STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

April 1, 2015

GA2013-22

Mr. Robert Russell, VP-Field Operations
Lodi Gas Storage, LLC.
P.O. Box 230
Acampo, CA 95220

Subject: Transmission Integrity Management Program (TIMP) Inspection

Dear Mr. Russell:

On behalf of the Safety and Enforcement Division (SED) of the California Public Utilities Commission (Commission), Mahmoud Intably and Paul Penney inspected the Lodi Gas Storage (LGS) Transmission Integrity Management Program (TIMP) from November 18, 2013 through November 22, 2013. The inspection consisted of an evaluation of LGS's TIMP plan and related records.

The Summary of Inspection Findings (Summary), which contains probable violations, concerns and recommendations identified during SED's inspection, is included as an attachment to this letter.

Please provide a written response indicating the measures taken by LGS to address the probable violations, concerns and recommendations within 30 days from the date of this letter. SED will notify LGS of the enforcement actions it plans to take, if any, in regard to each of the violations found during the inspection, pursuant to Commission Resolution ALJ-274, after it has had an opportunity to review the LGS's final response to the findings included in the Summary.

For any questions related to this matter, please contact Paul Penney at (415) 703-1817 or by email at paul.penney@cpuc.ca.gov.

Sincerely,

Kenneth Bruno 4/1/15

Kenneth Bruno, Program Manager
Gas Safety and Reliability Branch
Safety and Enforcement Division
California Public Utilities Commission

Enclosure: Summary of Inspection Findings

Summary of Inspection Findings

I. Violations, Concerns and Recommendations Identified in Protocol Area A: Identify HCAs.

A.01.a— Verify the operators integrity management program includes documented processes on how to implement methods (1) and (2) in order to identify high consequence areas [§ 192.905(a)]

This protocol is covered in Section 1.4 of the LGS TIMP, entitled "Process for ID of HCAs."

Issues Identified:
The 192.3(a)-(c) referenced in LGS's TIMP plan is inconsistent with numbering in the definition of a transmission line and should be corrected; the definition of a transmission line in Title 49, Code of Federal Regulations (CFR), § 192.3 Definitions references three categories: (1), (2) and (3).

On page 2, LGS references semi-annual performance measures; the requirement is now annual. The LGS TIMP plan should be updated to the latest requirement.

In section 1.4, page 6, LGS makes reference to "See figure E1A at the end of this IMP element" for an illustration of how to determine a HCA segment. However, the referenced figure is not at the end of the element.

To summarize, while not violations, we recommend the three items noted above be corrected in the LGS TIMP plan.

A.06.a— Verify the operator's integrity management program includes documented processes for how new information that shows a pipeline segment impacts a high consequence area is identified and integrated with the integrity management program. The program is to identify and analyze changes for impacts on pipeline segments potentially affecting high consequence areas. Issues the program must consider include but are not limited to [§ 192.905(c)]

i. Changes in maximum allowable operating pressure (MAOP),
ii. Pipeline modification affecting piping diameter,
iii. Changes in the commodity transported in the pipeline,
iv. Identification of new construction in the vicinity of the pipeline that results in additional buildings intended for human occupancy or additional identified sites.
v. Change in the use of existing buildings (e.g., hotel or house converted to a nursing home),
vi. Installation of new pipeline,
vii. Change in the pipeline class location (e.g., 2 to 3) or class location boundary,
viii. Pipeline reroutes,
ix. Corrections to erroneous pipeline centerline data.

The language for this protocol question is covered in Section 1.5 of the LGS TIMP, pages 9 and 10.

Issues Identified:
In Section 1.5 of the LGS TIMP, page 10, LGS references FAQ -117 in its discussion of keeping HCA segments up-to-date. LGS follows the language in this FAQ except for one item. LGS states that the Office of Pipeline Safety (OPS) expects that *"...operators would evaluate conditions along their pipelines once per calendar year not to exceed 18 months..."* While the

rule does not specify a frequency for updating data used to identify HCAs, FAQ-117 says that Pipeline and Hazardous Materials Safety Administration (PHMSA) expects operators to evaluate conditions along the pipeline at least once each calendar year.

We also noted that the LGS cross reference for this protocol question designates a frequency of once per calendar year.

To summarize, while not a violation, we recommend that LGS update the language to accurately reflect the language in FAQ-117 and LGS's protocol cross reference.

II. Violations, Concerns and Recommendations Identified in Protocol Area B: Baseline Assessment Plan

No issues identified

III. Violations, Concerns and Recommendations Identified in Protocol Area C: Identify Threats, Data Integration and Risk Assessment

C.01.a— If the operator is following the prescriptive or performance-related approaches, verify that the following categories of failure have been considered and evaluated: [§192.917(a) and ASME B31.8S-2004, Section 2.2]

...
x. cyclic fatigue or other loading conditions [§192.917(e)(2)]..."

Issue Identified:

192.917(e) and 192.917(e)(2) state:

"(e) Actions to address particular threats. If an operator identifies any of the following threats, the operator must take the following actions to address the threat..."

"192.917(e)(2) Cyclic fatigue. An operator must evaluate whether cyclic fatigue or other loading condition (including ground movement, suspension bridge condition) could lead to a failure of a deformation, including a dent or gouge, or other defect in the covered segment. An evaluation must assume the presence of threats in the covered segment that could be exacerbated by cyclic fatigue. An operator must use the results from the evaluation together with the criteria used to evaluate the significance of this threat to the covered segment to prioritize the integrity baseline assessment or reassessment."

The language in the LGS TIMP plan and threat analysis spreadsheet inadequately addresses the potential threat of cyclic fatigue on the two HCA segments, and why the threat is not applicable to the two HCA segments at this time. LGS discusses this threat in Section 2.5.2, page 7, of the TIMP plan; the language closely follows the language in Title 49, CFR, 192.917(e)(2). LGS also includes consideration of cyclic fatigue in the threat analysis spreadsheet, where two types of fatigue cycling are identified. Those are fatigue cycling of the carrier pipe due to pressure fluctuations, and the potential for fatigue cycling due to railroad traffic.

LGS must provide more detail in its TIMP plan and "BAP and Mitigation" worksheet for why cyclic fatigue was not, and is not, considered a threat at this time. System-wide or generic studies may be used as long as the operator documents the reason(s) why the study is applicable to the HCA segment specific conditions. For example, *"Evaluating the Stability of Manufacturing and Construction Defects in Natural Gas Pipelines"*, by John F. Kiefner (Publication date: April 26, 2007) is one possible report. Another example of a generic study is the *"Basics of Metal Fatigue in Natural*

Gas Pipeline Systems — A Primer for Gas Pipeline Operators", by Kiefner and Associates (Publication date: June 2006). Any generic report(s) used by LGS must address both pressure fluctuations in the pipe and fatigue cycling due to the railroad traffic; further, if LGS chooses to use generic studies, LGS must show why these studies are applicable to the two HCA segment specific conditions.

To summarize, LGS is in violation of 192.917(e)(2) for not doing the analysis required by this code section.

There is one additional issue related to threat identification and risk ranking. In the "IMP Risk Rank and Schedule," LGS incorrectly aggregates construction and manufacturing threats together in the spreadsheet. These are two different categories of threat, and should be evaluated separately. LGS includes Welding/ Fabrication in the next category of threat, which is synonymous with the construction category. The construction threat language should be removed from the manufacturing category in this spreadsheet. We noted during our records review that the "Gas IMP Threat Analysis" spreadsheet does correctly separate these two categories of threat.

To summarize, while not a violation, we recommend LGS correct the "IMP Risk Rank and Schedule".

C.01.c— Verify that the operator's threat identification has considered interactive threats from different categories (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage) [ASME B31.8S-2004, Section 2.2].

Issues Identified:
LGS provides minimum guidance in Section 2.4, page 4 of the TIMP plan on interactive threats. LGS should provide more detail on how it will treat interactive threats. For example, there is an Interstate Natural Gas Association of America (INGAA) report that provides guidance on threat interactions; it's called "Interacting Threats to Pipeline Integrity—Defined and Explained." This report provides background information and guidance on interactive threats; in particular, a matrix of threat interactions is included in the INGAA paper. Some interactions are deemed less likely because of the improbable nature of the interactions.

To summarize, while not a violation, we recommend that LGS update the language to provide more guidance for LGS staff to consider interactive threats.

C.01.d— Verify that the approach incorporates appropriate criteria for eliminating a specific threat for a particular pipeline segment. [ASME B31.8S-2004, Section 5.10]

Issues Identified:
There are two issues related to this protocol question.

First, in Section 2.4 of the LGS TIMP plan, page 5, LGS discusses elimination of threats. However, the discussion appears contradictory in what it is saying. At the top of the page in the first paragraph, the TIMP plan states: *"Specifically, a threat will not be eliminated unless it meets all of the following criteria."* Four criteria are then listed below. In the lower part of the same page, the TIMP plan states: "Specific steps for threat identification." In step 2, the TIMP plan says, *"Determine if potential threat is threat or no threat based on data collected and reviewed."* It says nothing about applying the four threat elimination criteria at the top of the page.

Second, the four criteria listed at the top of the page do not apply to some of the threats under consideration. For example, the second criteria states: *"Smart pig capable of discriminating for type of threat being eliminated with results showing no indication of specific threat."* This criterion

does not apply to Stress Corrosion Cracking (SCC) since the high resolution magnetic flux leakage (MFL) tool is not capable of detecting SCC per ASME B31.8S, Section 6.2.2(b).

ASME B31.8S-2004, Section 5.10 states in paragraph three: *"The integrity plan shall also provide for the elimination of a specific threat from the risk assessment. For a prescriptive integrity management program, the minimum data required and the criteria for risk assessment in order to eliminate a threat from further consideration are specified in Nonmandatory Appendix A..."*

LGS must clarify the language to eliminate the apparent contradiction in the language on page 5, and correct the threat elimination criteria at the top of the page to ensure the criteria are applicable to the threats under consideration.

Therefore, LGS is in violation of ASME, B31.8S-2004, Section 5.10.

C.01.f— Verify that the records indicate that all potential threats to each covered pipeline segment have been identified and evaluated. Adequate records that demonstrate all potential threats to each covered segment have been identified and evaluated should:

i. Show consideration and evaluation of categories of threats summarized in 192.917(a), 192.917(e), and ASME B31.8S-2004.
ii. If performance-based approach is utilized, show that all 21 of the threats associated with 192.917(a) and ASME B31.8S-2004 are considered.
iii. Show interactive threats from different categories (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage) are considered.
iv. Show appropriate criteria for eliminating a specific threat for a particular pipeline segment.
v. Show that industry data and experience was appropriately considered in the identification of potential threats.

Issues Identified:

i. No issues identified
ii. N/A
iii. This item was covered previously in C.01.c. There is some guidance in the threat spreadsheet at the bottom; there are three interactive threat categories that reproduce the guidance in this Roman numeral from above. See protocol C.01.c for further details. As noted above, while not a violation, we recommend that LGS update the language to provide more guidance for LGS staff.
iv. The criteria applied to eliminate threats are flawed as described in protocol C.01.d. Records indicate that two threats were eliminated: SCC and cyclic fatigue. However, the threat elimination criteria do not apply to SCC as discussed in C.01.d. As noted above, LGS is in violation of ASME, B31.8S-2004, Section 5.10
v. No issues Identified.

C.02.f— Verify that individual data elements are brought together and analyzed in their context such that the integrated data can provide improved confidence with respect to determining the relevance of specific threats and can support an improved analysis of overall risk. [ASME B31.8S-2004, Section 4.5]. Data integration includes...

vi. Integration of ILI or ECDA results with data on encroachments or foreign line crossings in the same segment to define locations of potential third party damage [§192.917(e)(1)].

Issues Identified:

192.917(e)(1) states: *"Third party damage. An operator must utilize the data integration required in paragraph (b) of this section and ASME/ANSI B31.8S, Appendix A7 to determine the susceptibility of each covered segment to the threat of third party damage... If, in conducting a baseline assessment under § 192.921, or a reassessment under § 192.937, an operator uses an internal inspection tool or*

external corrosion direct assessment, the operator must integrate data from these assessments with data related to any encroachment or foreign line crossing on the covered segment, to define where potential indications of third party damage may exist in the covered segment." [Emphasis Added]

One-call-ticket frequency encroachment data was not integrated into the common spatial reference system. LGS indicated that "irth" data was available, but that data manipulation was needed to integrate the data to the GIS system. Please update us on when LGS plans to complete its integration this data into the GIS system. Also, please indicate any other encroachment data sets that LGS plans to integrate into the GIS system, and has not yet done so.

To summarize, LGS is therefore in violation of 192.917(e)(1) for not integrating this data as of the date of the audit.

C.03.c. Verify that the risk assessment explicitly accounts for factors that could affect the likelihood of a release and for factors that could affect the consequences of potential releases, and that these factors are combined in an appropriate manner to produce a risk value for each pipeline segment. [ASME B31.8S-2004, Section 3.1, ASME B31.8S-2004, Section 3.3, ASME B31.8S-2004, Section 5.2, ASME B31.8S-2004, Section 5.3 and ASME B31.8S-2004, Section 5.7(j)] Verify that the risk assessment approach includes the following characteristics:

i. The risk assessment approach contains a defined logic and is structured to provide a complete, accurate, and objective analysis of risk [ASME B31.8S-2004, Section 5.7(a)];

Issues Identified:
There appears to be an error in the SME risk ranking approach used by LGS that could result in a higher risk segment being ranked lower than a lower risk segment. Step-by-step instructions are described in Section 2.8 of the TIMP plan for using the "IMP BAP & Mitigation" spreadsheet to accomplish the risk ranking.

A segment having a higher total risk score could be ranked lower on the spreadsheet as follows.[1] If a higher risk segment (i.e., lower numerical value) has fewer threats than a lower risk segment, then the average risk score could potentially be a larger average number (i.e., lower risk) than a lower risk segment with more threats. As described in Step 6, *"The worksheet will also determine the average score by dividing the total risk score by the number of risk factors."* Step 7 says, *"Using the average score... compare and rank all HCA segments against each other in the ""Risk Rank and Schedule"" worksheet".* As long as both segments have the same number of threats, then the approach will work. But if they have a different number of threats, then the potential exists to have an erroneous risk ranking. The risk ranking should be based on the total risk score.

To summarize, LGS is therefore in violation of ASME B31.8S-2004, Section 5.7(a) since risk ranking approach is erroneous as described above.

C.04.b— Verify that the operator's process provides for revisions to the risk assessment if new information is obtained or conditions change on the pipeline segments. Verify that the provisions for change to the risk assessment address the following areas:

i. the risk assessment plan calls for recalculating the risk for each segment to reflect the results from an integrity assessment or to account for completed prevention and mitigation actions. [ASME B31.8S-2004, Section 5.11, and ASME B31.8S-2004, Section 5.7(c)]
ii. the operator integrates the risk assessment process into field reporting, engineering, facility mapping, and other processes as necessary to ensure regular updates. [ASME B31.8S-2004, Section 5.4]

1 As noted in step 11 (page 24 of 31), higher risk is denoted with a lower risk score.

iii. the integrity management plan calls for revision to the risk assessment process if pipeline maintenance or other activities identify inaccuracies in the characterization of the risk for any segments. [§192.917(c) and ASME B31.8S-2004, Section 5.12]
iv. the operator uses a feedback mechanism to ensure that the risk model is subject to continuous validation and improvement. [§192.917(c) and ASME B31.8S-2004, Section 5.7(f)]
v. the use of a mechanism to ensure the risk model is subject to continuous validation and improvement.
vi. leak, failure, and incident history is used to validate the risk model.

Issues Identified:
This protocol question is referenced in the Element #2 protocol cross reference as C.03.d. NOTE: This finding is based on the August, 2013 PHMSA TIMP inspection protocols.

i. No issues identified
ii. No issues identified
iii. No issues identified
iv. No issues identified
v. This needs to be added to the LGS procedure on page 25 of 31
vi. This needs to be added to the LGS procedure on page 25 of 31.

C.04.c— Verify that records demonstrate that the risk assessment was revised as necessary as new information was obtained or conditions changed on the pipeline segments. Verify that the records address the following:

i. The risk for each segment was recalculated to reflect the results from an integrity assessment or to account for completed prevention and mitigation actions.
ii. The risk assessment process was integrated into field reporting, engineering, facility mapping, and other processes as necessary to ensure regular updates.
iii. The risk assessment process was revised if pipeline maintenance or other activities identify inaccuracies in the characterization of the risk for any segments.
iv. The risk model is continually being validated and improved.
v. The operator uses its leak, failure, and incident history to validate the risk model.
vi. The operator captures actions such as installing new pipe, new coating, repairs, etc. into the pipeline system in and outside of HCA's.

Issues Identified:
This protocol question is not referenced in the Element #2 protocol cross reference. LGS should add this new protocol question to the TIMP plan. This finding is based on the August, 2013 PHMSA TIMP inspection protocols.

IV. Violations, Concerns and Recommendations Identified in Protocol Area D: DA Plan

Per section 4.4 of the TIMP plan, LGS does not intend to use direct assessment as the primary assessment method. The TIMP plan states that LGS may use direct assessment processes to supplement other assessment methods, and in fact has done this with Close Interval Surveys (CIS) and a Direct Current Voltage Gradient (DCVG) Surveys.

V. Violations, Concerns and Recommendations Identified in Protocol Area E: Remediation

E.02.b— Verify provisions exist to classify and categorize anomalies meeting the following criteria...

iii. Monitored Conditions (Conditions which must be monitored until the next assessment).

1. A dent with a depth greater than 6% of the pipeline diameter located between the 4 and 8 o'clock position (lower 1/3) of the pipe; [§192.933(d)(3)]
2. A dent located between the 8 and 4 o'clock position (upper 2/3) of the pipe with a depth greater than 6% of the pipeline diameter, and engineering analysis to demonstrate critical strain levels are not exceeded; [§192.933(d)(3)]or,
3. A dent with a depth greater than 2% of the pipeline diameter, that affects pipe curvature at a girth weld or a longitudinal seam weld, and engineering analysis of the dent and girth or seam weld to demonstrate critical strain levels are not exceeded. [§192.933(d)(3)]

Issues Identified:

Monitored conditions are covered in Section 5.6.4 of the LGS TIMP plan. However, LGS does not define critical strain, or how strain will be determined. Per B31.8S-2004, Section 5.7(g), an operator is required to thoroughly and completely document its processes. LGS must define what criteria will be used to determine when critical strain levels are reached, and what approach will be used to determine strain in a dent. For example, B31.8, Appendix R (Estimating Strain in Dents) is one approach to estimate strain in a dent. However, there are other approaches.

LGS is therefore in violation of ASME B31.8S-2004, Section 5.7(g).

VI. Violations, Concerns and Recommendations Identified in Protocol Area F: Continual Evaluation and Assessment

No issues identified.

VII. Violations, Concerns and Recommendations Identified in Protocol Area G: Confirmatory DA

Not Applicable. LGS does their assessments on a five year period.

VIII. Violations, Concerns and Recommendations Identified in Protocol Area H: Preventative and Mitigative Measures

No issues identified.

IX. Violations, Concerns and Recommendations Identified in Protocol Area I: Performance Measures

I.01.a—Verify the process for measuring IM program effectiveness includes the elements necessary to conduct a meaningful evaluation.

An adequate process for measuring IM program effectiveness should have the following characteristics:

- Includes the use of periodic self-assessments, internal and/or external integrity management program audits, management reviews, or other self-critical evaluations to measure program effectiveness.
- Includes a clear description of the scope, objectives, and frequency of these program evaluation methods.
- Includes bench-marking performance metrics using data from inside or outside the company.
- Clearly defines the use of performance metrics in evaluating program performance.
- Provides for feedback to corrective action programs, preventive and mitigative measures decisions, and the threat and risk analysis processes? Does this feedback include communicating lessons learned and noteworthy practices to the appropriate individuals/organizational units.

- Assures management awareness and commitment, including the resources required to address integrity program improvements identified through performance measurement.
- Includes provisions for the review and follow-up of program effectiveness evaluation results, findings, and recommendations, etc., with appropriate company managers.
- Includes provisions for the assignment of responsibility, by organization, group, or title, for implementation of required actions.
- Requires evaluation of the effectiveness of programs to address specific threats in accordance with ASME B31.8S-2004 Appendix A.

Issues Identified:
LGS should update Element #9 of the TIMP plan to include the above bullets, and update the protocol cross reference at the end of Element #9 to identify where in the TIMP plan each of the above bullets is addressed. NOTE: This finding is based on the August, 2013 PHMSA TIMP inspection protocols.

I.01.b—Verify the process to evaluate IM program effectiveness includes an adequate set of performance metrics to provide meaningful insight into IM program performance.

A process for identifying an adequate set of performance measures should have the following characteristics:

- Includes a description of the performance metrics to be used and the frequency for data collection.
- Defines metrics that:
    - Provide an overall measure of program effectiveness such as number of leaks or ruptures, etc.,
    - Reflect the accomplishment of the program's objectives such as number of miles of pipeline assessed; number of anomalies found requiring repair or mitigation; number of right-of-way encroachments, and
    - Provide threat-specific insight in accordance with ASME B31.8S – 2004, Appendix A. Examples include: the number of leaks caused by each threat (e.g., internal/external corrosion, third party damage, etc.); number of repair actions taken for each threat, etc.
- Includes performance metrics developed in accordance with ASME B 31.8S-2004 Section 9 including:
    - Process/Activity Metrics that monitor the surveillance and preventive activities that are in place to control risk. These metrics indicate how well an operator is implementing the elements of its integrity management program.
    - Operational Measures that monitor operational and maintenance trends to indicate if the program is effective or ineffective, or the desired outcome is being achieved or not, despite the risk control activities in place.
    - Direct Integrity Metrics that reflect whether the program is effective in achieving the objective of improving integrity. These are typically lagging indicators that measure the number of leaks, ruptures, injuries, fatalities, etc.
- Includes trending of metrics over time and an analysis of these trends? The process for trending should include:
    - A method to establish the magnitude of trends that represent normal fluctuations versus significant deviations (e.g., significant enough to warrant corrective action).
    - The trending of equipment or material failures (e.g., valve gaskets or pump seals) as a means to evaluate pipeline deterioration (an indicator of the end of useful life of materials and components).
    - The trending of leading indicators such as inadvertent over-pressurization, right-of-way encroachments without one-call notification, SCADA outages, operation of overpressure

or other safety devices, or other abnormal operating conditions such as those listed in 192.605(c). (Leading indicators measure the effectiveness of proactive activities to control risk. These indicators can uncover weaknesses before they develop into full-fledged problems.)

- Provides for the periodic review and revision (if needed) of performance metrics to assure they are providing useful information about the effectiveness of IM Program activities.
- Includes procedures to ensure the completeness and accuracy of performance measure data – both for metrics reported to PHMSA and the metrics used internally.
- Defines performance goals, including segment-specific issues related to the operator's unique operating environment such as a decrease in the number, and depth, of corrosion related anomalies, a decrease in the threat of mechanical damage due to a decrease in one-calls, a decrease in the number of crack anomalies, etc.
- Provides for the periodic review of performance goals and their revision (if needed) based on the results of program evaluations.
- Includes comparing leak, failure, and incident metrics to risk model results, and uses these comparisons to modify the risk model if necessary.

Issues Identified:
LGS should update Element #9 of the TIMP plan to include the above bullets, and update the protocol cross reference at the end of Element #9 to identify where in the TIMP plan these bullets are addressed. The LGS TIMP plan appears not to address some of these bullets and sub-bullets. NOTE: This finding is based on the August, 2013 PHMSA TIMP inspection protocols.

Inspect operator records to verify: [§192.945(a)]

I.02.a. The methods to measure program effectiveness provide effective evaluation of IM program performance and result in program improvements where necessary.

The records to demonstrate IM program effectiveness should have the following characteristics:

- The records show that periodic self-assessments, internal and/or external audits, management reviews, or other self-critical program evaluations have been performed at the established frequency.
- The records indicate that the process has been implemented consistent with its scope and objectives, and at the established frequency.
- The records show that these program evaluations provided a comprehensive and in-depth examination of performance, and effectively used the established performance metrics in this process.
- The records show bench-marking performance using data from inside or outside the company.
- The records show evidence of feedback to corrective action programs, preventive and mitigative measures decisions, and the threat and risk analysis processes.
- The records show that lessons learned and best practices have been communicated to the appropriate individuals and organizational units.
- The records show evidence of management awareness and commitment, including providing resources to address improvements identified by the program evaluation.
- The records include the review and follow-up of program evaluation results, findings, and recommendations, etc., by appropriate company managers.
- The records include the assignment of responsibility, by organization, group, or title, for implementing required actions.
- The records show that deficiencies identified in program evaluations and recommended improvements have been implemented in a timely manner.

Issues Identified:
LGS should update Element #9 of the TIMP plan to include references to records that address each of the above bullets as appropriate, and update the protocol cross reference at the end of Element #9. NOTE: This finding is based on the August, 2013 PHMSA TIMP inspection protocols.

Inspect operator records to verify: [§192.945(a)]

I.02.b. That performance metrics are providing meaningful insight into integrity management program effectiveness.

Records to demonstrate that performance metrics are providing meaningful insights into IM program effectiveness should have the following characteristics:

- The records show the performance measure data is being collected and at the frequency established in the program evaluation process.
- The records show that overall metrics have been defined and data collected for:
    - Overall measures of program effectiveness such as number of leaks, or ruptures, etc.,
    - Metrics that reflect the accomplishment of the program's objectives, and
    - Threat specific metrics as established in ASME B31.8S-2004, Appendix A.
- The records show that the performance metrics developed in accordance with ASME B 31.8S-2004 Section 9 were implemented. Specifically,
    - Process/Activity Metrics that monitor the surveillance and preventive activities that are in place to control risk. These metrics indicate how well an operator is implementing the elements of its integrity management program.
    - Operational Measures that monitor operational and maintenance trends to indicate if the program is effective or ineffective, or the desired outcome is being achieved or not, despite the risk control activities in place.
    - Direct Integrity Metrics that reflect whether the program is effective in achieving the objective of improving integrity. These are typically lagging indicators that measure the number of leaks, ruptures, injuries, fatalities, etc.
- The records show the trending of metrics over time and an analysis of these trends. Specifically,
    - Do records show the trending analysis includes method(s) to establish the magnitude of trends that represent normal fluctuations versus significant deviations (e.g., significant enough to warrant corrective action).
    - Do records show trending of equipment or material failures as a means to evaluate pipeline equipment deterioration.
    - Do records show trending of leading indicators such as inadvertent over-pressurization, ROW encroachments without one-call notification, SCADA outages, operation of overpressure or other safety devices, or other abnormal operating conditions such as those listed in 192.605(c). (Leading indicators measure the effectiveness of proactive activities to control risk. These indicators can uncover weaknesses before they develop into full-fledged problems.)
- The records show that the performance metrics have been reviewed and updated if needed to assure they are providing useful information about the effectiveness of IM Program activities.
- The records show that the operator has implemented its program to assure the completeness and accuracy of the data used to measure performance.
- The records show that the IM performance measures reported to PHMSA are complete and accurate.
- The records show any data quality concerns that might exist.
- The records show that the operator has established specific performance goals, including segment specific issues related to the operator's unique operating environment such as the number, and depth, of corrosion related anomalies, the threat of mechanical damage due to one calls, the number of crack anomalies, etc.

- The records show that the performance goals have been reviewed and revised based on the results of program evaluations.
- The records show the leak, failure, and incident metrics have been compared to the risk model, and that changes to the risk model have been made when the data indicates such changes are necessary.

Issues Identified:
LGS should update Element #9 of the TIMP plan to include references to records that address each of the above bullets as appropriate, and update the protocol cross reference at the end of Element #9. NOTE: This finding is based on the August, 2013 PHMSA TIMP inspection protocols.

X. Violations, Concerns and Recommendations Identified in Protocol Area J: Record Keeping

No issues identified.

XI. Violations, Concerns and Recommendations Issues Identified in Protocol Area K: Management of Change (MOC)

No issues identified.

XII. Violations, Concerns and Recommendations Identified in Protocol Area L: Quality Assurance

No issues identified.

XIII. Violations, Concerns and Recommendations Identified in Protocol Area M: Communications Plan

No issues identified.

XIV. Violations, Concerns and Recommendations Identified in Protocol Area N: Submittal of Program Documentation

No issues identified.