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

EDMUND G. BROWN JR., *Governor*

March 20, 2015

GA2013-29

Mr. David A. Weber, President and CEO
Gill Ranch Storage
220 NW 2nd Avenue
Portland, OR 97209

Subject: Gill Ranch Transmission Integrity Management Program (TIMP) Inspection

Dear Mr. Weber:

On behalf of the Safety and Enforcement Division (SED) of the California Public Utilities Commission (Commission), Alin Podoreanu, Alula Gebremedhin, Mahmoud Intably, Molla Mohammad and Paul Penney inspected the Gill Ranch Gas Storage (GRS) Transmission Integrity Management Program (TIMP) from September 30, 2013 through October 3, 2013. The inspection consisted of an evaluation of GRS's TIMP plan and related procedures and records.

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

Please provide a written response indicating the measures taken by GRS to address the probable violations within 30 days from the date of this letter. SED will notify GRS 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 GRS'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,

K. B 3/20/15

Kenneth Bruno, Program Manager
Gas Safety and Reliability Branch
Safety and Enforcement Division

Enclosure: Summary of Inspection Findings

Summary of Inspection Findings

Protocol questions are identified below with the corresponding findings. Many of the findings are related to the requirement in American Society for Mechanical Engineers (ASME) B31.8S-2004, Section 5.7(g), which states: *"The risk assessment process shall be thoroughly and completely documented, to provide the background and technical justification for the methods and procedures used and their impact on decisions based on the risk estimates."*

Many findings are also related to Title 49, Code of Federal Regulations (CFR), § 192.947(d), which states: *"Documents to support any decision, analysis and process developed and used to implement and evaluate each element of the baseline assessment plan and integrity management program. Documents include those developed and used in support of any identification, calculation, amendment, modification, justification, deviation and determination made, and any action taken to implement and evaluate any of the program elements;"*

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 pipeline maximum allowable operating pressure (MAOP),
ii. Pipeline modifications 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. Changes in the use of existing buildings (e.g., hotel or house converted to nursing home),
vi. Installation of new pipeline,
vii. Change in pipeline class location (e.g., class 2 to 3) or class location boundary,
viii. Pipeline reroute
ix. Corrections to erroneous pipeline centerline data.

Potential Issue Identified:
Although the language in the GRS TIMP plan indicates that the items in the Roman numerals above will be considered, there is no reference to the documented process or processes in the TIMP plan (Section 2.6, pages 7 and 8).

GRS states in Section 2.6: *"Through the GRS Continuous Improvement Program, changes in the pipelines' operating conditions and environment are monitored to identify if new areas should be considered as HCA's, COMPANY's construction, inspection, operations, maintenance, and public awareness and education programs are fully utilized to monitor for changes included, but not limited to, the following..."*

The quoted language above does not reference how the "GRS Continuous Improvement Program" identifies and considers each of the nine items in this protocol question. The language must reference the documented process or processes that address each of the nine items listed in this protocol question (i.e., Task 9600). GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

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]

iii. stress corrosion cracking;

...

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

Potential Issues Identified:
The GRS TIMP plan, Section 4.1, paragraph 2, indicates that all threats will be considered. Section 4.1.4 discusses actions to address particular threats per the requirements of CFR § 192.917(e). The more detailed analysis of threats for 2013 is covered in the "Threat Identification and Risk Assessment" documentation. The file is named "GRS_TIRA 2013-02-28_FINAL.pdf".

iii. Stress Corrosion Cracking:

GRS should note in its TIMP plan that the screening criteria identified in ASME B31.8S-2004, Appendix A3, for the Stress Corrosion Cracking (SCC) threat is not absolute. These criteria do not account for approximately 25-35% of historical SCC failures. As noted in the National Association of Corrosion Engineers (NACE) RP0204-2004 (Stress Corrosion Cracking Direct Assessment Methodology), Section 1.2.1, *"It is recognized that these screening factors will identify a substantial portion of the susceptible locations, but not all of them."*

Therefore, while not a violation, we recommend that GRS incorporate language in its TIMP plan that notes the screening criteria in ASME B31.8S, Appendix A3, Section A3.3, are not an absolute guarantee that there will not be a threat of SCC in the future.

x. Cyclic Fatigue:

With regard to cyclic fatigue, GRS must provide more detail on two statements made in Section 4.1.4 of the TIMP plan. One statement is: *"GRS will also evaluate the threat of cyclic fatigue for covered pipeline segments that have a history of significant pressure cycles."* GRS does provide some discussion of cyclic fatigue in the supplemental document "GRS_TIRA 2013-02-28_FINAL.pdf", Section 3.4.10, page 14. However, this discussion is general in nature. GRS must identify what criteria will be used in determining what constitutes significant pressure cycles and how often this evaluation will take place since pressure cycling can change over time.

Statement two is: *"System-wide or generic studies of cyclic fatigue may be used as long as conclusions for why the study is applicable to the segment specific condition is documented."* GRS must provide more detail in this section of its TIMP plan regarding which generic study (or studies) it will use to evaluate the threat of cyclic fatigue and why the study is applicable to each HCA segment.

GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

Also, we recommend that GRS not aggregate the cyclic fatigue and "all other potential threats" categories together.

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]

Potential Issue Identified:
GRS discusses this item in Section 4.1.5, page 34 (Elimination of Threats from Consideration). This section states that exclusion will be in accordance with ASME B31.8S-2004, Section 5.10.

The GRS TIMP plan, Section 4.3, states, *"If a threat is excluded from the evaluation of a section in a HCA, the justification for its exclusion must be documented."* GRS must provide a reference in this section of the TIMP plan for where this exclusion will be documented (i.e., the "Threat Identification and Risk Assessment" (TIRA) supplemental analysis).

For the 2013 TIRA, GRS considered all threats with the exception of the SCC and the "other" categories; cyclic fatigue and "all other potential threats" are aggregated into one threat category. GRS does provide appropriate criteria for the elimination of the SCC threat, but does not provide appropriate criteria for elimination of the cyclic fatigue threat. GRS must develop and document appropriate criteria for elimination of this threat (see also Protocol C.01.a).

CFR § 192.917(e) states: *"Actions to address particular threats. If an operator identifies any of the following threats, the operator must take the following action to address the threat."* One of the threats listed is cyclic fatigue; CFR § 192.917(e)(2) identifies actions that must be taken if the cyclic fatigue threat is identified. To identify if a segment has the cyclic fatigue threat, GRS must identify the criteria that will be used, do the analysis, and document the results.

GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g), CFR §§ 192.947(d) and 192.917(e).

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...

iv. Show appropriate criteria for eliminating a specific threat for a particular pipeline segment....

Potential Issues Identified:
Section 4.1.5 of the TIMP plan discusses documenting elimination of threats. The elimination of the SCC threat used the appropriate criteria identified in ASME B31.8S, Appendix A3.3; this is documented in the TIRA, Section 3.3, page 9. However, the "other" category includes both cyclic fatigue and the "other" category. The criteria for eliminating cyclic fatigue are not appropriate; criteria for elimination of this threat must be specified and documented. The elimination of the cyclic fatigue threat is only documented in a qualitative way in two locations in the TIRA. The first location is in Section 3.4.10, page 14. The second location is in Appendix B, page 70, under the category of "pressure fluctuations." GRS must specify criteria, and document how the criteria allow for the elimination of the cyclic fatigue threat.

GRS is in violation of ASME B31.8S-2004, Section 5.7(g), and CFR §§ 192.947(d) and 192.917(e).

C.02.a. Verify that the operator has in place a comprehensive plan for collecting, reviewing, and analyzing the data. [ASME B31.8S-2004, Section 4.2 and ASME B31.8S-2004, Section 4.4]

Potential Issues Identified:
GRS does have a general plan for collecting, reviewing and analyzing the data; this is described in Section 4.2 of the TIMP plan. However, GRS must provide more detail in Section 4.2 to identify the specific process for documenting the data collection, review and analysis steps. As noted during our discussion with GRS representatives, the "Pipeline Data Book Volume 2" appears to be the vehicle for aggregating part of the data. If this is correct, then the book must be referenced in the TIMP plan. In addition, the review and analysis steps must be documented in the TIMP plan, or a reference made to other documented processes (i.e., the TIRA supplemental document).

GRS also documents data gathering and integration in the TIRA supplemental document, Section 4.2.1 (page 18). The process outlined in this section of the report is, however, incomplete. There are two issues related to the process outlined in this document:

One, GRS does not aggregate all required data elements for each threat from ASME B31.8S-2004, Appendix A. GRS does aggregate all data elements defined in ASME B31.8S-2004, Table 1 via Appendix B of the supplemental document, which matches exactly all data covered in Table 1. Table 1 and Appendix B do cover most data elements identified in Appendix A. However, these tables do not cover all required data elements for each threat in ASME B31.8S-2004, Appendix A. For example, for external corrosion, Appendix A1.2 lists MIC (Microbiological Induced Corrosion) as one of the data elements. This is not included in Table 1 or Appendix B data. Where identified, missing data elements from other threats must be included in the threat specific analysis. GRS must include in the threat analysis all data elements from ASME B31.8S-2004, Appendix A not already included in Appendix B.

Two, although the seven data elements from CFR § 192.917(b) are listed in the GRS TIMP plan, Section 4.2, page 34, the process for considering all of these data elements is not documented in either the GRS TIMP plan or the TIRA. Some, but not all of the data elements are considered in the TIRA supplemental document. For example, the past incident history is considered in the evaluation of Pipeline and Hazardous Materials Safety Administration (PHMSA) incident data as part of the probabilistic risk model. On the other hand, the process for how continuing surveillance is considered is not included in the TIRA supplemental document. Consideration of all the data elements must be documented as part of the process of threat identification and risk assessment.

GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

C.02.b. Verify that the operator has assembled data sets for threat identification and risk assessment according to the requirements in ASME B31.8S-2004, Section 4.2, ASME B31.8S-2004, Section 4.3, and ASME B31.8S-2004, Section 4.4. At a minimum, an operator must gather and evaluate the set of data specified in ASME B31.8S-2004, Appendix A (summarized in ASME B31.8S-2004, Table 1) and consider the following on covered segments and similar non-covered segments [§192.917(b)]:

1. Past incident history
2. Corrosion control records
3. Continuing surveillance records
4. Patrolling records
5. Maintenance history
6. Internal inspection records
7. All other conditions specific to each pipeline.

Potential Issues Identified:

The seven data elements listed above from CFR § 192.917(b) are documented in Section 4.2 of the GRS TIMP plan, page 34. GRS states that these data elements will be considered, but no process is documented in the TIMP plan or the TIRA supplemental document for how all these data elements are considered. GRS must document how these data elements are incorporated into the process.

GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

With regard to the data elements listed in ASME B31.8S-2004, Appendix A for each of the threats, GRS does incorporate most of these data elements via Appendix B of the TIRA document, but there are deficiencies as described in Protocol question C.02.a.

C.02.d. Verify that the operator has checked the data for accuracy. If the operator lacks sufficient data or where data quality is suspect, verify that the operator has followed the requirements in ASME B31.8S-2004, Section 4.2.1, ASME B31.8S-2004, Section 4.4, and ASME B31.8S-2004, Appendix A [ASME B31.8S-2004, Section 4.1, ASME B31.8S-2004, Section 4.2.1, ASME B31.8S-2004, Section 4.4, ASME B31.8S-2004, Section 5.7(e), and ASME B31.8S-2004, Appendix A]:

i. Each threat covered by the missing or suspect data is assumed to apply to the segment being evaluated. The unavailability of identified data elements is not a justification for exclusion of a threat.
ii. Conservative assumptions are used in the risk assessment for that threat and segment or the segment is given higher priority.
iii. Records are maintained that identify how unsubstantiated data are used, so that the impact on the variability and accuracy of assessment results can be considered.
iv. Depending on the importance of the data, additional inspection actions or field data collection efforts may be required.

Potential Issue Identified:
The four items listed for this protocol question are covered in Section 4.2, page 35 of the GRS TIMP plan. However, there are no specifics as to how the data will be checked for accuracy. GRS must have a documented process for how the data will be checked for accuracy.

With regard to the language in the TIMP plan (Section 4.2, page 35):

i. The wording of this item in the GRS TIMP plan is somewhat confusing; it should conform more with the wording in the protocol question. NOTE: GRS has assumed that all threats exist with the exception of SCC and the "other" category. While not a violation, we recommend GRS modify the language.

C.02.g. Verify that the operator's program includes a procedure for ensuring the accuracy and completeness of information and data used in the identification of potential threats and the risk analysis.

Potential Issue Identified:
The TIMP plan does discuss accuracy of data at various locations in the plan. For example, Section 4.3.1, item 7, page 38, discusses accuracy of the data. Also, page 36 of the TIMP plan discusses the "data review process," and the paragraph prior to the "data review process" discusses keeping records. There does not appear to be a detailed procedure in the TIMP plan, or a reference made to other documented processes, for ensuring the accuracy and completeness of information and data.

GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

C.03.a. Verify that the operator's risk assessment supports the following objectives [ASME B31.8S-2004, Section 5.3 and ASME B31.8S-2004, Section 5.4]:

i. ...
ii. assessment of the benefits derived from mitigating action...

This is a general comment related to this protocol question. Section 4.3.1 of the TIMP plan discusses the four allowable risk assessment approaches, but the specific approach used by GRS was not identified in the TIMP plan. The specific approach must be identified in the TIMP plan. The risk assessment approach is, however, identified in the TIRA supplemental document.

ii. The benefits of mitigating action are quantified in the risk assessment model via the "Threat Weight" factor. However, the specific process for how mitigating actions are used to modify the threat weights is not identified. The specific process must be documented. For example, if the "Threat Weight" is modified based on Subject Matter Expert (SME) opinion or a SME committee meeting, then this process must be specified.

GRS is therefore in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

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)];
ii. The risk assessment considers the frequency and consequences of past events, using company and industry data [ASME B31.8S-2004, Section 5.7(c)];
iii. The risk assessment approach integrates the results of the pipeline inspections in the development of the risk estimates [ASME B31.8S-2004, Section 5.7(d)];
iv. The risk assessment process includes a structured set of weighting factors to indicate the relative level of influence of each risk assessment component [ASME B31.8S-2004, Section 5.7(i)];
v. The risk assessment approach establishes the documentation requirements for the use of the inadequate of unsubstantiated data in the risk analysis [ASME B31.8S-2004, Section 5.7(e)];
vi. The risk assessment approach assumes a threat is applicable, and uses appropriately conservative assumptions, when inadequate or unsubstantiated data is available to eliminate the threat from the risk analysis [ASME B31.8S-2004, Section 5.7(e)];
vii. The risk assessment process incorporates sufficient resolution of pipeline segment size to analyze data as it exists along the pipeline [ASME B31.8S-2004, Section 5.7(k)];

...

iii. **Potential Issue Identified:** The specific process for how the pipeline inspections are integrated into the risk estimates was unclear. The process is discussed in the TIRA supplemental document (page 16, paragraph 1 and page 22, the last paragraph), but the specific process for integrating the inspection and testing results is incomplete. The TIRA document states the inspection and testing results (i.e., integrity assessments) will be incorporated into the "Threat Weight" (W). The specific process must be documented. For example, which inspection forms are used to integrate the results? Also, how are the threat weights modified? Is it through SME opinion? The process must be specified and documented in the TIMP plan or a reference made to other documented processes (i.e., the TIRA). Therefore, GRS is in violation of ASME B31.8S, Section 5.7(d).

...

v. **Potential Issue Identified:** The TIMP plan (page 35) states, *"The use of any unsubstantiated data will be documented so that the impact on the variability and accuracy of the assessment results can be considered."* However, the process is not further documented in the TIMP plan. The process must be documented or a reference made to other documented processes. Therefore, GRS is in violation of ASME B31.8S, Section 5.7(e) and CFR § 192.947(d).

vi. **Potential Issue Identified:** The TIMP plan (page 35) states, *"All applicable threats will be identified for each segment, regardless of whether or not substantiating data is available."* The language is somewhat unclear with regard to how "All applicable threats" are determined and whether the language meets the intent of this protocol question. The language must be clarified.

C.03.d. Verify that records demonstrate that the risk analysis data is combined in an appropriate manner to produce a risk value for each pipeline segment. Verify that the records...

iii. Shows the risk assessment approach integrates the results of pipeline inspections in the development of risk estimates [ASME B31.8S-2004, Section 5.7(d)]...

iii. **Potential Issue Identified:**
The TIMP plan does not sufficiently document which inspection data is integrated into the risk estimates, and how the inspection data is integrated.

C.04.a. Verify that the validation process includes a check that the risk results are logical and consistent with the operator's and other industry experience. [§192.917(c) and ASME B31.8S-2004, Section 5.12]

There is language in various parts of the TIMP plan and the TIRA document, but the references inadequately cover this protocol question. Those references include:

The TIRA document identifies on page 5 that *"These individuals will validate the inputs, assumptions and results of the risk assessment,"* but there is no reference made to the Quality Assurance (QA) chapter in the TIMP plan or any other documented process. If it is the intent of GRS to document the validation work in the QA chapter, then a reference to this chapter of the TIMP plan must be added.

There is language in Section 4.3.4 (Risk Assessment Validation), page 39, in the TIMP plan that references the QA chapter in the TIMP plan, but the QA chapter does not provide a documented process for validating the risk results. In addition, Table 13-1 does not provide documentation requirements for validating the risk results.

Language is included in Section 4.3.1, item 7, page 38 of the TIMP plan that uses part of the language in the Protocol question above. However, this item describes the purpose of these reviews as being to ensure the accuracy of the data, which is different than verifying the risk results.

Therefore, GRS is in violation of ASME B31.8S-2004, Sections 5.7(g) and 5.12, which requires that the *"...risk validation process shall be identified and documented in the integrity management program."*

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 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]...

i. **Potential Issue Identified:** GRS discusses integrating integrity assessment results and completed prevention and mitigation actions through the "Target Pipeline Data" and the "Threat Weight Factor (W)," which is part of the probability factor in the risk analysis. This is in the TIRA

document (page 22). However, details for how the Threat Weight Factor is modified based on completed prevention and mitigation actions are not addressed. The process must be specified. Therefore, GRS is in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

ii. **Potential Issue Identified:** GRS states in the TIRA document (page 22) that the risk assessment process is integrated into field reporting, engineering, etc. But specific details for how this is accomplished could not be found. Therefore, GRS is in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

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 HCAs.

i. **No Issues Identified**:
ii. **Potential Issue Identified**: Data Request: Does GRS have any documentation to demonstrate that the risk assessment process was integrated into field reporting, engineering, etc.?
iii. **Potential Issue Identified**: Data Request: Does GRS have any examples of this?
iv. **Potential Issue Identified**: This item is discussed in the TIMP plan in the Quality Assurance chapter; Table 13-1 incorporates this requirement, but the process outlined in the table and the rest of the chapter is unclear. It needs further clarification. For example, in Table 13-1 under methods for assuring quality, the line item states: *"Verified process in was [sic] Threat Idetification [sic] Flow chart was utilized"*. We are uncertain about what is being said here.
v. **Potential Issue Identified**: Leak and Failure history is noted in the TIRA document, Appendix B-1. It is also discussed in the TIMP plan. However, the specific process is unclear for how leak, failure and incident history is used to validate the risk model.
vi. **Potential Issue Identified**: Data Request: Does GRS have any examples of this?

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)] (Underline Added)

Potential Issue Identified:
iii. There is one issue related to this protocol question for monitored conditions. GRS must define the term "critical strain level" so that GRS engineers can determine if a dent meets the criteria of a monitored condition.

E.02.d. Verify that program requirements exist to meet the provisions of ASME B31.8S-2004, Section 7, Figure 4 for scheduling and remediating any other threat conditions that do not meet the classification criteria of Protocol E.02.b, above. [§192.933(c)]

Potential Issue Identified:

This item is covered in Section 6.6.4 of the TIMP plan. However, the language is incomplete. Figure 4 is for the time dependent threats. The language in the TIMP plan does not specify this. The language must be updated.

F.01.a. Verify that periodic evaluations are conducted based on a data integration and risk assessment of the entire pipeline as specified in §192.917. The evaluation must consider the following: [§192.937(b) and 192.917]

I. Past and present assessment results
II. Data integration and risk assessment information [§192.917]
III. Decisions about remediation [§192.933]
IV. Additional preventive and mitigative actions [§192.935]

Potential Issue Identified:
The above language is covered in Section 7.1 (Periodic Evaluations) of the TIMP plan. However, there is no reference to a documented process for how these elements will be integrated into the periodic evaluations. GRS must reference an existing documented process, or if one does not exist, add these elements to the process and reference them in Section 7.1.

Therefore, GRS is in violation of ASME B31.8S-2004, Section 5.7(g) and CFR § 192.947(d).

F.01.b. Verify that periodic evaluations of data are thorough, complete, and adequate for establishing reassessment methods and schedules. [§192.937(b)]

Potential Issue Identified:
The GRS periodic process for review includes the following record sources: TIRA report, HCA Analysis, ROW Patrols and Leak Detection Reports. While the reviews are thorough, there are deficiencies in the documented process related to methods and schedules as follows.

With regard to methods, GRS has done an analysis of threats based on its probabilistic risk model. See Protocol F.02.b for a discussion of this item.

With regard to reassessment schedules, Section 7.4.1, bullet three in the GRS TIMP plan states: *"If the predicted failure pressure ratio or test pressure ratio falls in-between the values listed in Table 7-1 (above), the ratio will be interpolated."* Table 7-1 is a reproduction of Table 3 in ASME B31.8S-2004. This statement is less conservative than the requirement in ASME B31.8S-2004, Table 3. There is no allowance for the interpolation of integrity assessment time intervals based on ASME B31.8S-2004, Table 3 alone. For example, for in-line-inspection, the language in the Table 3 states that the integrity

assessment interval is 5 years for *"Pf above 1.25 times the MAOP"* for pipelines operating at or above 50% of SMYS.

FAQ-207 describes the two options available for determining reassessment intervals, which are based on CFR § 192.939(a)(1)(i)&(ii). FAQ-207, option one identified in CFR § 192.939(a)(1)(i) will allow for an extended reassessment interval beyond those identified in ASME B31.8S-2004, Table 3 based on factors identified in this code section. This is covered in bullet one of the GRS TIMP plan. Option 2 identified in CFR § 192.939(a)(1(ii) is covered in bullet two of the GRS TIMP plan. However, the extrapolation approach identified in the GRS TIMP plan, Section 7.4.1, bullet three can only be used in conjunction with option one (i.e., the first bullet). The language in Section 7.4.1 is unclear, and it could be miss-interpreted as allowing extrapolation by using Table 3 only. GRS must revise its TIMP plan to make this requirement clear.

F.02.b. Review the methods selected for reassessments and verify that they are appropriate for the identified threats.

Potential Issue Identified:
This protocol question requires an operator to conduct integrity reassessments based on threats that are identified for each segment. The integrity reassessments must use one or more of the four approved assessment techniques (hydro-testing, ILI, DA and other technology) to physically test the segments for all threats on those segments that have not been eliminated during the risk assessment phase of the process. GRS has conservatively assumed most of the threats are present on the pipeline during the risk assessment process, with the exception of SCC and "other" which have been eliminated as threats.

However, it was unclear from the TIRA document which threats GRS intends to assess for during the planned ILI reassessment.

H.02.a. Verify implementation of enhancements to the §192.614-required Damage Prevention Program with respect to covered segments to prevent and minimize the consequences of a release, and that the enhanced measures include, at a minimum: [Note: As noted in Protocol H.03 and Protocol H.04, a subset of these enhancements are required for pipelines operating below 30% SMYS and for plastic transmission pipelines.] [§192.935(b)(1)]...

ii. Collecting, in a central database, location-specific information on excavation damage that occurs in covered and non-covered segments in the transmission system and the root cause analysis to support identification of targeted additional preventative and mitigative measures in the high consequence areas. This information must include recognized damage that is not required to be reported as an incident under Part 191. [§192.935(b)(1)(ii)]...

Potential Issue Identified:
ii. GRS must identify the specific database used for this requirement in the TIMP plan.

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 ASME B31.8S-2004 Appendix A.

Potential Issue Identified:
Chapter 10 of the GRS TIMP plan discusses the four overall performance metrics as well as the nine threat specific performance metrics. However, Chapter 10 does not have a written process for periodic evaluations that measure IM program effectiveness, incorporating the above bullets where applicable into the review process.

ASME B31.8S-2004, Section 9.1 requires plan evaluations to be conducted at least annually *"...to provide a continuing measure of integrity management program effectiveness over time."* GRS is therefore in violation of this requirement.

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.

Potential Issue Identified:
GRS has identified in its plan the four overall performance metrics and the nine threat specific performance metrics. However, there are no other performance metrics that have been identified in Chapter 10 of the TIMP plan. GRS should develop a process that evaluates whether or not there are an adequate set of performance metrics based on the above considerations and develop them as appropriate. For example, ASME B31.8S-2004, Sections 9.2.1 and 9.2.2 discusses process measures and operational measures.

K.01.b. Verify, that for significant changes to the program, program implementation, or schedules, PHMSA and the State or local pipeline safety authority, if applicable, has been notified within 30 days after the operator has adopted the change. [§192.909(b)]

Potential Issue Identified:
GRS has changed from a relative risk model to a probabilistic risk model. It appears this change is significant, but GRS believes they are compliant with this item per FAQ #111.

FAQ #111 states:

"The type of changes considered here would include significant revisions to the baseline assessment plan schedule such as significant delays in segment assessments, or changes that affect the overall manner in which an operator is conducting its IM program. These qualifiers are intended to preclude notifications for minor, even editorial, changes, or changes anticipated to occur to baseline assessment schedules due to foreseeable circumstances such as weather, permitting delays, or re-ranking schedule priorities due to updated risk assessment information..." [Underline added]

SED staff believes a change from a relative risk model to a probabilistic risk model is a significant change. Therefore, GRS should have notified the CPUC of this change to the risk model prior to the IM inspection per CFR § 192.909(b), which states in part *"...An operator must notify OPS, in accordance with § 192.949, of any change to the program that may substantially affect the program's implementation or may significantly modify the program or schedule for carrying out the program elements..."*

In addition, GRS must add language to the TIMP plan that instructs GRS staff to notify PHMSA or the CPUC within 30 days when significant changes occur per CFR § 192.909(b) and ASME B31.8S-2004, Section 5.7(g).

K.02.c. Verify the following are provided for by the change procedures: [ASME B31.8S-2004, Section 11(a)]

i. Reason for the change
ii. Authority for approving changes
iii. Analysis of implications
iv. Acquisition of required work permits
v. Documentation
vi. Communication of the change to affected parties
vii. Time limitations
viii. Qualification of staff

Potential Issue Identified:
Two of the items in the above list are apparently missing from the Management of Change (MOC) procedure located in the Operation & Maintenance (O&M) plan, Section 5. They are: (iv) acquisition of required work permits, and (vii) time limitations. These must be added to the MOC procedure.

GRS is therefore in violation of ASME B31.8S-2004, Section 11(a).

K.02.d. Verify that integrity management system changes are properly reflected in the pipeline system and that pipeline system changes are properly reflected in the integrity management program. [ASME B31.8S-2004, Section 11(b)]

Potential Issue Identified:
This item is apparently missing from the MOC procedure located in the O&M plan, Section 5, which is referenced in the TIMP plan.

GRS is therefore in violation of ASME B31.8S-2004, Section 11(b).

L.01.c. Verify that corrective actions to improve the integrity management program and the quality assurance process have been documented and are monitored for effectiveness. [ASME B31.8S-2004, 12.2(b)(7)]

Potential Issue Identified:
The process for documenting corrective actions is identified in Section 13.1.1; however, the process for monitoring the corrective actions for effectiveness is not clear. The process must be documented in the TIMP plan.