



Lodi Gas Storage, L.L.C.

A BUCKEYE PARTNERS, L.P. COMPANY

**Safety Plan for Natural Gas Pipeline Safety Act of 20 11
California Public Utilities Code §§ 961 and 963**

Introduction

This Safety Plan is submitted by Lodi Gas Storage, LL.C. ("LGS") in compliance with Public Utilities Code Sections 961 and 963, enacted by Senate Bill (SB) 705 (Ch. 522, Stats. 2011) and the California Public Utilities Commission's (CPUC's) Decision Amending Scope of Rulemaking 11-02-019 and Adding Respondents, Decision 12-04-010, issued April 20, 2012 ("Decision").

LGS owns and operates two storage fields, the Lodi Facility authorized in D.00-05-048 and the Kirby Hills Facility authorized in D.06-03-012 and in D.08-02-035. The Lodi Facility was constructed in 2001 and Kirby Hills in two phases – Phase I in 2006 followed by Phase II in 2009 – using state-of-the-art materials and construction techniques. The Lodi Facility has approximately 37 miles of DOT jurisdictional pipeline, and Kirby Hills has approximately 7 miles used to connect the storage facilities to PG&E's gas transmission network. Lodi connects to PG&E's Line 401, and Kirby connects to both Line 400 and Line 401 at which we receive odorized gas from PG&E. LGS does not own and operate any distribution facilities.

The pipelines were constructed per 49 CFR 192 requirements; visual inspections were conducted during the construction phases, all pipeline butt-welds were inspected by x-ray, and all Maximum Allowable Operating Pressures (MAOPs) were determined by design and qualified by hydrostatic testing. Much of the Lodi line runs in un-incorporated agriculture areas and is buried between 48 inches and 96 inches deep, this is a minimum of 12 inches deeper than would normally be recommended in 49 CFR § 192.327 and considered to be a safe depth, in case landowners wanted to use portions of the right-of-way (ROW) productively, e.g., as vineyards, a win-win for safety and our stakeholders. Extensive records have been kept of the construction and continued operations of each facility.

LGS is committed to safe operations and has since 2001 operated without a significant safety incident. This is because, from the top down, the corporate culture is imbued with the message that providing safe and reliable operations are top priority. On an ongoing basis, management commitment, employee and process evaluation, public awareness and systematic review and analysis are at the core of LGS's safety programs. Coupled with and equally important, the results also reflect the high quality of the employees and direct management at the Facilities and the longstanding commitment to the safe and reliable operations of the LGS facilities.



Management Commitment

At LGS, management commitment to safe operations starts with its parent company, Buckeye Partners, L.P. (Buckeye). In addition to owning and operating LGS, Buckeye owns and operates over 6,000 miles of liquid petroleum products pipelines and over 2,800 miles of pipeline under contracts with major oil and chemical companies.

Buckeye is a leader in pipeline safety efforts. Indeed, safety is the first item listed in Buckeye's "core values": (1) Safe, Reliable, Low-Cost Provider; (2) Accountability; (3) Entrepreneurism.

The Buckeye Board of Directors has a standing Health, Safety, Security and Environment (HSSE) committee that meets at least quarterly and receives detailed reports from Buckeye's HSSE staff. The full board also receives HSSE reports directly from management and from the director who chairs the HSSE committee. This is an industry "best practice." Buckeye arranges board meetings at locations that allow directors to visit operating sites. The charter for this HSSE committee is attached hereto as Attachment A.

Buckeye's CEO and COO have put their commitment in writing, in a "Commitment to Health, Safety & Environmental Values." This is attached hereto as Attachment B. Top management includes safety as an agenda item on investor relations calls. Safety is emphasized in virtually all public presentations.

LGS's commitment to safety also features prominently in its utility-level management and operation at all times, including operations prior to Buckeye's acquisition in 2008. For example, LGS has a full-time Compliance Manager onsite. LGS starts all meetings with a safety minute and all jobs with a pre-job safety brief. All of LGS's major projects have Job Hazard Analysis and Process Hazard Analysis performed prior to their start. Additionally, LGS holds Safety & Operational Excellence Summits, Safe Driving initiatives, Situational Awareness/4Qs training and a Near Miss program. These efforts have paid off, as LGS leads its peers in Vehicle Accidents and in OSHA recordables. They are above and beyond the industry practice of periodic meetings on a variety of safety related matters, which LGS also holds.

Overall Approach:

LGS has comprehensive sets of procedures to implement this commitment. These were adopted and have been used since the inception of the Lodi Gas Storage project, long before SB 705 was enacted. LGS appreciates that Commission's recognition that Respondents can meet the requirements of PU Code 961 and 963 by existing programs and plans. Consistent with the Commission's suggestion, LGS is providing a chart referencing where procedures exist that satisfy each of the requirements of the new PU Code sections enacted by SB 705. That chart refers to four primary documents:

- LGS's Operator Qualifications Manual
- LGS's Operations and Maintenance Manual
- LGS's Integrity Management Plan
- LGS's Emergency Response Plan



In very simple terms, LGS starts with having qualified employees and contractors and giving them clear and consistent instructions. It supplements these with procedures and checks to avoid and, where necessary, identify safety risks, and then, with plans in the event some threat to safety nonetheless occurs. These manuals and plans start with time-tested and regularly-updated industry-standard models, and then tailor them to LGS's operations and facilities.

In its Decision, the Commission directed Respondents to file safety plans, including references to existing plans, which demonstrate how the operator addresses each component of PU Code §§ 961 and 963 of its gas transmission and distribution facilities. LGS does not own and operate any distribution facilities. The Commission also stated its intent that Respondents "provide a comprehensive articulation of these components, e.g., policies, procedures, standards, guidelines, which together form their respective safety plans." Decision at 19.

This report responds to the Decision in two ways: (1) the "Assuring Safe and Reliable Operations" section describes how each of these plans work and how they work together; and (2) the Cross Reference chart shows how each of the requirements of SB 705 is satisfied, and consistent with the Commission's direction, "includes a substantive summary of the referenced policy, procedure, or standard that is a component of the safety plan." *Id.* As shown, LGS has plans already in place that meet or exceed the safety requirements now enumerated in PU Code §§ 961 and 963. In the event of a conflict between this Safety Plan and the underlying documents described herein, the underlying documents should be deemed to apply.



Part 1: Assuring Safe and Reliable Operations

As described above, LGS assures safe and reliable operations by having qualified employees and contractors and giving them clear and consistent instructions. The instructions apply to normal operations, include procedures for keeping those operations normal through integrity management, and then address the “who does what?” questions that would occur when the integrity of LGS facilities is actually threatened. These are primarily found in four documents:

- LGS's Operator Qualifications Manual
- LGS's Operations and Maintenance Manual
- LGS's Integrity Management Plan
- LGS's Emergency Response Plan

Each is described below.

Operator Qualifications Manual

LGS has adopted an industry-standard, regularly updated Operator Qualification (OQ) Plan (Attached hereto as Attachment C) that is intended to eliminate job performance errors that might affect the integrity of its facilities. The plan:

- identifies tasks (“covered tasks”) that might affect or detect the integrity of the system;
- assures that those performing covered tasks are qualified to do so, and can recognize and react to abnormal operating circumstances (“AOCs”) specifically associated with a specific task, along with more generic AOCs;
- provides periodic and/or event-induced evaluation of the job performance of Qualified Operators, the OQ Plan itself and O&M procedures;
- provides for record keeping to document that operators have in fact been qualified and remain so, e.g., through documentation of evaluation procedures, job performance reviews and the like; and
- calls for training for certain tasks and circumstance, e.g., new hires.

The OQ Plan itself starts by identifying tasks for which qualifications are required, addresses how employees and contractors are evaluated initially and how to assure that they continue to be qualified. The qualified operators and OQ Plan itself are subject to periodic reevaluation. All this is documented and training is required for certain enumerated circumstances.

- **“Covered Task” Identification:** All employees performing tasks enumerated in 49 CFR 192.801 and 195.501, e.g., tasks performed on the facility, certain operation and maintenance tasks, and other work that might affect or detect the integrity of the facility, must be qualified to perform those tasks. The OQ Plan includes a comprehensive list of covered tasks and identifies who is qualified to perform them. This can be found in Appendix B of the OQ Plan, Employees performing tasks.



- **Qualifying to Perform Covered Tasks:** Qualifications are measured in terms of an individual's knowledge, skill in performance and ability to physically perform the task for which he/she will be qualified through an evaluation process that is set forth in detail in the Company's Operator Qualification Plan (OQ Plan). Appendix C (aka Tab 20) of the OQ Plan (Attachment C hereto) sets forth the specific approved methods of evaluation.
- **Assuring Continued Operator Qualification:** When a qualified operator is involved in an incident, found not to be performing the task properly, or there otherwise is reason to believe the person is no longer qualified to perform a covered task, the Qualification Plan requires a re-evaluation of that person's qualifications and of any manual on which the operator might have been relying. As part of this "reasonable cause" evaluation, not only will the operator be evaluated, but the Plan itself (including its subcomponents) and O&M procedures will be reviewed when appropriate. These reviews can result in changes to the OQ Plan, which in turn are communicated to affected employees and contractors. Significant changes, as defined, are communicated to the appropriate government authorities.
- **Periodic Evaluation:** Certain tasks are periodically evaluated. The frequency and timing of evaluation are determined based on the task's difficulty, importance and frequency. The OQ Plan is updated regularly and when circumstances call for updating.
- **Record Keeping:** Records are kept that demonstrate what tasks a qualified operator has been qualified to do, that the operator has been evaluated, along with the method of evaluation and date. Contractors are required to produce records that their employees performing covered tasks are qualified for those tasks. Specific procedures for evaluating Contractors are set out in the OQ Plan.
- **Training:** Training is provided for specified circumstances and tasks, such as new hires and when changes are made in procedures. Notwithstanding, training does not make a person qualified to do a particular covered task; rather, an evaluation of performance of the task itself is the metric. Not only must an individual have the knowledge, skill and ability to perform the task, he/she must be able to recognize and react to Abnormal Operating Conditions (AOCs). AOCs can be task-specific, or generic. All qualified individuals are provided training on the generic AOCs.

Together, these standards and procedures assure performance of identified tasks by qualified personnel, providing a foundation for safe and reliable operations.



Operations and Maintenance Manual

Having qualified operators is an important part of the overall plan; assuring they know exactly what to do and how to do it in a coordinated manner is a lynchpin for success in the quest for safety. As with the OQ Plan, the Operations and Maintenance Manual (OMM) (Attachment D) starts with a comprehensive, regularly updated, industry standard model and applies it to LGS's facilities and operations. LGS's OMM is updated at least once per calendar year.

- **Assignment of Responsibilities:** The OMM has numerous places throughout it for which there is a numbered blank meant to facilitate the assignment of responsibilities to individual employees or positions. LGS keeps a chart of those assignments that can be found at the beginning of the OMM (starting at p. 10 of the PDF version).
- **Cross References to Regulations and Forms:** Also at the beginning of the OMM (at p. 17 of the PDF) there is a chart cross-referencing specific DOT regulations and requirements with numbered procedures in the OMM. These include not only primary but also secondary procedures. Additionally, the OMM includes a comprehensive chart of forms required by, among other things, its standard procedures, this time with a cross reference to the applicable procedure.
- **Reporting and Control of Incidents:** The OMM includes specific requirements for reporting and control of "incidents", which include but are not limited to the following activities: incident control, repair, reporting, investigation and documentation. The types of events that constitute "incidents" are described in Procedure 1.01, Section 4. Actions to take in the event of an "incident" include completing an Incident and Service Interruption Report form (Form 1.01B), which is also found in the Emergency Response Plan and is intended to provide a checklist to help assure accurate reporting and recording of details of an incident.

As with other sections of the OMM, a flow chart to illustrate the sequence of incident identification is provided. Once an incident is identified, there are procedures and responsibilities assigned for taking control, notifying emergency services, communications, repair, preservation of evidence, recording and reporting (internal and governmental), analysis, and recommendations to change operational procedures.

- **Safety-Related Conditions:** Similar assignments, procedures, criteria, decision charts and record-keeping requirements are in place for the reporting of "safety-related conditions." These are defined in Procedure 1.02, Section 5.1 (1) as occurring within 220 yards of place where people will live, assemble, or travel and (2) fitting the description in Section 5.1. which addresses "safety-related conditions" that must be reported. Section 5.1 specifically describes situations ranging from stressed pipe to corrosion, movement or loading from environmental causes, defects, damage, malfunctions or operating errors, leaks needing immediate action to protect



the public or property, and incidents that require a pipeline pressure reduction of 20 percent or more.

Section 5.2 specifies procedures for reporting safety-related conditions. It also specifies the forms to be utilized and document-retention requirements.

- **Investigation of Failures and Accidents:** Procedures for dealing with pipeline failures or accidents can be found in Procedure 1.03. Like the procedures for reporting and control of incidents, these cover what needs to happen and who is responsible for making it happen from the point of taking control of the scene in order to protect people (first) and property, through investigation, analysis, reporting and recommendations for operational or facilities modifications.
- **Annual and Other Reporting:** Procedure 1.04 assigns responsibility for preparing annual reports. Procedure 1.05 addresses updating of mapping information and Procedure 1.06 assures, among other things, that pipeline identification numbers are current, and for the reporting of related information.
- **Record-Keeping:** Procedure 2 of the OMM lays out extensive record-keeping requirements and provides for the assignment of responsibility for record keeping for a wide variety of activities.
- **Damage Prevention:** Procedure 3 in the OMM establishes a comprehensive damage prevention program intended to minimize the possibility of damage to facilities by outside forces. LGS participates in the "one-call" program and has minimum requirements for telephone answering services. The OMM includes a comprehensive marking, inspection and monitoring protocol to prevent excavation- and other construction related incidents.
- **Public Education:** LGS also engages in a Public Education Program consistent with the requirements of 49 CFR, Sections 192.614(c)(2), 192.616. Procedure 3.03 describes the program, its intent, frequency, targeted audiences, content, communications methods, documentation and the like. Procedure 3.01, Sec. 10 describes methods of measuring the efficiency of these outreach efforts. Appendix 3.03B describes LGS-specific initiatives and target audiences in more detail. Appendix 3.03D assigns specific responsibilities.
- **Operating Manual:** Procedure 3.06 requires a pipeline-specific operating manual (PSOM) and assigns responsibility for the manual and assuring that operating personnel are knowledgeable of it. The PSOM covers both normal and abnormal operating conditions.
- **Emergency Response Plan:** Procedure 3.04 establishes the requirement that LGS have a written Emergency Response Plan, assigns responsibility for assuring operating personnel are knowledgeable of emergency procedures and establishes criteria for that plan. The Plan is described here below.



- **Class Location Survey and Determination:** Procedure 4 in the OMM includes procedures and criteria for determining and updating pipeline class locations and boundaries, and associated record keeping.
- **Marking:** Procedure 5.04 establishes requirements and responsibility for installation and maintenance of pipeline markers in all areas accessible to the public.
- **Continuing Surveillance:** Procedure 5.01 of the OMM describes and summarizes the various surveillance programs in the OMM, and assigns responsibility for the implementation of inspections and maintenance, as well as training and record keeping, all with the purpose of detecting changing conditions that could eventually result in a hazard to the public and property.

These can be found in different sections of the OMM:

5.1.1	Investigation of Failures and Accidents	1.03
5.1.2	Damage Prevention Program Includes: excavation activities, and horizontal directional drilling.	3.01
5.1.3	Class Location Survey Includes: population density survey (class location), and right-of-way (R/W) observations.	4.01
5.1.4	Gas Leak Detection Survey with Instrumentation for pipelines without odorant. Includes: gas leak survey of pipelines and casing.	5.02
5.1.5	Pipeline Patrolling/Gas Leak Survey without Instrumentation Includes: pipeline R/W observation for leaks, construction activity, exposed pipe, erosion, and other detrimental effects on the pipeline.	5.03
5.1.6	Corrosion Control and Cathodic Protection Includes: atmospheric, internal and external corrosion, pipeline examination, CP maps and records.	Section 6 (all)
5.1.7	Emergency Valve Maintenance Includes: emergency and blowdown valve Maintenance, valve security, valve corrosion.	7.01
5.1.8	Pressure Regulators and Relief Devices (Overpressure safety devices)	7.02
5.1.9	Valve Vaults Includes: overall evaluation of valve vault.	7.03
5.1.10	Pipeline Repair Procedures Includes: preliminary investigation, damage evaluation, and repair of any damage or defect.	9.01
5.1.11	Odorization of Gas	11.01
5.1.12	Pressure Testing	15.01

If review and analysis of any or all of the above procedures indicates that a hazardous condition or a developing trend is detected or exists affecting persons or property, the OMM calls for immediate steps to be taken to reduce or eliminate the hazard, which may include a complete shutdown of the system.

- **Pipeline Corrosion Control:** Procedure 6 includes a comprehensive set of standards for pipeline corrosion control. These include the following:

6.01	Atmospheric Corrosion
6.02	Internal Corrosion
6.03	External Protective Coating
6.04	Internal and External Examination of Buried Pipelines
6.05	Cathodic Protection/External Corrosion Control
6.06	Electrical Isolation
6.07	Impressed Current Power Source – Inspection



6.08	Cathodic Protection, Maps, and Records
6.09	Evaluation of Bare, Buried or Submerged Unprotected Lines
6.10	District Office Review
6.11	Remedial Measures

- **Emergency Valve Maintenance and Inspection:** Procedure 7 requires that all emergency valves be inspected and partially operated at intervals not exceeding 15 months but at least once per calendar year. Section 5 of procedure 7 specifies in detail the procedures for doing so and for securing valves to prevent unauthorized operations. Record-keeping is required.
- **Maximum Allowable Operating Pressure:** Procedure 8.01 outlines the responsibility for establishing the MAOP of each pipeline segment, along with related operating and record-keeping requirements. Procedure 8.02 provides guidance on MAOPs when there is maintenance, excavation, repair or other such activities being performed.
- **Purging, Blowdown, Tapping and Welding:** Detailed procedures for purging, blowdown, tapping and welding can be found in Procedures 9.03, 9.04, 9.05, and 9.06, along with assignments of responsibility and record-keeping requirements.
- **Compressor Station Operations:** LGS has emergency shutdown systems in its compressor stations. Procedure 10.01 sets parameters for these systems and assigns responsibility for implementation. Procedure 10.01 also specifies requirements for emergency compressor station shutdown systems and their testing. Test forms are to be completed and kept for at least five years. Procedure 10.02 includes guidelines for the safe storage of combustibles in compressor stations. Procedure 10.03 provides criteria for gas detection and alarm systems and their maintenance. Test results are recorded and kept for at least five years.
- **Pipeline Upgrading:** Procedure 12.01 includes procedures for increasing the MAOP of pipelines. These address, among other things, requirements for incremental ramping of pressure, testing and lifetime record keeping.
- **Valve Safety and Security:** Procedure 14.01, Valve Security, includes requirements for securing or locking valves to prevent accidental, inadvertent operation, and protection from tampering. These include requiring locks on manually operated valves and on control boxes for remotely operated valves. Other methods of securing valves, e.g., removing handles, are also specified. Under Procedure 14.02, lock and tag requirements are applicable to maintenance and modification operations. Procedure 14.03, Prevention of Accidental Ignition, addresses situations where the presence of gas constitutes a hazard of fire or explosion. Procedure 14.04, Excavations, establishes safety requirements for the protection of personal entering excavations for maintenance purposes.
- **Test Requirements:** Procedure 15.01 provides detailed criteria for pressure testing installations and repairs. Procedure 15.02, Visual Inspection and Nondestructive



Testing, provides the criteria for non-destructive testing of butt welds. Detailed record-keeping requirements apply to both these types of testing, with lifetime-of-facility retention required for most data.

- **LGS-Specific Operating Guidelines:** Section 17 of the OMM contains LGS-specific operating procedures. Individual sets of procedures exist for the Lodi facility and the Kirby Hills Phase I and Phase II facilities. These include startup and shutdown procedures for compressors, dehydration, thermal oxidation, and emergency generation equipment. Among other things, these procedures also specify valve positions for various operating conditions, e.g., injection, withdrawal, and emergencies.
- **Forms:** The OMM includes PHMSA forms, specifically standard Incident and Annual Reports, along with detailed instructions for their preparation.



Integrity Management Plan

LGS has developed a detailed Integrity Management Plan (IMP) which is attached hereto as Attachment E. The IMP, along with the OQ Plan, and OMM, are designed to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems.

The IMP is comprised of 15 “Elements.” Most of these use the same format, starting with a purpose, definitions, and procedures, record-keeping and reporting requirements. These are industry-standard. Most Elements conclude with specific agenda items for reviews that are to take place each calendar year, assignments of responsibility, and a checklist of items and how they were dealt with at the last annual “agenda” meeting, which took place on October 10-12, 2011.

- **Element #1: HCA Identification:** While LGS makes safe and reliable operations its first priority; identifying high concentration areas (HCAs) helps LGS and other pipeline operators prioritize efforts to maintain pipeline integrity. Element 1 includes specific methods by which LGS identifies HCAs, which contain not only on-the-ground surveys, but also data from public and emergency officials. These are reviewed each calendar year. When necessary, changes in methodology are to be reported to government agencies.
- **Element #2: Threats, Data Integration, and Risk Analysis:** The objective and purpose of an IMP is to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems. To ensure that the IMP achieves these objectives, LGS has developed threat, data integration, and risk analysis procedures to assist in this effort.
 - **Threats:** LGS looks for the following threats:

Time Dependent Threats:	
1.	External corrosion
2.	Internal corrosion
3.	Stress corrosion cracking
Static (stable) or Resident Threats	
4.	Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31. 8S-2001, Appendix A4.3]
5.	Welding or fabrication related defects <ul style="list-style-type: none"> ff Defective pipe girth weld ff Defective fabrication weld ff Wrinkle bend or buckle ff Stripped threads, broken pipe, coupling failure
6.	Equipment failures <ul style="list-style-type: none"> ff Gasket O-ring failure ff Control/Relief equipment malfunction ff Seal/pump packing failure ff Miscellaneous
Time-Independent Threats (Random)	
7.	Third party/mechanical damage [192.917(e)(1)]



8.	Incorrect operations (including human error)
9.	Weather related and outside force damage
	ff Cold weather
	ff Lightening
	ff Heavy rains or floods
	ff Earth movement
	Additional Threats
10.	Cyclic fatigue or other loading condition. [192.917 (e)(2)]
11.	All other potential threats. [192.917(a)]
12.	Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)]

- **Data Integration:** In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required.

For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.

LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.

- **Risk Assessment** is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures.

The objectives of risk assessment are:

- 1) prioritization of pipelines/segments for scheduling integrity assessments and mitigating action;
- 2) assessment of the benefits derived from mitigating action (i.e., reduced risk);
- 3) determination of the most effective mitigation measures for the identified threats;
- 4) assessment of the integrity impact from modified inspection intervals;
- 5) assessment of the use of or need for alternative inspection methodologies;
- 6) more effective resource allocation; and
- 7) facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items).



Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.

- **Element #3: Baseline Assessments:** Element #3 provides procedures and methodologies for baseline assessment of pipeline integrity. LGS has cross-referenced specific O&M procedures that apply when doing a baseline assessment (Element #3, pp. 19-20 of 26). Modifications to the baseline assessment are required under circumstances specified in Section 3.8. Those that may substantially affect program implementation or may significantly modify the program are to be reported to the OPS.
- **Element #4: Direct Assessments:** LGS does not use direct assessment as the primary assessment method. Rather, it uses other methods allowed under the IMP regulations.
- **Element #5 Remediation and Repair:** Element #5 details procedures for remediation and repair when certain defects are discovered. These include prescribed time limits for differing types of defects, as well as record-keeping and reporting requirements. As discussed above, LGS uses not only in-line inspection (ILI) but also data integration to determine where defects might occur.
- **Element #6: Continual Evaluation:** Element #6 requires LGS to conduct a periodic evaluation of pipeline integrity based on data integration and risk assessment with the goal of identifying the threats specific to each covered segment and the risk represented by these threats. In addition to periodic evaluations, LGS conducts evaluations in response to specified events in order to assure that pipeline integrity threats are promptly identified. Element #6 provides methodologies to be used to evaluate differing potential defects, along with reassessment timelines.
- **Element #7: Confirmatory Direct Assessment:** Confirmatory Direct Assessment can be used for pipe that is scheduled to be reassessed at a period longer than 7 years. LGS does not use confirmatory direct assessment.
- **Element #8: Preventive and Mitigative Measures:** LGS has a process in place to identify additional measures to prevent a pipeline failure and to mitigate the consequences of a pipeline failure in a high consequence area. Element # 8 specifies the process for identifying additional measures be based on identified threats to each pipeline segment and the risk analysis required by §192.917. These are described in IMP Element #2. Mitigative measures are shown on the LGS risk analysis and mitigative review worksheet.

The additional measures evaluated by LGS will cover a spectrum of alternatives such as, but not limited to the following:

- 1) enhancements to the damage prevention program (third party damage);
- 2) installing automatic shut-off valves or remote control valves;
- 3) installing computerized monitoring and leak detection systems;
- 4) replacing pipe segments with pipe of heavier wall thickness;



- 5) providing additional training to personnel on response procedures;
- 6) conducting drills with local emergency responders; and
- 7) implementing additional inspection and maintenance programs.

A systematic, documented decision-making process will be used to decide which measures are to be implemented, involving input from relevant parts of the organization, such as operations, maintenance, engineering, and corrosion control. The decision-making process considers both the likelihood and consequences of pipeline failures. Additional measures are, when applicable, identified and documented in the action item list. Documentation will include identification of the additional items, completed implementation items, and schedules for completion. See IMP Element #2 and LGS risk analysis.

Enhancements to damage protection include using qualified personnel for work LGS conducts, collecting location-specific information on excavation damage, root cause analyses, participation in one-call systems, and monitoring of excavation on covered segments. Other mitigative and preventative measures are also set forth in Element #8. These are considered as part of LGS's risk analysis.

LGS has 22 emergency shutdown valves on the Lodi system and 38 on the Kirby Hills facility. Both also have relief valves at each compressor and other protections.

- **Element #9: Performance Measures:** LGS conducts semi-annual performance reviews to compare actual miles of pipe inspected versus planned, the number of immediate and scheduled repairs completed as a result of the IMP and the number of leaks, failures and incidents. Semi-annual reports, certified by a senior executive officer are submitted to the OPS.

Other threats to pipeline integrity are also listed and treated as performance measures: these include internal and external corrosion, stress corrosion cracking, defects in materials used in construction, and third party damage, as well as incorrect operations. O&M reports are gathered and reviewed as part of the performance-evaluation process. In addition, the evaluation process itself is evaluated, as part of the annual agenda meeting.

- **Element #10: Record Keeping:** Element #10 specifies numerous reports and documentation required for the IMP. LGS keeps these records in an accessible form on a central database. Retention requirements and responsibilities are assigned.
- **Element #11: Management of Change:** LGS has specific management of change (MOC) procedures. Consistent with those procedures, changes to the IMP are documented along with the reason for each change. Significant changes require notification consistent with Section 11.5, which includes requirements to notify OPS and local authorities within 30 days of the change. MOC procedures are reviewed annually.
- **Element #12: Quality Assurance:** LGS has quality-assurance processes that meet industry standards. These include:
 - determining the documentation required for the IMP;



- clearly and formally defining responsibilities and authorities under the IMP;
- reviewing the results of the IM program at predetermined intervals and including recommendations for improvements
- identifying personnel qualification requirements for anyone who is involved in the IMP;
- monitoring of the IM program to ensure that it is being implemented according to the written procedures;
- periodic internal audits of the IM program; and
- corrective actions to improve the IM program

Corrective action items are to be documented during each agenda review with follow-up on a periodic basis, normally quarterly.

Notably, the quality assurance program solicits recommendations for program improvement from operators and subject matter experts.

- **Element # 13: Communications Plan:** LGS's IMP communications plan includes procedures to:
 - address safety concerns raised by the OPS or state authority with jurisdictional authority;
 - keep LGS employees informed of appropriate integrity issues; and
 - make the public aware of its integrity management efforts and results.

This program is not the same as the O&M procedure #3.03. Rather it is more targeted to internal communications.

Communications with OPS and local authorities will include at least one of the following:

- remedial corrective measures completed or scheduled;
- root cause determination (for failure investigations); and/or
- actions to prevent recurrence.

The communications plan is reviewed annually.

- **Element # 14: Agency Notification:** Element #14 provides that LGS's risk analysis or IMP will be provided upon request to the OPS and state and local safety authorities, as applicable. Element #14 also describes what types of agency notifications are required and when they are required to be made.
- **Element # 15: Minimization of Environmental and Safety Risk:** Element #15 reinforces LGS's desire to ensure that, in conducting its baseline assessment and reassessments, precautions will be implemented to protect workers, members of the public, and the environment from safety hazards (such as an accidental release of product) during reassessments. Specific O&M procedures to accomplish this goal are cross-referenced. Verification procedures ensure they have been utilized.



Emergency Response Plan

LGS has had an Emergency Response Plan (attached hereto as Attachment F) in place since its initial operation. It has evolved over the years. As with the other Plans and Manuals, LGS starts with an industry standard plan, and revises and/or supplements it to take into account LGS-specific items.

The Emergency Response Plan (ERP) is not intended to be an all-encompassing plan of action for emergencies, because certain types of emergencies may occur that would make it impractical to follow the guidelines established in the Plan. The ERP requires that necessary preparatory planning, procurement of certain equipment and supplies and training be completed.

Each supervisor who may have duties and responsibilities in emergency situations is furnished a copy of the ERP. Employees are trained in their areas of responsibility, and must become familiar with the total Plan.

- **Section 1: Fact Sheets:** The ERP starts with detailed fact sheets on the LGS facilities. These include descriptions of the Lodi and Kirby Hills facilities, emergency shutoff and pressure relief valves, the MAOPs and other pertinent data.
- **Section 2: Pre-Emergency Planning:** LGS simulates an emergency at least once each year. Supervisors verify employee training effectiveness through testing and/or drills. Familiarity with the ERP is subject to a written test for each employee. Section 2 also requires, among other things, liaison with public officials and emergency response agencies, a public education program, use of the one-call system and Hazardous Waste Operations and Emergency Response training.
- **Section 3: General Emergency Response Procedures:** Section 3 includes procedures applicable to five different potential emergency situations:
 - Escaping gas
 - Abnormal pressure condition
 - Fire or explosion
 - Natural disaster
 - Civil disturbance

Section 3 also assigns overall responsibility to the Supervisor in charge, not only to assure employees are trained and equipped, but also to identify the type of emergency and, when necessary, declaring an emergency. It also speaks to emergency isolation procedures and refers to valve locations that are at the end of the ERP.

Procedures are included for receiving information about leaks, fires, explosions and other emergencies, along with checklists of vital and helpful information to get from a party calling to report a potential emergency and advice to give a caller.



Upon receiving a call, the operator is to notify the appropriate personnel (using a call-out emergency phone list contained in the ERP) and the Supervisor will, in turn, classify the potential emergency and invoke the applicable plan.

The potential emergency may be “minor” or “major.” Depending on its nature, calls may be placed to the Fire Department and/or Emergency Rescue, the Police/Sheriff Department, State Police, an Ambulance Unit, or Civil Defense, all of whom have been coordinated with in advance. The Supervisor may call upon other LGS personnel or other gas companies and will when appropriate dispatch a Leak Investigation Person to the scene.

The Plant Manager is to designate a “Supervisor in Charge” or “Incident Commander” (IC) who will coordinate field activities. A Supervisor should when possible be designated as a Public Information Officer.

The IC is responsible for notifying the CPUC and DOT of reportable accidents, leaks or incidents. A log of events is to be kept.

Section 3 includes specific assignments to various personnel for purposes of an emergency. As noted above, Section 3 includes specific procedures for each of the different types of incidents. It also includes an Emergency Shutdown and Pressure Reduction Procedure and Public Communications protocols.

- **Section 4: On Scene Response Activities:** Section 4 includes general instructions for the first LGS employee to arrive on the scene. These include determining the scope and making an assessment of the incident, mitigation and containment. Checklists provide general guidance. Section 4 also includes more specific options for mitigation, including evacuation, shelter in place, ignition source control, and emergency shutdown and isolation.
- **Section 5: Incident Command and Emergency Authority:** Section 5 adopts the “Incident Command System,” a system widely used for emergency management by federal, state, and local emergency response organizations. It goes on to describe that system, both in narrative and organization chart formats, as well as providing qualification and responsibility checklists for the Incident Commander, Information Officer, Planning Section Chief, Logistics Section Chief, and Finance Section Chief.
- **Section 6: Reporting Requirements:** Section 6 lists the agencies that must be notified in the event of a release of gas, the procedures for notification, and contact information. It also includes the form to be used.
- **Section 7: Natural Gas & Gas Condensate Hazard Info:** Section 7 includes a response guide taken from DOT Transportation Emergency Response Guide #115. This provides a checklist of advisable actions for a variety of situations. Much more detailed information is also provided to help guide someone responding to a leak.
- **Section 8: Emergency Equipment:** Section 8 includes an Emergency Equipment list that includes the locations for a wide variety of equipment.



- **Section 9: Emergency Phone Numbers:** Section 9 includes a list of LGS-employee contact information, and information for contacting emergency contractors and government agencies. Other information includes maps and directions to the nearest hospital.
- **Section 10: Emergency Valve List:** Section 10 includes a list of all emergency valves, their characteristics and GPS location.
- **Section 11: Zone Specific Information:** Section 11 includes a map of, directions to, and pictures of facilities in emergency response zones for both the Lodi and Kirby Hills locations, along with a list of valves in each zone and sites within a zone.
- **Section 12: Forms:** Section 12 provides a compendium of pertinent forms, checklists and documentation aids.



Part 2: Public Utilities Code §§ 961 and 963 Compliance Checklist

The following table shows how each of the requirements of PU Code §§ 961 and 963 are satisfied, and consistent with the Commission's direction, includes "a substantive summary of the referenced policy, procedure, or standard that is a component of the safety plan."

Decision at p. 20. The discussion below follows the grouping of issues set forth as a table at pages 16-17 of the Decision

Safety Plan Topics

1. Safety Systems

LGS identifies hazards and implements safety-related systems in order to accomplish its #1 priority: protect the public, responders, and company personnel. LGS promotes a culture of safety through management commitment and employee training, e.g., emergency response training, training in the identification and evaluation of numerous types of risks, damage prevention, public education to make the public aware of risk and alert to report any abnormal conditions. Hazards and systemic risks are evaluated annually during review of the Integrity Management Program.

Cross-Reference Table

Public Utilities Code Citation	LGS Plan(s) Reference
961(D)(1)	
"Identify and minimize hazards and systemic risks in order to minimize accidents, explosions, fires, and dangerous conditions, and protect the public and the gas corporation workforce."	<p>Emergency Response Plan</p> <ul style="list-style-type: none"> • Section 3 -- General Emergency Response Procedures: Section 3 includes procedures applicable to five different potential emergency situations: <ul style="list-style-type: none"> ○ Escaping gas ○ Abnormal pressure condition ○ Fire or explosion ○ Natural disaster ○ Civil disturbance <p>Section 3 also assigns overall responsibility to the Supervisor in charge, not only to assure employees are trained and equipped, but also to identify the type of emergency and, when necessary, declaring an emergency. It also speaks to emergency isolation procedures and refers to valve locations that are at the end of the ERP.</p> <p>Procedures are included for receiving information about leaks, fires, explosions and other emergencies, along with checklists of vital and helpful information to get from a party calling to report a potential emergency and advice to give a caller.</p> <p>Upon receiving a call, the operator is to notify the appropriate personnel (using a call-out emergency phone list contained in the ERP) and the Supervisor will, in turn, classify the potential emergency and invoke the applicable plan.</p> <p>The potential emergency may be "minor" or "major." Depending on its nature, calls may be placed to the Fire Department and/or Emergency Rescue, the Police/Sheriff Department, State Police, an Ambulance Unit, or Civil Defense, all of whom have been coordinated with in advance. The Supervisor may call upon other LGS personnel or gas companies and will when appropriate dispatch a Leak Investigation Person to the scene.</p> <p>The Plant Manager is to designate a "Supervisor in Charge" or "Incident Commander" (IC) who will coordinate field activities. A Supervisor should when possible be designated as a Public Information Officer.</p>



The IC is responsible for notifying the CPUC and DOT of reportable accidents, leaks or incidents. A log of events is to be kept.

Section 3 includes specific assignments to various personnel for purposes of an emergency. As noted above, Section 3 includes specific procedures for each of the different types of incidents. It also includes an Emergency Shutdown and Pressure Reduction Procedure and Public Communications protocols.

The IC is responsible for notifying the CPUC and DOT of reportable accidents, leaks or incidents. A log of events is to be kept.

Section 3 includes specific assignments to various personnel for purposes of an emergency. As noted above, Section 3 includes specific procedures for each of the different types of incidents. It also includes an Emergency Shutdown and Pressure Reduction Procedure and Public Communications protocols.

Operations & Maintenance Manual

Section 1: Pipeline Failure, Reporting, and Investigation:

Reporting and Control of Incidents: The OMM includes specific requirements for reporting and control of "incidents", which include but are not limited to the following activities: incident control, repair, reporting, investigation and documentation. The types of events that constitute "incidents" are described in Procedure 1.01, Section 4. Actions to take in the event of an "incident" include completing an Incident and Service Interruption Report form (Form 1.01B), which is also found in the Emergency Response Plan and is intended to provide a checklist to help assure accurate reporting and recording of details of an incident.

** As with other sections of the OMM, a flow chart to illustrate the sequence of incident identification is provided. Once an incident is identified, there are procedures and responsibilities assigned for taking control, notifying emergency services, communications, repair, preservation of evidence, recording and reporting (internal and governmental), analysis, and recommendations to change operational procedures.

Safety-Related Conditions: Similar assignments, procedures, criteria, decision charts and record-keeping requirements are in place for the reporting of "safety-related conditions." These are defined in Procedure 1.02, Section 5.1 (1) as occurring within 220 yards of place where people will live, assemble, or travel and (2) fitting the description in Section 5.1, which addresses "safety related conditions" that must be reported. Section 5.1 specifically describes situations ranging from stressed pipe to corrosion, movement or loading from environmental causes, defects, damage, malfunctions or operating errors, leaks needing immediate action to protect the public or property, and incidents that require a pipeline pressure reduction of 20 percent or more.

** Section 5.2 specifies procedures for reporting safety related conditions. It also specifies the forms to be utilized and document-retention requirements.

Investigation of Failures and Accidents: Procedures for dealing with pipeline failures or accidents can be found in Procedure 1.03. Like the procedures for reporting and control of incidents, these cover what needs to happen and who is responsible for making it happen from the point of taking control of the scene in order to protect people (first) and property, through investigation, analysis, reporting and recommendations for operational or facilities modifications.

Section 3: Plans and Programs:

Damage Prevention: Procedure 3 in the OMM establishes a comprehensive damage prevention program intended to minimize the possibility of damage to facilities by outside forces. LGS participates in the "one-call" program and has minimum requirements for telephone answering services. The OMM includes a comprehensive marking, inspection and monitoring protocol to prevent excavation- and other construction related incidents.

Public Education: LGS also engages in a Public Education Program consistent with the requirements of 49 CFR, Sections 192.614(c)(2), 192.616. Procedure 3.03 describes the program, its intent, frequency, targeted audiences, content, communications methods, documentation and the like. Procedure 3.01, Section 10 describes methods of measuring the efficiency of these outreach efforts. Appendix 3.03B describes LGS-specific initiatives and target audiences in more detail. Appendix 3.03 D assigns specific responsibilities.

Operating Manual: Procedure 3.06 requires a pipeline-specific operating manual (PSOM) and assigns responsibility for the manual and assuring that operating personnel are knowledgeable of it. The PSOM covers both normal and abnormal operating conditions.

Emergency Response Plan: Procedure 3.04 establishes the requirement that LGS have a written Emergency Response Plan, assigns responsibility for assuring operating personnel are knowledgeable of emergency procedures and establishes criteria for that plan.

Section 14: Safety and Security

Valve Safety and Security: Procedure 14.01, Valve Security, includes requirements for securing or locking valves to prevent accidental, inadvertent operation, and protection from tampering. These include requiring locks on manually operated valves and on control boxes for remotely operated valves. Other methods of securing valves, e.g., removing handles, are also specified. Under Procedure 14.02, lock and tag requirements are applicable to maintenance and modification operations.

Prevention of Accidental Ignition: Procedure 14.03 addresses situations where the presence of gas constitutes a hazard of fire or explosion. Procedure 14.04, Excavations, establishes safety requirements for the protection of personnel entering excavations for maintenance purposes.



Integrity Management Program (IMP)

Element #2: Threats, Data Integration, and Risk Analysis: The objective and purpose of an IMP is to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems. To ensure that the IMP achieves these objectives, LGS has developed threat, data integration, and risk analysis procedures to assist in this effort.

Threats: LGS looks for the following threats:

- Time Dependent Threats:
1. External corrosion
2. Internal corrosion
3. Stress corrosion cracking
Static (stable) or Resident Threats
4. Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31.8S-2001, Appendix A4.3]
5. Welding or fabrication related defects
ff Defective pipe girth weld
ff Defective fabrication weld
ff Wrinkle bend or buckle
ff Stripped threads, broken pipe, coupling failure
6. Equipment failures
ff Gasket O-ring failure
ff Control/Relief equipment malfunction
ff Seal/pump packing failure
ff Miscellaneous
Time-Independent Threats (Random)
7. Third party/mechanical damage [192.917(e)(1)]
8. Incorrect operations (including human error)
9. Weather related and outside force damage
ff Cold weather
ff Lightening
ff Heavy rains or floods
ff Earth movement
Additional Threats
10. Cyclic fatigue or other loading condition. [192.917 (e)(2)]
11. All other potential threats. [192.917(a)]
12. Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)]

Data Integration: In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required.

For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.

LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.

Risk assessment is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures.

The objectives of risk assessment are:

- ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action
** assessment of the benefits derived from mitigating action (i.e., reduced risk);
** determination of the most effective mitigation measures for the identified threats;
** assessment of the integrity impact from modified inspection intervals;



	<ul style="list-style-type: none"> ** assessment of the use of or need for alternative inspection methodologies; ** more effective resource allocation; and ** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items). <p>Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.</p> <p>- Element #8: Preventive and Mitigative Measures: LGS has a process in place to identify additional measures to prevent a pipeline failure and to mitigate the consequences of a pipeline failure in a high consequence area. Element # 8 specifies the process for identifying additional measures based on identified threats to each pipeline segment and the risk analysis required by §192.917. These are described in IMP Element #2. Mitigative measures are shown on the LGS risk analysis and mitigative review worksheet.</p> <p>The additional measures evaluated by LGS will cover a spectrum of alternatives such as, but not limited to the following:</p> <ul style="list-style-type: none"> o enhancements to the damage prevention program (third party damage); o installing automatic shut-off valves or remote control valves; o installing computerized monitoring and leak detection systems; o replacing pipe segments with pipe of heavier wall thickness; o providing additional training to personnel on response procedures; o conducting drills with local emergency responders; and o implementing additional inspection and maintenance programs. <p>A systematic, documented decision-making process will be used to decide which measures are to be implemented, involving input from relevant parts of the organization, such as operations, maintenance, engineering, and corrosion control. The decision-making process considers both the likelihood and consequences of pipeline failures. Additional measures are, when applicable, identified and documented in the action item list. Documentation will include identification of the additional items, completed implementation items, and schedules for completion. See IMP Element #2 and LGS risk analysis.</p> <p>Enhancements to damage protection include using qualified personnel for work LGS conducts, collecting location-specific information on excavation damage, root cause analyses, participation in one-call systems, and monitoring of excavation on covered segments. Other mitigative and preventative measures are also set forth in Element #8. These are considered as part of LGS's risk analysis.</p> <p>LGS has 22 emergency shutdown valves on the Lodi system and 38 on the Kirby Hills facility. Both also have relief valves at each compressor and other protections.</p> <p>- Element #9: Performance Measures: LGS conducts semi-annual performance reviews to compare actual miles of pipe inspected versus planned, the number of immediate and scheduled repairs completed as a result of the IMP and the number of leaks, failures and incidents. Semi-annual reports, certified by a senior executive officer are submitted to the OPS.</p> <ul style="list-style-type: none"> o Other threats to pipeline integrity are also listed and treated as performance measures: these include internal and external corrosion, stress corrosion cracking, defects in materials used in construction, and third party damage, as well as incorrect operations. O&M reports are gathered and reviewed as part of the performance-evaluation process. In addition, the evaluation process itself is evaluated, as part of the annual agenda meeting.
<p>961(d)(2)</p> <p>"Identify the safety-related systems that will be deployed to minimize hazards, including adequate documentation of the commission-regulated gas</p>	<p>Emergency Response Plan –</p> <ul style="list-style-type: none"> - Section 2: Pre-Emergency Planning : LGS simulates an emergency at least once each year. Supervisors verify employee training effectiveness through testing and /or drills. Familiarity with the ERP is subject to a written test for each employee. Section 2 also requires, among other things, liaison with public officials and emergency response agencies, a public education program, use of the one-call system and Hazardous Waste Operations and Emergency Response training. - Section 4: On Scene Response Activities: Section 4 includes general instructions for the first LGS employee to arrive on the scene. These include determining the scope and making an assessment of the incident, mitigation and containment. Checklists provide general guidance. Section 4 also includes more specific options for mitigation, including evacuation, shelter in place, ignition source control, and emergency shutdown and isolation.



pipeline facility history and capability."

Operations & Maintenance Manual

- Section 1: Pipeline Failure, Reporting, and Investigation: Reporting and Control of Incidents... Section 2: Record-Keeping... Section 3: Plans and Programs... Section 14: Safety and Security...

Integrity Management Program (IMP)

- Element #2: Threats, Data Integration, and Risk Analysis: The objective and purpose of an IMP is to maintain the integrity of the pipeline system... Threats: LGS looks for the following threats:

Table with 1 column and 1 row: 1. External corrosion



	<ol style="list-style-type: none"> 2. Internal corrosion 3. Stress corrosion cracking <li style="text-align: center;">Static (stable) or Resident Threats 4. Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31. 8S-2001, Appendix A4.3] 5. Welding or fabrication related defects <ul style="list-style-type: none"> ff Defective pipe girth weld ff Defective fabrication weld ff Wrinkle bend or buckle ff Stripped threads, broken pipe, coupling failure 6. Equipment failures <ul style="list-style-type: none"> ff Gasket O-ring failure ff Control/Relief equipment malfunction ff Seal/pump packing failure ff Miscellaneous <li style="text-align: center;">Time-Independent Threats (Random) 7. Third party/mechanical damage [192.917(e)(1)] 8. Incorrect operations (including human error) 9. Weather related and outside force damage <ul style="list-style-type: none"> ff Cold weather ff Lightning ff Heavy rains or floods ff Earth movement <li style="text-align: center;">Additional Threats 10. Cyclic fatigue or other loading condition. [192.917 (e)(2)] 11. All other potential threats. [192.917(a)] 12. Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)] <p>o Data Integration: In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and a physical examination of the pipeline will be required.</p> <p>For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.</p> <p>LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.</p> <p>o Risk assessment is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures.</p> <p>The objectives of risk assessment are:</p> <ul style="list-style-type: none"> ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action ** assessment of the benefits derived from mitigating action (i.e., reduced risk); ** determination of the most effective mitigation measures for the identified threats; ** assessment of the integrity impact from modified inspection intervals; ** assessment of the use of or need for alternative inspection methodologies; ** more effective resource allocation; and ** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items). <p>Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.</p> <p>- Element #8: Preventive and Mitigative Measures: LGS has a process in place to identify additional measures to prevent a pipeline failure and to mitigate the consequences of a pipeline failure in a high consequence area. Element #</p>
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	<p>8 specifies the process for identifying additional measures be based on identified threats to each pipeline segment and the risk analysis required by §192.917. These are described in IMP Element #2. Mitigative measures are shown on the LGS risk analysis and mitigative review worksheet.</p> <p>The additional measures evaluated by LGS will cover a spectrum of alternatives such as, but not limited to the following:</p> <ul style="list-style-type: none"> ○ enhancements to the damage prevention program (third party damage); ○ installing automatic shut-off valves or remote control valves; ○ installing computerized monitoring and leak detection systems; ○ replacing pipe segments with pipe of heavier wall thickness; ○ providing additional training to personnel on response procedures; ○ conducting drills with local emergency responders; and ○ implementing additional inspection and maintenance programs. <p>A systematic, documented decision-making process will be used to decide which measures are to be implemented, involving input from relevant parts of the organization, such as operations, maintenance, engineering, and corrosion control. The decision-making process considers both the likelihood and consequences of pipeline failures. Additional measures are, when applicable, identified and documented in the action item list. Documentation will include identification of the additional items, completed implementation items, and schedules for completion. See IMP Element #2 and LGS risk analysis.</p> <p>Enhancements to damage protection include using qualified personnel for work LGS conducts, collecting location-specific information on excavation damage, root cause analyses, participation in one-call systems, and monitoring of excavation on covered segments. Other mitigative and preventative measures are also set forth in Element #8. These are considered as part of LGS's risk analysis.</p> <p>LGS has 22 emergency shutdown valves on the Lodi system and 38 on the Kirby Hills facility. Both also have relief valves at each compressor and other protections.</p> <p>Element #9: Performance Measures: LGS conducts semi-annual performance reviews to compare actual miles of pipe inspected versus planned, the number of immediate and scheduled repairs completed as a result of the IMP and the number of leaks, failures and incidents. Semi-annual reports, certified by a senior executive officer are submitted to the OPS.</p> <ul style="list-style-type: none"> ○ Other threats to pipeline integrity are also listed and treated as performance measures: these include internal and external corrosion, stress corrosion cracking, defects in materials used in construction, and third party damage, as well as incorrect operations. O&M reports are gathered and reviewed as part of the performance-evaluation process. In addition, the evaluation process itself is evaluated, as part of the annual agenda meeting.
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2. Emergency Response

LGS maintains an Emergency Response Plan (a.k.a. "Emergency Plan") in accordance with 49 CFR 192.615. The Emergency Response Plan provides guidelines to quickly, safely, and effectively respond to an emergency. Although the types of emergencies that might occur in a gas system are widely varied, there are certain common actions that can be taken regardless of the type of emergency. The Emergency Response Plan specifies those actions.

Cross-Reference Table

Public Utilities Code Citation	LGS Plan(s) Reference
961(d)(5)	
"Provide for appropriate and effective system controls, with respect to both	<p>Emergency Response Plan</p> <ul style="list-style-type: none"> • Section 3: General Emergency Response Procedures: Section 3 includes procedures applicable to five different potential emergency situations: <ul style="list-style-type: none"> ○ Escaping gas ○ Abnormal pressure condition



equipment and personnel procedures, to limit the damage from accidents, explosions, fires, and dangerous conditions."

- o Fire or explosion
- o Natural disaster
- o Civil disturbance

Section 3 also assigns overall responsibility to the Supervisor in charge, not only to assure employees are trained and equipped, but also to identify the type of emergency and, when necessary, declaring an emergency. It also speaks to emergency isolation procedures and refers to valve locations that are at the end of the ERP.

Procedures are included for receiving information about leaks, fires, explosions and other emergencies, along with checklists of vital and helpful information to get from a party calling to report a potential emergency and advice to give a caller.

Upon receiving a call, the operator is to notify the appropriate personnel (using a call-out emergency phone list contained in the ERP) and the Supervisor will, in turn, classify the potential emergency and invoke the applicable plan.

The potential emergency may be "minor" or "major." Depending on its nature, calls may be placed to the Fire Department and/or Emergency Rescue, the Police/Sheriff Department, State Police, an Ambulance Unit, or Civil Defense, all of whom have been coordinated with in advance. The Supervisor may call upon other LGS personnel or gas companies and will when appropriate dispatch a Leak Investigation Person to the scene.

The Plant Manager is to designate a "Supervisor in Charge" or "Incident Commander" (IC) who will coordinate field activities. A Supervisor should when possible be designated as a Public Information Officer.

The IC is responsible for notifying the CPUC and DOT of reportable accidents, leaks or incidents. A log of events is to be kept.

Section 3 includes specific assignments to various personnel for purposes of an emergency. As noted above, Section 3 includes specific procedures for each of the different types of incidents. It also includes an Emergency Shutdown and Pressure Reduction Procedure and Public Communications protocols.

- **Section 8: Emergency Equipment:** Section 8 includes an Emergency Equipment list that includes the locations for a wide variety of equipment.

Operations & Maintenance Manual

Section 1: Pipeline Failure, Reporting, and Investigation

- o **Reporting and Control of Incidents:** The OMM includes specific requirements for reporting and control of "incidents", which include but are not limited to the following activities: incident control, repair, reporting, investigation and documentation. The types of events that constitute "incidents" are described in Procedure 1.01, Section 4. Actions to take in the event of an "incident" include completing an Incident and Service Interruption Report form (Form 1.01B), which is also found in the Emergency Response Plan and is intended to provide a checklist to help assure accurate reporting and recording of details of an incident.

** As with other sections of the OMM, a flow chart to illustrate the sequence of incident identification is provided. Once an incident is identified, there are procedures and responsibilities assigned for taking control, notifying emergency services, communications, repair, preservation of evidence, recording and reporting (internal and governmental), analysis, and recommendations to change operational procedures.

- o **Safety-Related Conditions:** Similar assignments, procedures, criteria, decision charts and record-keeping requirements are in place for the reporting of "safety-related conditions." These are defined in Procedure 1.02, Section 5.1 (1) as occurring within 220 yards of place where people will live, assemble, or travel and (2) fitting the description in Section 5.1, which addresses "safety related conditions" that must be reported. Section 5.1 specifically describes situations ranging from stressed pipe to corrosion, movement or loading from environmental causes, defects, damage, malfunctions or operating errors, leaks needing immediate action to protect the public or property, and incidents that require a pipeline pressure reduction of 20 percent or more.

** Section 5.2 specifies procedures for reporting safety related conditions. It also specifies the forms to be utilized and document-retention requirements.

- o **Investigation of Failures and Accidents:** Procedures for dealing with pipeline failures or accidents can be found in Procedure 1.03. Like the procedures for reporting and control of incidents, these cover what needs to happen and who is responsible for making it happen from the point of taking control of the scene in order to protect people (first) and property, through investigation, analysis, reporting and recommendations for operational or facilities modifications.

Section 3: Plans and Programs:

- o **Damage Prevention:** Procedure 3 in the OMM establishes a comprehensive damage prevention program intended to minimize the possibility of damage to facilities by outside forces. LGS participates in the "one-call" program and has minimum requirements for telephone answering services. The OMM includes a comprehensive marking, inspection and monitoring protocol to prevent excavation- and other construction related incidents.
- o **Public Education:** LGS also engages in a Public Education Program consistent with the requirements of 49 CFR, Sections 192.614(c)(2), 192.616. Procedure 3.03 describes the program, its intent, frequency, targeted audiences, content, communications methods, documentation and the like. Procedure 3.01, Sec. 10 describes methods of measuring the efficiency of these outreach efforts. Appendix 3.03B describes LGS-specific initiatives



and target audiences in more detail. Appendix 3.03 D assigns specific responsibilities.

- o **Operating Manual:** Procedure 3.06 requires a pipeline-specific operating manual (PSOM) and assigns responsibility for the manual and assuring that operating personnel are knowledgeable of it. The PSOM covers both normal and abnormal operating conditions.
- o **Emergency Response Plan:** Procedure 3.04 establishes the requirement that LGS have a written Emergency Response Plan, assigns responsibility for assuring operating personnel are knowledgeable of emergency procedures and establishes criteria for that plan.

Section 14: Safety and Security:

- o **Valve Safety and Security:** Procedure 14.01, Valve Security, includes requirements for securing or locking valves to prevent accidental, inadvertent operation, and protection from tampering. These include requiring locks on manually operated valves and on control boxes for remotely operated valves. Other methods of securing valves, e.g., removing handles, are also specified. Under Procedure 14.02, lock and tag requirements are applicable to maintenance and modification operations.
- o **Prevention of Accidental Ignition:** Procedure 14.03 addresses situations where the presence of gas constitutes a hazard of fire or explosion. Procedure 14.04, Excavations, establishes safety requirements for the protection of personnel entering excavations for maintenance purposes.

Integrity Management Program (IMP)

Element #1: HCA Identification: While LGS makes safe and reliable operations, its #1 priority; identifying high concentration areas (HCAs) helps LGS and other pipeline operators prioritize efforts to maintain pipeline integrity. Element 1 includes specific methods by which LGS identifies HCAs, which contain not only on-the-ground surveys, but also data from public and emergency officials. These are reviewed each calendar year. When necessary, changes in methodology are to be reported to government agencies.

Element #2: Threats, Data Integration, and Risk Analysis: The objective and purpose of an IMP is to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems. To ensure that the IMP achieves these objectives, LGS has developed threat, data integration, and risk analysis procedures to assist in this effort.

- o **Threats:** LGS looks for the following threats:

Time Dependent Threats:	
1.	External corrosion
2.	Internal corrosion
3.	Stress corrosion cracking
Static (stable) or Resident Threats	
4.	Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31. 8S-2001, Appendix A4.3]
5.	Welding or fabrication related defects
	ff Defective pipe girth weld
	ff Defective fabrication weld
	ff Wrinkle bend or buckle
	ff Stripped threads, broken pipe, coupling failure
6.	Equipment failures
	ff Gasket O-ring failure
	ff Control/Relief equipment malfunction
	ff Seal/pump packing failure
	ff Miscellaneous
Time-Independent Threats (Random)	
7.	Third party/mechanical damage [192.917(e)(1)]
8.	Incorrect operations (including human error)
9.	Weather related and outside force damage
	ff Cold weather
	ff Lightning
	ff Heavy rains or floods
	ff Earth movement
Additional Threats	
10.	Cyclic fatigue or other loading condition. [192.917 (e)(2)]
11.	All other potential threats. [192.917(a)]
12.	Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)]



- Data Integration: In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross-reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required.

For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.

LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.

- Risk assessment is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures.

The objectives of risk assessment are:

- ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action
** assessment of the benefits derived from mitigating action (i.e., reduced risk);
** determination of the most effective mitigation measures for the identified threats;
** assessment of the integrity impact from modified inspection intervals;
** assessment of the use of or need for alternative inspection methodologies;
** more effective resource allocation; and
** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items).

Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.

- Element #9: Performance Measures: LGS conducts semi-annual performance reviews to compare actual miles of pipe inspected versus planned, the number of immediate and scheduled repairs completed as a result of the IMP and the number of leaks, failures and incidents. Semi-annual reports, certified by a senior executive officer are submitted to the OPS.

- Other threats to pipeline integrity are also listed and treated as performance measures: these include internal and external corrosion, stress corrosion cracking, defects in materials used in construction, and third party damage, as well as incorrect operations. O&M reports are gathered and reviewed as part of the performance-evaluation process. In addition, the evaluation process itself is evaluated, as part of the annual agenda meeting.

- Element #12: Quality Assurance: LGS has quality-assurance processes that meet industry standards. These include:

- determining the documentation required for the IMP;
clearly and formally defining responsibilities and authorities under the IMP;
reviewing the results of the IM program at predetermined intervals and including recommendations for improvements
identifying personnel qualification requirements for anyone who is involved in the IMP;
monitoring of the IM program to ensure that it is being implemented according to the written procedures;
periodic internal audits of the IM program; and
corrective actions to improve the IM program

Corrective action items are to be documented during each agenda review with follow-up on a periodic basis, normally quarterly.

Notably, the quality assurance program solicits recommendations for program improvement from operators and subject matter experts.

See also - Operator Qualification Manual

LGS has adopted an industry-standard, regularly updated Operator Qualification (OQ) Plan that is intended to eliminate job performance errors that might affect the integrity of its facilities. (Attached hereto as Attachment C) The plan:



	<ul style="list-style-type: none"> - identifies tasks ("covered tasks") that might affect or detect the integrity of the system; - assures that those performing covered tasks are qualified to do so, and can recognize and react to abnormal operating circumstances ("AOCs") specifically associated with a specific task, along with more generic AOCs; - provides periodic and/or event-induced evaluation of the job performance of Qualified Operators, the O Q Plan itself and O&M procedures; - provides for record keeping to document that operators have in fact been qualified and remain so, e.g. , through documentation of evaluation procedures, job performance reviews and the like; and - calls for training for certain tasks and circumstance, e.g., new hires. 																											
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<p>"Provide timely response to customer and employee reports of leaks and other hazardous conditions and emergency events, including disconnection, reconnection, and pilot-lighting procedures."</p>	<p>Emergency Response Plan</p> <ul style="list-style-type: none"> - Section 6: Reporting Requirements: Section 6 lists the agencies that must be notified in the event of a release of gas, the procedures for notification, and contact information. It also includes the form to be used. <p>Operations & Maintenance Manual</p> <ul style="list-style-type: none"> - Section 3: Plans and Programs <ul style="list-style-type: none"> o Damage Prevention: Procedure 3 in the OMM establishes a comprehensive damage prevention program intended to minimize the possibility of damage to facilities by outside forces. LGS participates in the "one-call" program and has minimum requirements for telephone answering services. The OMM includes a comprehensive marking, inspection and monitoring protocol to prevent excavation- and other construction related incidents. o Public Education: LGS also engages in a Public Education Program consistent with the requirements of 49 CFR, Sections 192.614(c)(2), 192.616. Procedure 3.03 describes the program, its intent, frequency, targeted audiences, content, communications methods, documentation and the like. Procedure 3.01, Sec. 10 describes methods of measuring the efficiency of these outreach efforts. Appendix 3.03B describes LGS-specific initiatives and target audiences in more detail. Appendix 3.03 D assigns specific responsibilities. o Operating Manual: Procedure 3.06 requires a pipeline-specific operating manual (PSOM) and assigns responsibility for the manual and assuring that operating personnel are knowledgeable of it. The PSOM covers both normal and abnormal operating conditions. o Emergency Response Plan: Procedure 3.04 establishes the requirement that LGS have a written Emergency Response Plan, assigns responsibility for assuring operating personnel are knowledgeable of emergency procedures and establishes criteria for that plan. - Section 5 (Leak, Patrolling And Surveillance) <ul style="list-style-type: none"> o Location: The OMM includes procedures and criteria for determining and updating pipeline class locations and boundaries, and associated record keeping. Procedure 5.04 establishes requirements and responsibility for installation and maintenance of pipeline markers in all areas accessible to the public. o Continuing Surveillance: Procedure 5.01 of the OMM describes and summarizes the various surveillance programs in the OMM, and assigns responsibility for the implementation of inspections and maintenance, as well as training and record keeping, all with the purpose of detecting changing conditions that could eventually result in a hazard to the public and property. <p>These can be found in different sections of the OMM :</p> <table border="1" data-bbox="414 1422 1356 1908"> <tr> <td>5.1.1</td> <td>Investigation of Failures and Accidents</td> <td>1.03</td> </tr> <tr> <td>5.1.2</td> <td>Damage Prevention Program Includes: excavation activities, and horizontal directional drilling.</td> <td>3.01</td> </tr> <tr> <td>5.1.3</td> <td>Class Location Survey Includes: population density survey (class location), and right-of-way (R/W) observations.</td> <td>4.01</td> </tr> <tr> <td>5.1.4</td> <td>Gas Leak Detection Survey with Instrumentation for pipelines without odorant.</td> <td>5.02</td> </tr> <tr> <td>5.1.5</td> <td>Pipeline Patrolling/Gas Leak Survey without Instrumentation Includes: pipeline R/W observation for leaks, construction activity, exposed pipe, erosion, and other detrimental effects on the pipeline.</td> <td>5.03</td> </tr> <tr> <td>5.1.6</td> <td>Corrosion Control and Cathodic Protection Includes: atmospheric, internal and external corrosion, pipeline examination, CP maps and records.</td> <td>Section 6 (all)</td> </tr> <tr> <td>5.1.7</td> <td>Emergency Valve Maintenance Includes: emergency and blowdown valve maintenance, valve security, valve corrosion.</td> <td>7.01</td> </tr> <tr> <td>5.1.8</td> <td>Pressure Regulators and Relief Devices</td> <td>7.02</td> </tr> <tr> <td colspan="3" style="text-align: center;">(Overpressure safety devices)</td> </tr> </table>	5.1.1	Investigation of Failures and Accidents	1.03	5.1.2	Damage Prevention Program Includes: excavation activities, and horizontal directional drilling.	3.01	5.1.3	Class Location Survey Includes: population density survey (class location), and right-of-way (R/W) observations.	4.01	5.1.4	Gas Leak Detection Survey with Instrumentation for pipelines without odorant.	5.02	5.1.5	Pipeline Patrolling/Gas Leak Survey without Instrumentation Includes: pipeline R/W observation for leaks, construction activity, exposed pipe, erosion, and other detrimental effects on the pipeline.	5.03	5.1.6	Corrosion Control and Cathodic Protection Includes: atmospheric, internal and external corrosion, pipeline examination, CP maps and records.	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5.1.10	Includes: overall evaluation of valve vault. Pipeline Repair Procedures	9.01
5.1.11	Includes: preliminary investigation, damage evaluation, and repair of any damage or defect. Odorization of Gas	11.01
5.1.12	Pressure Testing	15.01

If review and analysis of any or all of the above procedures indicates that a hazardous condition or a developing trend is detected or exists affecting persons or property, the OMM calls for immediate steps to be taken to reduce or eliminate the hazard, which may include a complete shutdown of the system.

Section 14: Safety and Security:

- Valve Safety and Security: Procedure 14.01, Valve Security, includes requirements for securing or locking valves to prevent accidental, inadvertent operation, and protection from tampering. These include requiring locks on manually operated valves and on control boxes for remotely operated valves. Other methods of securing valves, e.g., removing handles, are also specified. Under Procedure 14.02, lock and tag requirements are applicable to maintenance and modification operations.
- Prevention of Accidental Ignition: Procedure 14.03 addresses situations where the presence of gas constitutes a hazard of fire or explosion. Procedure 14.04, Excavations, establishes safety requirements for the protection of personnel entering excavations for maintenance purposes.

Section 17: LGS-Specific Operating Guidelines: Section 17 of the OMM contains LGS-specific operating procedures. Individual sets of procedures exist for the Lodi facility and the Kirby Hills Phase I and Phase II facilities. These include startup and shutdown procedures for compressors, dehydration, thermal oxidation, and emergency generation equipment. Among other things, these procedures also specify valve positions for various operating conditions, e.g., injection, withdrawal, and emergencies.

Integrity Management Program (IMP)

Element #2: Threats, Data Integration, and Risk Analysis: The objective and purpose of an IMP is to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems. To ensure that the IMP achieves these objectives, LGS has developed threat, data integration, and risk analysis procedures to assist in this effort.

- Threats: LGS looks for the following threats:

Time Dependent Threats:	
1.	External corrosion
2.	Internal corrosion
3.	Stress corrosion cracking
Static (stable) or Resident Threats	
4.	Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31.8S-2001, Appendix A4.3]
5.	Welding or fabrication related defects <ul style="list-style-type: none"> ff Defective pipe girth weld ff Defective fabrication weld ff Wrinkle bend or buckle ff Stripped threads, broken pipe, coupling failure
6.	Equipment failures <ul style="list-style-type: none"> ff Gasket O-ring failure ff Control/Relief equipment malfunction ff Seal/pump packing failure ff Miscellaneous
Time-Independent Threats (Random)	
7.	Third party/mechanical damage [192.917(e)(1)]
8.	Incorrect operations (including human error)
9.	Weather related and outside force damage <ul style="list-style-type: none"> ff Cold weather ff Lightening ff Heavy rains or floods ff Earth movement
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	<ul style="list-style-type: none"> o Data Integration: In identifying threats, LGS uses a threat worksheet , and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required. <p>For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.</p> <p>LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.</p> <ul style="list-style-type: none"> o Risk assessment is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures. <p>The objectives of risk assessment are:</p> <ul style="list-style-type: none"> ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action ** assessment of the benefits derived from mitigating action (i.e., reduced risk); ** determination of the most effective mitigation measures for the identified threats; ** assessment of the integrity impact from modified inspection intervals; ** assessment of the use of or need for alternative inspection methodologies; ** more effective resource allocation; and ** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items). <p>Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.</p> <ul style="list-style-type: none"> - Element #5 Remediation and Repair: Element #5 details procedures for remediation and repair when certain defects are discovered. These include prescribed time limits for differing types of defects, as well as record-keeping and reporting requirements. As discussed above, LGS uses not only in-line inspection (ILI) but also data integration to determine where defects might occur.
	<p>See also - Operator Qualification Manual</p> <p>LGS has adopted an industry-standard, regularly updated Operator Qualification (OQ) Plan that is intended to eliminate job performance errors that might affect the integrity of its facilities. (Attached hereto as Attachment C) The plan:</p> <ul style="list-style-type: none"> - identifies tasks ("covered tasks") that might affect or detect the integrity of the system; - assures that those performing covered tasks are qualified to do so, and can recognize and react to abnormal operating circumstances ("AOCs") specifically associated with a specific task, along with more generic AOCs; - provides periodic and/or event-induced evaluation of the job performance of Qualified Operators, the O Q Plan itself and O&M procedures; - provides for record keeping to document that operators have in fact been qualified and remain so, e.g., through documentation of evaluation procedures, job performance reviews and the like; and - calls for training for certain tasks and circumstance, e.g., new hires.
<p>961(d)(8)</p> <p>"Prepare for, or minimize damage from, and respond to, earthquakes and other major events."</p>	<p>Emergency Response Plan</p> <ul style="list-style-type: none"> • Section 3: General Emergency Response Procedures: Section 3 includes procedures applicable to five different potential emergency situations: <ul style="list-style-type: none"> o Escaping gas o Abnormal pressure condition o Fire or explosion o Natural disaster o Civil disturbance <p>Section 3 also assigns overall responsibility to the Supervisor in charge, not only to assure employees are trained and equipped, but also to identify the type of emergency and, when necessary, declaring an emergency. It also speaks to emergency isolation procedures and refers to valve locations that are at the end of the ERP.</p> <p>Procedures are included for receiving information about leaks, fires, explosions and other emergencies, along with checklists of vital and helpful information to get from a party calling to report a potential emergency and advice to give</p>



a caller.

Upon receiving a call, the operator is to notify the appropriate personnel (using a call-out emergency phone list contained in the ERP) and the Supervisor will, in turn, classify the potential emergency and invoke the applicable plan.

The potential emergency may be "minor" or "major." Depending on its nature, calls may be placed to the Fire Department and/or Emergency Rescue, the Police/Sheriff Department, State Police, an Ambulance Unit, or Civil Defense, all of whom have been coordinated with in advance. The Supervisor may call upon other LGS personnel or gas companies and will when appropriate dispatch a Leak Investigation Person to the scene.

The Plant Manager is to designate a "Supervisor in Charge" or "Incident Commander" (IC) who will coordinate field activities. A Supervisor should when possible be designated as a Public Information Officer.

The IC is responsible for notifying the CPUC and DOT of reportable accidents, leaks or incidents. A log of events is to be kept.

Section 3 includes specific assignments to various personnel for purposes of an emergency. As noted above, Section 3 includes specific procedures for each of the different types of incidents. It also includes an Emergency Shutdown and Pressure Reduction Procedure and Public Communications protocols.

Operations & Maintenance Manual

Section 3 :Plans and Programs:

- o Damage Prevention: Procedure 3 in the OMM establishes a comprehensive damage prevention program intended to minimize the possibility of damage to facilities by outside forces. LGS participates in the "one-call" program and has minimum requirements for telephone answering services. The OMM includes a comprehensive marking, inspection and monitoring protocol to prevent excavation- and other construction related incidents.
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- o Threats: LGS looks for the following threats:

Table with 2 columns: Threat ID and Description. Includes sub-headers for Time Dependent Threats and Static (stable) or Resident Threats. Lists 5 specific threats including external corrosion, internal corrosion, stress corrosion cracking, construction and manufacturing-related defects, and welding or fabrication related defects.



	<p>ff Defective fabrication weld ff Wrinkle bend or buckle ff Stripped threads, broken pipe, coupling failure</p> <p>6. Equipment failures ff Gasket O-ring failure ff Control/Relief equipment malfunction ff Seal/pump packing failure ff Miscellaneous</p> <p style="text-align: center;">Time-Independent Threats (Random)</p> <p>7. Third party/mechanical damage [192.917(e)(1)] 8. Incorrect operations (including human error) 9. Weather related and outside force damage ff Cold weather ff Lightening ff Heavy rains or floods ff Earth movement</p> <p style="text-align: center;">Additional Threats</p> <p>10. Cyclic fatigue or other loading condition. [192.917 (e)(2)] 11. All other potential threats. [192.917(a)] 12. Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)]</p> <p>o Data Integration: In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required.</p> <p>For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.</p> <p>LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.</p> <p>o Risk assessment is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures.</p> <p>The objectives of risk assessment are:</p> <ul style="list-style-type: none"> ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action ** assessment of the benefits derived from mitigating action (i.e., reduced risk); ** determination of the most effective mitigation measures for the identified threats; ** assessment of the integrity impact from modified inspection intervals; ** assessment of the use of or need for alternative inspection methodologies; ** more effective resource allocation; and ** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items). <p>Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.</p> <ul style="list-style-type: none"> • Element #5 Remediation and Repair: Element #5 details procedures for remediation and repair when certain defects are discovered. These include prescribed time limits for differing types of defects, as well as record-keeping and reporting requirements. As discussed above, LGS uses not only in-line inspection (ILI) but also data integration to determine where defects might occur. <p>See also - Operator Qualification Manual LGS has adopted an industry-standard, regularly updated Operator Qualification (OQ) Plan that is intended to eliminate job performance errors that might affect the integrity of its facilities. (Attached hereto as Attachment C) The plan:</p> <ul style="list-style-type: none"> - identifies tasks ("covered tasks") that might affect or detect the integrity of the system; - assures that those performing covered tasks are qualified to do so, and can recognize and react to abnormal
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3. State and Federal Regulations

LGS maintains several plans and manuals to document that the design, construction, installation, operation, and maintenance was conducted and continues to be conducted in accordance with state and federal regulations.

Cross-Reference Table

Public Utilities Code Citation	LGS Plan(s) Reference															
961(d)(7)	Emergency Response Plan															
<p>"Include appropriate protocols for determining maximum allowable operating pressures on relevant pipeline segments, including all necessary documentation affecting the calculation of maximum allowable operating pressures."</p>	<ul style="list-style-type: none"> - Section 1: Fact Sheets: The ERP starts with detailed fact sheets on the LGS facilities. These include descriptions of the Lodi and Kirby Hills facilities, emergency shutoff and pressure relief valves, the MAOPs and other pertinent data. 															
	<p>Operations & Maintenance Manual</p> <ul style="list-style-type: none"> - Section 4: Class Location Survey and Determination: Procedure 4 in the OMM includes procedures and criteria for determining and updating pipeline class locations and boundaries, and associated record keeping. - Section 8: Maximum Allowable Operating Pressure: Procedure 8.01 outlines the responsibility for establishing the MAOP of each pipeline segment, along with related operating and record-keeping requirements. Procedure 8.02 provides guidance on MAOPs when there is maintenance, excavation, repair or other such activities being performed. - Section 15: Pressure Testing: Procedure 15.01 provides detailed criteria for pressure testing installations and repairs. Procedure 15.02, Visual Inspection and Non-destructive Testing, provides the criteria for non-destructive testing of butt welds. Detailed record-keeping requirements apply to both these types of testing, with lifetime-of-facility retention required for most data. - Section 17: LGS-Specific Operating Guidelines: Section 17 of the OMM contains LGS-specific operating procedures. Individual sets of procedures exist for the Lodi facility and the Kirby Hills Phase I and Phase II facilities. These include start up and shutdown procedures for compressors, dehydration, thermal oxidation, and emergency generation equipment. Among other things, these procedures also specify valve positions for various operating conditions, e.g., injection, withdrawal, and emergencies. 															
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Static (stable) or Resident Threats																
4.	Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31. 8S-2001, Appendix A4.3]															
5.	Welding or fabrication related defects <ul style="list-style-type: none"> ff Defective pipe girth weld ff Defective fabrication weld ff Wrinkle bend or buckle ff Stripped threads, broken pipe, coupling failure 															
6.	Equipment failures															



- ff Gasket O-ring failure
 - ff Control/Relief equipment malfunction
 - ff Seal/pump packing failure
 - ff Miscellaneous
- Time-Independent Threats (Random)**
- 7. Third party/mechanical damage [192.917(e)(1)]
 - 8. Incorrect operations (including human error)
 - 9. Weather related and outside force damage
 - ff Cold weather
 - ff Lightening
 - ff Heavy rains or floods
 - ff Earth movement
- Additional Threats**
- 10. Cyclic fatigue or other loading condition. [192.917 (e)(2)]
 - 11. All other potential threats. [192.917(a)]
 - 12. Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)]

Data Integration: In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross-reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required.

For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.

LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.

- o **Risk assessment** is used to support integrity decisions. Baseline integrity assessments and re-assessments can result in the implementation of additional preventative and mitigative measures.

The objectives of risk assessment are:

- ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action
- ** assessment of the benefits derived from mitigating action (i.e., reduced risk);
- ** determination of the most effective mitigation measures for the identified threats;
- ** assessment of the integrity impact from modified inspection intervals;
- ** assessment of the use of or need for alternative inspection methodologies;
- ** more effective resource allocation; and
- ** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items).

Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.

- Element 3 (Baseline Assessment)
- Element 6 (Continual Assessment)
- **Element #9: Performance Measures:** LGS conducts semi-annual performance reviews to compare actual miles of pipe inspected versus planned, the number of immediate and scheduled repairs completed as a result of the IMP and the number of leaks, failures and incidents. Semi-annual reports, certified by a senior executive officer are submitted to the OPS.
 - o Other threats to pipeline integrity are also listed and treated as performance measures: these include internal and external corrosion, stress corrosion cracking, defects in materials used in construction, and third party damage, as well as incorrect operations. O&M reports are gathered and reviewed as part of the performance-evaluation process. In addition, the evaluation process itself is evaluated, as part of the annual agenda meeting.

961(d)(9)



<p>“Meet or exceed the minimum standards for safe design, construction, installation, operation, and maintenance of gas transmission and distribution facilities prescribed by regulations issued by the United States Department of Transportation in Part 192 (commencing with Section 192.1) of Title 49 of the Code of Federal Regulations.”</p>	<p>Operations & Maintenance Manual: LGS starts with a comprehensive, regularly updated, industry standard model and applies it to LGS’s facilities and operations. LGS’s OMM is updated at least once per calendar year.</p> <p>Integrity Management Program: LGS has developed a detailed Integrity Management Plan (IMP). The IMP, along with the OQ Plan, and OMM, are designed to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems. The IMP is comprised of 15 “Elements.” Most of these use the same format, starting with a purpose, definitions, procedures, record-keeping and reporting requirements. These are industry-standard. Most Elements conclude with specific agenda items for reviews that are to take place each calendar year, assignments of responsibility, and a checklist of items and how they were dealt with at the last annual “agenda” meeting, which took place on October 10-12, 2011.</p> <p>See also - Operator Qualification Manual LGS has adopted an industry-standard, regularly updated Operator Qualification (OQ) Plan that is intended to eliminate job performance errors that might affect the integrity of its facilities. The plan:</p> <ul style="list-style-type: none"> - identifies tasks (“covered tasks”) that might affect or detect the integrity of the system; - assures that those performing covered tasks are qualified to do so, and can recognize and react to abnormal operating circumstances (“AOCs”) specifically associated with a specific task, along with more generic AOCs; - provides periodic and/or event-induced evaluation of the job performance of Qualified Operators, the OQ Plan itself and O&M procedures; - provides for record keeping to document that operators have in fact been qualified and remain so, e.g., through documentation of evaluation procedures, job performance reviews and the like; and - calls for training for certain tasks and circumstance, e.g., new hires.
<p>961(c) “The plan developed, approved, and implemented pursuant to subdivision (b) shall be consistent with best practices in the gas industry and with federal pipeline safety statutes as set forth in Chapter 601 (commencing with Section 60101) of Subtitle VIII of Title 49 of the United States Code and the regulations adopted by the United States Department of Transportation pursuant to those statutes.”</p>	<p>LGS assures safe and reliable operations by having qualified employees and contractors and giving them clear and consistent instructions. The instructions apply to normal operations, include procedures for keeping those operations normal through integrity management, and then address the “who does what?” questions that would occur when the integrity of LGS facilities is actually threatened. These are primarily found in four documents:</p> <ul style="list-style-type: none"> • LGS’s Operator Qualifications Manual • LGS’s Operations and Maintenance Manual • LGS’s Integrity Management Plan • LGS’s Emergency Response Plan <p>For each of these, LGS has adopted an industry-standard, regularly updated model plan. LGS also reviews each of these plans at least every calendar year.</p>

4. Continuing Operations

LGS is committed to maintaining the integrity of its pipeline system and providing safe and reliable operations. The policies and procedures contained in LGS’s DOT compliance programs are designed to meet this commitment. LGS employees are provided with annual training and continuous reinforcement of LGS policies and procedures. Routine inspections prescribed by the LGS O&M Manual are also used to verify operations.

Cross-Reference Table

Public LGS Plan(s) Reference



Utilities Code Citation	
963(b)(3)	<p>"It is the policy of the state that the commission and each gas corporation place safety of the public and gas corporation employees as the top priority. The commission shall take all reasonable and appropriate actions necessary to carry out the safety priority policy of this paragraph consistent with the principle of just and reasonable cost-based rates."</p> <p>As set forth in this Plan, LGS places safety as a top priority in the conduct of its natural gas storage facilities. LGS, however, operates under market-based rates and, as such, the rate issues identified do not apply to LGS.</p>
961(d)(3)	<p>"Provide adequate storage and transportation capacity to reliably and safely deliver gas to all customers consistent with rules authorized by the commission governing core and noncore reliability and curtailment, including provisions for expansion, replacement, preventive maintenance, and reactive maintenance and repair of its commission-regulated gas pipeline facility."</p> <p>Operations and Maintenance Manual The OMM is intended to assure that its Qualified Operators know exactly what to do and how to do it in a coordinated manner is a lynchpin for success in the quest for safety. The Operations and Maintenance Manual (OMM) starts with a comprehensive, regularly updated, industry standard model and applies it to LGS's facilities and operations. LGS's OMM is updated at least once per calendar year.</p>
961(d)(4)	<p>"Provide for effective patrol and inspection of the commission-regulated gas pipeline facility to detect leaks and other compromised facility conditions and to effect timely repairs."</p> <p>Operations & Maintenance Manual</p> <ul style="list-style-type: none"> - Section 2: Record-Keeping: Procedure 2 of the OMM lays out extensive record-keeping requirements and provides for the assignment of responsibility for record keeping for a wide variety of activities. - Section 3: Plans and Programs: <ul style="list-style-type: none"> o Damage Prevention: Procedure 3 in the OMM establishes a comprehensive damage prevention program intended to minimize the possibility of damage to facilities by outside forces. LGS participates in the "one-call" program and has minimum requirements for telephone answering services. The OMM includes a comprehensive marking, inspection and monitoring protocol to prevent excavation- and other construction related incidents. o Public Education: LGS also engages in a Public Education Program consistent with the requirements of 49 CFR, Sections 192.614(c)(2), 192.616. Procedure 3.03 describes the program, its intent, frequency, targeted audiences, content, communications methods, documentation and the like. Procedure 3.01, Sec. 10 describes methods of measuring the efficiency of these outreach efforts. Appendix 3.03B describes LGS-specific initiatives and target audiences in more detail. Appendix 3.03D assigns specific responsibilities.



- o **Operating Manual:** Procedure 3.06 requires a pipeline-specific operating manual (PSOM) and assigns responsibility for the manual and assuring that operating personnel are knowledgeable of it. The PSOM covers both normal and abnormal operating conditions.
- o **Emergency Response Plan:** Procedure 3.04 establishes the requirement that LGS have a written Emergency Response Plan, assigns responsibility for assuring operating personnel are knowledgeable of emergency procedures and establishes criteria for that plan.

Section 5: Leak, Patrolling And Surveillance:

- o **Location:** The OMM includes procedures and criteria for determining and updating pipeline class locations and boundaries, and associated record keeping. Procedure 5.04 establishes requirements and responsibility for installation and maintenance of pipeline markers in all areas accessible to the public.
- o **Continuing Surveillance:** Procedure 5.01 of the OMM describes and summarizes the various surveillance programs in the OMM, and assigns responsibility for the implementation of inspections and maintenance, as well as training and record keeping, all with the purpose of detecting changing conditions that could eventually result in a hazard to the public and property.

These can be found in different sections of the OMM :

5.1.1	Investigation of Failures and Accidents	1.03
5.1.2	Damage Prevention Program Includes: excavation activities, and horizontal directional drilling.	3.01
5.1.3	Class Location Survey Includes: population density survey (class location), and right-of-way (R/W) observations.	4.01
5.1.4	Gas Leak Detection Survey with Instrumentation for pipelines without odorant. Includes: gas leak survey of pipelines and casing.	5.02
5.1.5	Pipeline Patrolling/Gas Leak Survey without Instrumentation Includes: pipeline R/W observation for leaks, construction activity, exposed pipe, erosion, and other detrimental effects on the pipeline.	5.03
5.1.6	Corrosion Control and Cathodic Protection Includes: atmospheric, internal and external corrosion, pipeline examination, CP maps and records.	Section 6 (all)
5.1.7	Emergency Valve Maintenance Includes: emergency and blowdown valve maintenance, valve security, valve corrosion.	7.01
5.1.8	Pressure Regulators and Relief Devices (Overpressure safety devices)	7.02
5.1.9	Valve Vaults Includes: overall evaluation of valve vault.	7.03
5.1.10	Pipeline Repair Procedures Includes: preliminary investigation, damage evaluation, and repair of any damage or defect.	9.01
5.1.11	Odorization of Gas	11.01
5.1.12	Pressure Testing	15.01

If review and analysis of any or all of the above procedures indicates that a hazardous condition or a developing trend is detected or exists affecting persons or property, the OMM calls for immediate steps to be taken to reduce or eliminate the hazard, which may include a complete shutdown of the system.

Section 6: Pipeline Corrosion Control: Procedure 6 includes a comprehensive set of standards for pipeline corrosion control. These include the following:

6.01	Atmospheric Corrosion
6.02	Internal Corrosion
6.03	External Protective Coating
6.04	Internal and External Examination of Buried Pipelines
6.05	Cathodic Protection/External Corrosion Control
6.06	Electrical Isolation
6.07	Impressed Current Power Source – Inspection
6.08	Cathodic Protection, Maps, and Records
6.09	Evaluation of Bare, Buried or Submerged Unprotected Lines
6.10	District Office Review



6.11 Remedial Measures

- **Section 7: Inspect And Maintain Emergency Valves:** Procedure 7 requires that all emergency valves be inspected and partially operated at intervals not exceeding 15 months but at least once per calendar year. Section 5 of procedure 7 specifies in detail the procedures for doing so and for securing valves to prevent unauthorized operations. Record-keeping is required.

Integrity Management Program (IMP)

- **Element #2: Threats, Data Integration, and Risk Analysis:** The objective and purpose of an IMP is to maintain the integrity of the pipeline system at levels necessary to provide safe and reliable pipeline systems. To ensure that the IMP achieves these objectives, LGS has developed threat, data integration, and risk analysis procedures to assist in this effort.

o **Threats:** LGS looks for the following threats:

- | | |
|--|---|
| Time Dependent Threats: | |
| 1. | External corrosion |
| 2. | Internal corrosion |
| 3. | Stress corrosion cracking |
| Static (stable) or Resident Threats | |
| 4. | Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects [§192.917(e)(4) and ASME B31.8S-2001, Appendix A4.3] |
| 5. | Welding or fabrication related defects |
| ff | Defective pipe girth weld |
| ff | Defective fabrication weld |
| ff | Wrinkle bend or buckle |
| ff | Stripped threads, broken pipe, coupling failure |
| 6. | Equipment failures |
| ff | Gasket O-ring failure |
| ff | Control/Relief equipment malfunction |
| ff | Seal/pump packing failure |
| ff | Miscellaneous |
| Time-Independent Threats (Random) | |
| 7. | Third party/mechanical damage [192.917(e)(1)] |
| 8. | Incorrect operations (including human error) |
| 9. | Weather related and outside force damage |
| ff | Cold weather |
| ff | Lightening |
| ff | Heavy rains or floods |
| ff | Earth movement |
| Additional Threats | |
| 10. | Cyclic fatigue or other loading condition. [192.917 (e)(2)] |
| 11. | All other potential threats. [192.917(a)] |
| 12. | Interactive threats (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside force damage. [ASME/ANSI B31.8S, Section 2.2]. [192.917(a)] |

o **Data Integration:** In identifying threats, LGS uses a threat worksheet, and then determines whether there is a threat based on the data collected and reviewed. For instance, data integration is used to cross reference inspection-related data with third party activities in order to determine whether there may be third-party damage in a covered segment. When this analysis indicates potential damage, excavation and physical examination of the pipeline will be required.

For specified threats, actions to take, including but not limited to employing various testing methodologies, are spelled out in detail in Section 2.5. For certain actions, governmental authorities must be notified. Remediation to fix a problem at one location may be required for other segments of pipe with similar characteristics.

LGS collects extensive amounts of data for use in its prescriptive IM Program. Data elements can be found at pp. 14-17 of Element #2. LGS collects and utilizes data from both covered and non-covered segments. LGS validates the accuracy of its data. When data is missing or suspect, it is assumed that the threat that could be posed by that data exists and actions are spelled out for validating the data.

o **Risk assessment** is used to support integrity decisions. Baseline integrity assessments and re-



	<p>assessments can result in the implementation of additional preventative and mitigative measures.</p> <p>The objectives of risk assessment are:</p> <ul style="list-style-type: none"> ** prioritization of pipelines/segments for scheduling integrity assessments and mitigating action ** assessment of the benefits derived from mitigating action (i.e., reduced risk); ** determination of the most effective mitigation measures for the identified threats; ** assessment of the integrity impact from modified inspection intervals; ** assessment of the use of or need for alternative inspection methodologies; ** more effective resource allocation; and ** facilitation of decisions to address risks along a pipeline or within a facility (i.e., action items). <p>Risk assessment methodologies are described in detail in Section 2.8 of the IMP. The risk model includes a feedback mechanism to ensure it is subject to continuous validation and improvement.</p> <ul style="list-style-type: none"> - Element #3: Baseline Assessments: Element #3 provides procedures and methodologies for baseline assessment of pipeline integrity. LGS has cross-referenced specific O&M procedures that apply when doing a baseline assessment (Element #3, pp. 19-20 of 26). Modifications to the baseline assessment are required under circumstances specified in Section 3.8. Those that may substantially affect program implementation or may significantly modify the program are to be reported to the OPS. - Element #6: Continual Evaluation: Element #6 requires LGS to conduct a periodic evaluation of pipeline integrity based on data integration and risk assessment with the goal of identifying the threats specific to each covered segment and the risk represented by these threats. In addition to periodic evaluations, LGS conducts evaluations in response to specified events in order to assure that pipeline integrity threats are promptly identified. Element #6 provides methodologies to be used to evaluate differing potential defects, along with reassessment timelines. - Element #9: Performance Measures: LGS conducts semi-annual performance reviews to compare actual miles of pipe inspected versus planned, the number of immediate and scheduled repairs completed as a result of the IMP and the number of leaks, failures and incidents. Semi-annual reports, certified by a senior executive officer are submitted to the OPS. <ul style="list-style-type: none"> o Other threats to pipeline integrity are also listed and treated as performance measures: these include internal and external corrosion, stress corrosion cracking, defects in materials used in construction, and third party damage, as well as incorrect operations. O&M reports are gathered and reviewed as part of the performance-evaluation process. In addition, the evaluation process itself is evaluated, as part of the annual agenda meeting. <p>See also - Operator Qualification Manual LGS has adopted an industry-standard, regularly updated Operator Qualification (OQ) Plan that is intended to eliminate job performance errors that might affect the integrity of its facilities. (Attached hereto as Attachment C) The plan:</p> <ul style="list-style-type: none"> - identifies tasks ("covered tasks") that might affect or detect the integrity of the system; - assures that those performing covered tasks are qualified to do so, and can recognize and react to abnormal operating circumstances ("AOCs") specifically associated with a specific task, along with more generic AOCs; - provides periodic and/or event-induced evaluation of the job performance of Qualified Operators, the OQ Plan itself and O&M procedures; - provides for record keeping to document that operators have in fact been qualified and remain so, e.g., through documentation of evaluation procedures, job performance reviews and the like; and - calls for training for certain tasks and circumstance, e.g., new hires.
<p>961(d)(10) "Ensure an adequately sized, qualified, and properly trained gas corporation workforce to carry out the plan."</p>	<p>Emergency Response Plan –</p> <ul style="list-style-type: none"> - Section 2: Pre-Emergency Planning : LGS simulates an emergency at least once each year. Supervisors verify employee training effectiveness through testing and /or drills. Familiarity with the ERP is subject to a written test for each employee. Section 2 also requires, among other things, liaison with public officials and emergency response agencies, a public education program, use of the on e-call system and Hazardous Waste Operations and Emergency Response training. <p>Operations & Maintenance Manual</p>



Table with 2 columns: Section 3: Plans and Programs (listing Damage Prevention, Public Education, Operating Manual, Emergency Response Plan) and Section 17: LGS-Specific Operating Guidelines. Includes a 'See also - Operator Qualification Manual' section.

5. Emerging Issues

No emerging issues have been identified at this time.

Cross-Reference Table

Table with 2 columns: Public Utilities Code Citation and LGS Plan(s) Reference. Row 1: 961(d)(11) and None Identified By the Commission.

6. Workforce Involvement

LGS employees are trained and updated on DOT compliance programs and revisions to those programs each year. Employee feedback is gathered and analyzed by leveraging an online survey tool; subsequent revisions to DOT compliance programs are made as appropriate.



information for CPSD as well as instructions regarding confidential treatment of safety breach reports.

Cross-Reference Table

Public Utilities Code Citation	LGS Plan(s) Reference
<p>961(e)</p> <p>“The commission and gas corporation shall provide opportunities for meaningful, substantial, and ongoing participation by the gas corporation workforce in the development and implementation of the plan, with the objective of developing an industrywide culture of safety that will minimize accidents, explosions, fires, and dangerous conditions for the protection of the public and the gas corporation workforce.”</p>	<p>DOT-required plans are reviewed and updated once per year not to exceed 15 months.</p> <p>As directed by the Decision, LGS has provided a copy of this Safety Plan to its workforce and has requested employees to submit any comments or suggestions to Greg Clark, LGS's Compliance Officer. All comments or suggestions received from employees will be included in a log and will include a summary of the disposition of the comment or suggestion along with a summary of the rationale for the disposition.</p> <p>LGS has also informed its employees that if they perceive a breach of safety requirements they may inform the Commission of the breach and that the Commission will keep the identity of the employee confidential. LGS has provided its employees with the address of the Director of the Commission's Consumer Safety and Protection Division and the designation "Safety Breach Notification from Gas System Operator Employee – Confidentiality Request" to seek confidential treatment.</p>

Plan Approval

This document requires the following approvals

Approved By /s/ Robert Russell

(Robert Russell, Vice President, Field Operations)

Approval Date June 28, 2012

Conclusion

Lodi Gas Storage, LLC continues to be fully committed to the safe and reliable operations of its facilities, just as it has since inception. LGS management, starting with the Board of Directors of its parent, Buckeye Partners, L.P., regularly communicates that commitment to its personnel.

As described above, in very simple terms, LGS starts with having qualified employees and contractors and giving them clear and consistent instructions. It supplements these with procedures and checks to avoid and, if necessary, identify safety risks, and then, in the event some threat to safety nonetheless occurs, LGS has a plan for dealing with that threat. The manuals and plans described in this Safety Plan start with time tested and regularly updated industry-standard models, and then tailor them to LGS's operations and facilities.

LGS respectfully requests that the Commission approve this Plan.



Lodi Gas Storage, L.L.C.

A BUCKEYE PARTNERS, L.P. COMPANY

Safety Plan for Natural Gas Pipeline Safety Act of 20 11
California Public Utilities Code §§ 961 and 963



Attachments

Attachment A: Buckeye Partners, L.P. Board of Directors Health, Safety, Security and Environmental Committee Charter

Attachment B: Commitment to Health, Safety & Environmental Values

Attachment C: Operator Qualification Manual

Attachment D: Operations and Maintenance Manual

Attachment E: Gas Integrity Management Plan

Attachment F: Emergency Response Plan