Public Awareness, and Environmental, Health & Safety Plans.
- Conducted a comprehensive permit review of Longhorn Pipeline Partners, Houston Ship Channel to El Paso refined products pipeline. This included all federal, state, and local jurisdictions for the construction, start-up, and on-going operations of the refined products pipeline, various pump stations, and breakout terminals.
- Managed all aspects of EHS compliance for thirteen combined cycle power generation facilities in the Western Region of the U.S. This included acquisition and compliance monitoring for air and wastewater permits, performing comprehensive environmental due diligence reviews of recently acquired facilities, and served as lead point of contact for all agency representatives for a wide variety of regulatory issues.
- Developed EHS Management Tools utilizing web-based communication tools, for audit tracking.
- Coordinated Process Safety Management and Risk Management Plan compliance for all highly hazardous production processes within a large pulp & paper facility and lead several PSM/RMP compliance audit teams at various facilities throughout the country.
- Played a key role with the East Harris County Manufacturers Association, planning and hosting joint communication forums between local chemical industries and community members which presented each facility's chemical release modeling scenarios, accident prevention measures, emergency response capabilities, and community alert notification systems.
- Lead Project Engineer during various petrochemical production facility expansion and shutdown maintenance projects, and new LNG production facility start-up project.

**Associations/Affiliations**

- American Gas Association
- American Petroleum Institute
- American Society of Safety Engineers
- American Society of Mechanical Engineers
- Southern Gas Association
- Texas Gas Association
- Texas Oil & Gas Association