Natural Gas Pipeline Company
of America LLC

November 28, 2012

Mr. R. M Seeley
Director, Southwest Region
U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
8701 South Gessner, Suite 1110
Houston, TX 77074

RE: **CPF 4-2012-1019M**

Dear Mr. Seeley:

From May through December of 2011, representatives of the Pipeline and Hazardous Materials Safety Administration (PHMSA) inspected the Natural Gas Pipeline Company of America LLC's (NGPL) Operating & Maintenance (O&M) Procedures at the Lakewood, Colorado and Gulf Coast district offices. Based upon these reviews, PHMSA has identified an apparent inadequacy with these O&M Procedures as noted in the referenced Notice of Amendment, CPF 4-2012-1019M. For clarity, each PHMSA Item is restated below, followed by NGPL's response. For Items 1, 2 and 4, NGPL is not contesting the notice and has submitted information regarding how the alleged inadequacy has been addressed. With regard to Item 3, NGPL believes that this Item is already sufficiently addressed by existing procedures and therefore is contesting Item 3 and providing additional information stating the reasons for objection.

Referenced CFR Title 49, Pipeline Safety Regulation:

Item 1. §192.605 Procedural manual for operations, maintenance, and emergencies.

(b)[1] Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.

(4) Gathering of data needed for reporting incidents under Part 191 of this chapter in a timely and effective manner.

Note 1 Subsection revised from (a) in CPF 2-2012-1019M to (b).

NGPL procedures did not include a definition for incidents but only referenced 49 CFR § 191.3. NGPL should amend their procedures to define incidents that are required for making telephonic notices to the National Response Center and written reports to PHMSA.

NGPL Response to Item 1:

Kinder Morgan O&M Procedure 159 (Emergency Reporting and Investigation), has been revised by updating Section 3.3 (Additional Reporting Requirements), and subsection 3.3.1 (Pipeline Facilities Events), to state that "A member of the Company's Codes and Standards or EHS department shall be responsible for reporting events classified as incidents, as defined in P0010 – Master Glossary, within the two-hour reporting limit."

P0010 – Master Glossary has been revised to provide the following definition of an "Incident (for compliance with 49 CFR 191 and 192)" as follows:

An event that meets any of the three following criteria:

(1) Involves the release of gas from a pipeline, or of liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences:
   (i) A death;
   (ii) personal injury necessitating hospitalization that includes lodging and food as well as treatment;
   (iii) Estimated property damage of $50,000 or more, including loss to the operator or others, or both, but excluding cost of gas lost;
   (iv) Unintentional estimated gas loss of 3,000 Mcf or more;

(2) An emergency that results in an emergency shutdown of an LNG facility.

(3) An event that occurs on a gas pipeline facility of LNG facility and is considered significant in the judgment of the operator. Significant events could include, but are not limited to, events that result in the closure of a major highway or a mandatory evacuation of a community. The Vice President of Operations, Vice President of EHS, or designee will determine when an event is considered significant.

Copies of both of the revised O&M Procedures are attached.

Item 2. §192.805 Qualification Program.

Each operator shall have and follow a written qualification program. The program shall include provisions to:

(b) Ensure through evaluation that individuals performing covered tasks are qualified;

NGPL's Operator Qualification Plan did not have a process for managing qualifications of individuals, including contractors, who perform covered tasks during program integration following a merger or acquisition.

NGPL should amend their Operator Qualification Plan to describe the process for ensuring OQ qualifications, evaluations, and performance of covered tasks during the merger with or acquisition of other entities. This process should also include contractors.

NGPL Response to Item 2:

This item is addressed within Kinder Morgan's Operator Qualification Program For Facilities Subject to DOT Parts 192 and 195, Section 3.6 (Guidelines for New Hires of OQ Qualified Individuals) which provides:

> "When an individual with OQ qualifications is newly hired by KM, that individual's OQ qualifications do not automatically transfer to KM. The new individual's Supervisor, in conjunction with the OQ Administrator, must review any available documentation for that individual's OQ qualifications and will decide if any of the OQ qualifications will transfer to KM. The new individual must pass an initial OQ qualification for any covered tasks where approved OQ qualifications are absent. If new employees are acquired by acquisition of a complete company, that individual's OQ qualifications and the new company's OQ Program will be reviewed for compatibility. Comparable qualifications will be transferred. Non-transferred qualifications will be evaluated as initial qualifications before the employee is allowed to independently perform covered, non-transferred, tasks."

In Section 1 Scope of Kinder Morgan's Operator Qualification Program For Facilities Subject to DOT Parts 192 and 195, it states in part "All KM employees as well as all contractors performing these covered tasks will be OQ-qualified under this Program before they perform any covered tasks." And in Section 10 (Definitions) an "individual" as referenced in Section 3.6, above, is defined as "a person, who on behalf of KM, performs one or more Covered Tasks on a pipeline facility operated by KM. This includes regular employees, part-time employees and contractors."

As noted in the first bullet item of the referenced Section of O&M 199, contractors would be covered as part of the merger process:

- Those who perform OQ-covered tasks (Company and contract employees) must be documented as qualified to perform such tasks

In addition and prior to receiving DOT's October 24, 2012 NOA, Kinder Morgan O&M 199 (Operator Qualification), Section 3 (Core Information Requirements), was revised by the addition of the following bullet item describing the process for ensuring OQ qualifications, evaluations, and performance of covered tasks during the acquisition of El Paso Corporation:

- As a result of the acquisition of El Paso Corporation by Kinder Morgan, each respective company's OQ Programs will remain in effect until such time as a transition can be completed to a comprehensive Kinder Morgan Program. The Op Qual Management shall be responsible for the review and transition plan of the two operator's qualification programs into one. Based upon the results of this review, the Op Qual Management shall establish a transition period during which time any differences between the respective Operator Qualification Plans will be resolved, and the qualification and documentation process for the qualification of the employees established. At the conclusion of the transition period, all Kinder Morgan employees shall follow all provisions of the Kinder Morgan OQ Program.

Accordingly, Item 2 has been addressed.

Item 3. §192.805 Qualification Program.

Each operator shall have and follow a written qualification program. The program shall include provisions to:

(g) Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.

NGPL's Operator Qualification Plan, section 3.3.1 Re-evaluation at Subsequent Intervals, states that "qualified Evaluatees who perform the specific covered task will be evaluated before or during the final year of the subsequent OQ qualification interval for that task (third year). If the subsequent OQ qualification does not take place before December 31 of the third (or final) year of the interval the Evaluatee will be deemed unqualified to perform that task." This could allow up to four years for a three year re-evaluation interval

NGPL should amend their Operator Qualification Plan to implement a grace period that would not exceed three months beyond the three year re-evaluation interval.

NGPL Response to Item 3:

Although the referenced NOA requests that the NGPL implement a grace period applicable to the three year OQ qualification re-evaluation interval, it is our belief that such a program modification is not necessary. The following is the current re-evaluation criteria as described in Section 3.3 (Re-evaluation), Subsection 3.3.1 (Re-evaluation at subsequent Intervals):

> "OQ qualified Evaluatees who perform the specific covered task will be evaluated before or during the final year of the subsequent OQ qualification interval for that task (third year). If the subsequent OQ qualification does not take place before December 31 of the third (or final) year of the interval, the Evaluatee will be deemed unqualified to perform that task."

Based upon the above interval criteria it is possible, as noted in the NOA, to "stretch" a re-evaluation interval up to nearly a four your span by performing a re-evaluation early in year one

and then at the very end of year three. But this re-evaluation interval could only occur once for that individual. That individual's next re-evaluation would then been due before the end of the third subsequent year—no further interval tolerance or grace period would be allowed based upon the current OQ Program criteria. NGPL believes that its current program meets the current regulatory requirement for this topic, as it must be kept in mind that the re-evaluation period for each task is established by the operator and there is no specific regulatory limit for this time period or a regulatory required fixed date grace period. Four years could have been chosen as the re-evaluation period in the first instance. Therefore NGPL is contesting Item 3 of the NOA and requests that this item be rescinded.

Item 4. §192.805 Qualification Program.

Each operator shall have and follow a written qualification program. The program shall include provisions to:

(i) After December 16, 2004, notify the Administrator or a state agency participating under 49 U.S.C. Chapter 601 if the operator significantly modifies the program after the Administrator or state agency has verified that it complies with this section.

NGPL's Operator Qualification Plan did not specify increases in the number of non-qualified individuals who may perform a covered task while being directed and observed by a qualified individual (span of control) as a significant change. Although NGPL trains their employees on all covered tasks every three years, increase in evaluation intervals is not considered in the Operator Qualification plan as a significant change.

NGPL should amend its Operator Qualification Plan to include increases in the number of non-qualified individuals who may perform a covered task while being directed and observed by a qualified individual (span of control) and increases in evaluation intervals as significant changes that would require notification to PHMSA or appropriate state agencies.

NGPL *Response to Item 4:*

The NOA recommendation that the current listing of "significant changes" in Section 6.3 of the OQ Program be revised to include "increases in the number of non-qualified individuals who may perform a covered task while being directed and observed by a qualified individual (span of control) and increases in evaluation intervals" has been included as additional bullet items with the following current criteria as provided in Section 6.3:

> "In the event of a significant change being made to the KM OQ Program, a copy of the revised program will be forwarded to PHMSA or appropriate state agency for review. Significant changes could include (but are not necessarily limited to) the following:
> - a change in the number of covered tasks identified by the operator,
> - a change in the evaluation methods or criteria for performing covered tasks;

- wholesale changes made to an OQ Plan or Program, whether due to an overall effort to improve program performance, or due to a merger or acquisition that results in incorporating the best features of the competing plans and programs."

A "draft" version of the revised Section 6.3 of the OQ Program is attached and will become final upon completion of the Kinder Morgan Action Decision Committee (ADC) revision process in December 2012.

Based upon the information provided above, NGPL believes that the alleged deficiencies noted in the October 24, 2012, Notice of Amendment Items 1, 2 and 4 either have been or are being adequately addressed. With regard to Item 3, NGPL believes that this Item is already sufficiently addressed by existing procedures and therefore is contesting Item 3 and providing additional information stating the reasons for objection. If there are any additional questions or concerns, please contact Reji George at 713-420-5433.

Sincerely,

Jorge Torres
Vice President of Engineering

Cc (w/o att.): Dwayne Burton
Regi George
Mike Catt
Gary Buchler
Ken Grubb

Table of Contents

1. Introduction

This glossary is provided as a reference to support Kinder Morgan's DOT compliance manuals. It is not intended to be a comprehensive dictionary for the natural gas or petroleum industry. Rather, it is a compilation of terms that are specific to Kinder Morgan's engineering and operations activities. It is intended for use only by Kinder Morgan staff, contractors, subcontractors and manufacturers. Definitions in this glossary are derived from multiple sources, including "Acronyms and Abbreviated Definitions" within API Recommended Practice 500 and A Dictionary for the Petroleum Industry (Third Edition, Revised, The University of Texas at Austin, 2001). Other sources include previous Kinder Morgan documents, Kinder Morgan staff and natural gas industry web sites. Although this glossary could not have been compiled without these sources, Kinder Morgan is solely responsible for its content.

Definitions within this glossary should not be interpreted as providing approval or disapproval of any product or practice. Use Kinder Morgan glossary definitions only in context with the aforementioned Kinder Morgan compliance manuals.

This glossary may be periodically updated. Submit suggestions for new terms or definitions to Kinder Morgan's **Action Decision Committee (ADC)** per **O&M Procedure 001 – Standards Modification**.

Definitions marked with an asterisk (*) come from the Kinder Morgan Records Management website: **Procurement & Administration - Records Management - Records Glossary**

For a comprehensive list of measurement-related definitions see **Measurement Glossary**.

2. Definitions

(Navigation Tip for MS Word users: Highlight the left column, click on the pull-down Edit Menu, click on Find, enter the term you're searching for and click on Find next.)

12F tanks	See API 12F Specification
AAT	Auto Adjust Turbine Meter (from Rockwell/Equimeter/Invensys/Sensus)
Abandoned pipeline or abandoned in place	A pipeline that is physically separated from its source of gas and is no longer maintained under 49 CFR Part 192.
Abnormal Operating Condition (AOC)	A condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may: (a) Indicate a condition exceeding design limits; or (b) Result in a hazard(s) to persons, property, or the environment.
Abnormal Operation	Operations in which operating design limits have been exceeded. Abnormal operation includes but it is not limited to: • Unintended closure of valves or shutdowns; • Increase or decrease in pressure or flow rate outside of normal operating limits; • Loss of communications; • Operation of any safety device; Any other foreseeable malfunction of a component, deviation from normal operation, or personnel error which may result in a hazard to persons or property.

Absolute Pressure (PSIA)	Pressure in excess of a perfect vacuum. Absolute pressure is obtained by algebraically adding gauge pressure to atmospheric pressure. Absolute pressure must be used in equations of state and in all gas law calculations. Every 1% change from correct absolute pressure (psia) will create a 1% volume error. A 4" w.c. change in pressure from a specified pressure changes the indicated meter volume also by about 1%.
Absorption	The extraction of one or more fluids from an atmosphere or mixture of gases or liquids by the substance of a sorbent material with which the atmosphere, gases or liquids come in contact. The absorption or extraction process causes (or is accompanied by) a physical or chemical change or both in the sorbent material. See and note difference in *Adsorption*.
AC	Alternating current
Accumulation	Quantity of hydrocarbons (oil and natural gas) found in the reservoir rock in an oil or gas field.
ACF	Actual flow rate (uncorrected)
ACFH	Actual cubic foot per hour. Used in measurement to refer to the volume measured by the meter prior to any temperature or pressure compensation.
ACI	American Concrete Institute
ACOE	Army Corps of Engineers
Acoustic resonance	A tone at its natural frequency. A common example would be blowing across the opening of a pop bottle or jug, which will produce a tone.
Active records*	Records that are routinely used on a monthly basis.
Actuator	A device designed to shut off gas flow upon flame failure, pilot outage, control impulse, overpressure or under pressure without a person being physically at the location.
ADC	Action Decision Committee (KM)
Adsorption	The extraction of one or more fluids from an atmosphere or mixture of gases or liquids by surface adhesion to that material with which the atmosphere, gases or liquids come in contact. The adsorption or extraction process does not cause and is not accompanied by either a physical or chemical change in the sorbent material. See and note difference in *Absorption*.
AGA	American Gas Association
AISC	American Institute of Steel Construction
Algorithm	A sequence of instructions for solving a particular problem.
Ambient pressure	The pressure of the medium surrounding a device, usually the local surrounding atmospheric pressure.
Ambient temperature	The temperature of the air, atmosphere or fluid that completely surrounds the apparatus, equipment or workplace.
American Innovations (CPDM)	Cathodic Protection Data Manager - Software that contains various diagnostic reports to alert personnel to possible corrosion problems

AM/FM	Automated Mapping/Facilities Management
Analog transmitter	An electronic device designed to convert linearly a frequency input into an equivalent voltage output.
Analysis pressure	Design pressure
Analysis temperature	Maximum sustained operating temperature
Anchorage	Secure attachment point for a lifeline, lanyard or device to slow the fall
Annunciator	Electrically controlled signal board or indicator
ANSI	American National Standards Institute
AOC	Abnormal Operating Condition
APB	Acid Producing Bacteria
API	American Petroleum Institute
Archive*	To move records from active file or online storage to offsite or offline storage to meet retention requirements. The Records Management Department is the custodian of archived hard copy records and the Information Technology Department is the custodian of archived electronic records.
ArcView	GIS software application that allows qualified users to view and query pipeline information, including Class Location and HCA status.
AREMA	American Railway Engineering and Maintenance of Way Association
ASCII	American Standard Code for information interchange. One of the standard formats for representation characters on a computer. It is useful when files are shared between programs. A DOS text file is usually in ASCII format.
ASME	American Society of Mechanical Engineers
ASME BPV	American Society of Mechanical Engineers Boiler and Pressure Vessel Code
ASPRS	American Society for Photogrammetry and Remote Sensing
Assessment	The use of testing techniques as allowed by PHMSA/OPS to ascertain the condition of a covered pipeline segment.
ASTM	American Society for Testing and Materials
Atmospheric pressure	The pressure of the weight of air and water vapor on the surface of the earth. The average atmospheric pressure at sea level for scientific purposes has been defined as 14.696 pounds per square inch absolute. A 0.15 psia change in actual atmospheric pressure will affect low pressure ("w.c.") metered volume by approximately 1%. Local atmospheric pressure is determined by a barometer. For our measurement purposes, we use latitude and elevation.
Authorized Employee	Person who locks out or tags out machines or equipment to perform service or maintenance on the machine or equipment
Averaging pitot flow sensor	A probe that can sense total and static pressure at the same point in a moving fluid in determining flow and velocity.

Ball valve	A valve in which a pierced sphere rotates within the valve body to control the flow of fluids.
BAP	Baseline assessment plan
Base conditions	The ANSI Z132 has established 60°F and 14.73 psia as the base temperature and pressure to which all volumes are commonly referred.
Base pressure	The pressure used as a standard in determining gas volume. Volumes are measured at operating pressures and then corrected to base pressure volume. It is normally defined in any gas measurement contract.
Base temperature	An arbitrary temperature to which measurements of a volume of gas are referred. The standard value in the United States is 60°F (520°R) for natural gas, established by the American National Standards Institute as standard Z-132.1 in 1969.
BCF	Billion cubic feet
Bell hole	A hole shaped like a bell, larger at the top than at the bottom. A bell hole may be dug beneath a pipeline to allow access for workers and tools.
Benchmark/Monument	A brass device installed to indicate elevation and to provide survey coordinates for a company site such as a compressor station. Two or more are installed. The devices should be located on a line parallel to the main coordinate system, out of the way of planned construction and in a readily accessible location.
Beta ratio	Orifice to meter tube diameter ratios (d/D = B)
BHP	Brake horsepower – the effective or available power of an engine or turbine.
Blind flange	A solid plate used to close off the end of a piping system. Also, a device constructed with flanged ends.
Blowdown	The process of reducing gas pressures by releasing such pressures to atmosphere.
Blowoff	A properly designed point on the pipeline where a valve is installed to control blowing pressure to atmosphere. Can also be used for purging the pipeline.
Blowout	Uncontrolled release of fluids, solids or gases.
BMP	Best Management Practices – a practice or combination of practices that is determined by a state or designated planning agency to be the most effective and practical means of controlling pollutants at levels compatible with environmental quality goals.
Body harness	System of straps that distributes arresting forces over at least the thighs, shoulders and pelvis. It may include a means to attach other components of a PFAS
Bonding	Connecting two or more conductive objects together with a conductor (wire or cable) to minimize potential differences between conductive objects. Bonding "equalizes" the potential between objects

Branch connection	Pressurized branch connections, also known as side tap connections, are installed on pipelines to initiate laterals, connect service lines and provide access to the main for control lines, gauge lines and other gas supply needs.
British Thermal Unit	(BTU) - Quantity of heat necessary to raise the temperature of one-pound mass of water one degree Fahrenheit from 58.5°F to 59.5°F under a standard pressure of 30-inches of mercury at 32°F. Natural gas averages 1000 BTU per cubic foot, so divide the BTU rating of an appliance by 1000 to obtain the cubic foot rating. One Btu equals 252 calories, (gram), 778 foot-pounds, 1022 joules or 0.293 watt hours.
BTU/Hr	British Thermal Units per hour
Buffer zone	An area within 300 feet of a Company pipeline or related facility in a DOT Class 1 or 2 location and within 1000 feet in a DOT Class 3 or 4 location.
Bull plug	A plug of a particular shape with a male thread on one end and considerable length to the closed end for conveniently using a wrench.
Butane	A liquefied petroleum gas obtained by processing natural gas and also from a process in petroleum refining. Its formula is $C_4 H_{10}$.
C	Celsius
Carpal Tunnel Syndrome	Results when there is pressure on the nerve that passes through the rigid, bony passage in the wrist known as the carpal tunnel. Pain, weakness, numbness or a burning sensation to the hand and wrist muscles can result.
CARS	Consolidated Activity Request System
CARTMAN	A computer program for browsing historical and real-time measurement information online. Primarily used by Field Operations, Engineering and downstream business groups.
Catastrophic release	Major, uncontrolled emission, fire or explosion involving one or more highly hazardous chemicals that presents serious danger to personnel in the workplace.
Cathodic Protection	(CP) - A cathodic polarization method that is widely and effectively used to limit corrosion.
CD	Compact disc
CDA	Confirmatory Direct Assessment - An integrity assessment method using more focused application of the principles and techniques of direct assessment to identify internal and external corrosion in a covered transmission pipeline segment.
CE	Carbon equivalent
CEE	Critical Equipment Elevation - Minimum installation elevation of all equipment necessary for continued operation of a station during high water conditions.
CEESI	Colorado Engineering and Experimental Station, Inc.
CF	Cubic feet.

CF/D	Cubic feet per day
CFH	Cubic feet per hour
CFR	Code of Federal Regulations
Christmas tree	The valve assembly at the top of tubing strings and casing of a gas well or an oil well to provide primary pressure reduction, production rate control and shut-in service.
Chromatograph	Field device used to measure and record the quality of the gas in a pipeline.
CIRTS	Online tool that collects information for undesired pipeline events or damage
CIS	Close interval survey – Inspection technique that includes a series of aboveground pipe-to-soil potential measurements taken at predetermined increments of several feet (i.e., 2,100 ft.) along the pipeline and used to provide information on the cathodic protection system effectiveness.
City gate station	The point or measuring station at which a gas distribution utility receives gas from a pipeline or transmission company.
CMT	Crisis Management Team
CNG	Compressed natural gas
CO	Colorado
COGCC	Colorado Oil and Gas Conservation Commission
COGIS	Colorado Oil and Gas Information Systems
Commingled	Separate flow streams joined together.
Company Representative	Individual representing the Company with the authority to make decisions on behalf of the Project Manager.
Company use gas	The quantity of gas consumed by the transporter as fuel and for other purposes in its gas operations, not including lost and unaccounted for gas.
Competent Person	Person possessing the skills, knowledge, experience and judgment to perform assigned tasks or activities satisfactorily.
Composite sample	A sample obtained at a specific meter site. The device samples the flow over a period of time. The sample is removed and sent to a lab for chromatograph analysis.
Compressibility	The property of a material that permits it to decrease in volume when subjected to an increase in pressure. In gas measurement, the compressibility factor "Z" is the deviation from the ideal gas law behavior.
Compressor station	Stations located about every 100 miles along a gas pipeline that recompress gas to ensure an even flow.
Condensate	Natural gas liquid that forms due to condensation in natural gas production, transmission and distribution pipelines. Condensate production is induced by the higher pressure and lower temperature conditions in the pipeline.

Condensate tank	A tank to hold or collect condensate
Confidential records*	Those records that are for internal use only by authorized Kinder Morgan users and may be disclosed only on a restricted or "need-to-know" basis. Confidential records are acquired, created or owned by Kinder Morgan and may have economic or strategic value to Kinder Morgan or if disclosed without Kinder Morgan's permission, would give advantage to parties outside Kinder Morgan. Confidential records are commonly referred to as trade secrets, proprietary information or confidential commercial information and include all privileged records. In addition, confidential records include records that: 1. Contain employee, customer or personally identifiable information and/or 2. Are subject to non-disclosure agreements or similar contractual restrictions concerning dissemination and/or 3. Are required to be kept confidential by statute, law, court rule, regulation and/or court decision.
Connecting Device	Flexible line to secure the worker's lifeline to an anchorage
Construction ROW	Permanent and temporary right-of-way
Corrosive gas/service	A gas that can cause corrosion, such as hydrogen sulfide.
Covered segment	A segment of gas transmission pipeline located in a high consequence area. The terms gas and transmission line are defined in § 192.3.
CPDM	Cathodic Protection Data Manager
Crane	A machine for lifting and lowering a load and moving it horizontally with a hoisting mechanism as an integral part of the machine.
Crossover	Piping used to connect two or more pipelines, typically running in parallel.
CS	Carbon steel
CSA	Canadian Standards Association
Cubic foot	The amount of gas required to fill a volume of one cubic foot under stated conditions of temperature, pressure and water vapor. SCF = standard cubic foot (one cubic foot of gas at standard conditions, i.e., 14.73 psia and 60°F without adjustments for water vapor) DCF = 10 cubic feet (multiply by 10) CCF = one hundred cubic feet (multiply by 100) MCF = one thousand cubic feet (multiply by 1,000) DMCF = ten thousand cubic feet (multiply by 10,000) MMCF = one million cubic feet (multiply by 1,000,000)
Cultipacker	Heavy equipment that accelerates breaking down large clods of dirt.
Custodian*	The individual or department having physical custody of records. The custodian may or may not also be the official record holder.

DA	Direct Assessment - An integrity assessment that uses a process to evaluate certain threats (i.e., external corrosion, internal corrosion and SCC) to a covered pipeline segment's integrity. The process includes gathering and integrating risk factor data, indirect examination or analysis to identify area of suspected corrosion, direct examination of the pipeline in these areas and post assessment evolution.
DART	Accounting system that interfaces with ELM database. This system is used for gas scheduling, allocations, invoicing and other business purposes.
DataViewer	GIS Software application that allows qualified users to view and query pipeline information, including Class Location and HCA status.
Davit	An A-frame that booms out 5 to 10 feet over the side of a barge. It has a cable or chain that is lowered to pick up pipeline. A diver attaches the pipeline to the line and it is reeled in on the davit.
Day tank	Tank designed to maintain a full day's supply of product for the use it is intended (i.e., fuel, oil or water).
dBA	Adjusted decibels – a single-number measurement based on the decibel but weighted to approximate the response of the human ear with respect to frequencies. For purpose of noise control, both dB and dBA scale can be used interchangeably.
DC	Direct current
DCVG	Direct Current Voltage Gradient - Inspection technique that includes aboveground electrical measurements taken at predetermined increments along the pipeline and is used to provide information on the effectiveness of the coating system
Decibel	A logarithmic scale unit used for expressing the relative magnitudes of sound intensity but the sound *pressure* level is expressed in decibels, which is 20 X $\log_{10}$ of the ratio of sound pressure to a reference sound pressure. The reference sound pressure used most is 0.0002 microbar (approximately 1.974 X 10^{-10} atmosphere). Typical sound pressure levels could be: Average conversation 50 decibels Unmuffled truck 90 decibels
Dehydration	In general, the process of removing water in all its forms from solids or fluids.
Dehydrator	Equipment for removing water from natural gas, air, or natural gas liquids, typically by glycol or desiccant dehydration.
Delivery point	For a pipeline, the delivery point is where sales or transportation gas exits the system. For a producer it can be the point where gas goes into the pipeline and would be synonymous with the pipeline's receipt point. Sometimes these are called the delivery point and the redelivery point.
Destruction date*	The date records are due for disposition.
Dew point	The temperature at which a vapor begins to condense and deposit as a liquid.
Differential pressure	The pressure difference between two points.

DIN	Deutsches Institut fyr Normung (German Institute for Standardization)
Disaster Recovery Plan*	A written and approved course of action to take when disaster strikes, ensuring an organization's ability to respond to an interruption in services by systematically restoring the critical business functions.
DOM	Drawn-over-mandrel
DOT	Department of Transportation
Double-chambered orifice fitting	An orifice fitting that allows orifice plate removal under pressure without interrupting flow.
Downstream	Term used to describe operations performed after those at a point of reference.
DP	Differential pressure
Drip	1. The water and hydrocarbon liquids that have condensed from the vapor state in the natural gas flow line and accumulated in the low points of the line. 2. The receiving vessel that accumulates such liquids.
DSAW	Doubled submerged-arc welded pipe
D/t ratio	Diameter versus wall thickness ratio
Duplicate records*	Exact reproductions or duplicate copies of an original or official record that contain no additional markings of any kind, such as notes in the margins, handwriting, highlighting or date stamping. These operational copies can be disposed of before the end of the retention period and cannot be retained longer than the official record.
EBD	Emergency blowdown
ECAP	Electronic Compliance and Approval Process
ECDA	External Corrosion Direct Assessment - A four-step process that combines preassessment, indirect inspection, direct examination and post assessment to evaluate the threat of external corrosion to the integrity of a pipeline.
ECDA Region	A section or sections of a pipeline that have similar physical characteristics and operating history and in which the same indirect inspection tools are used.
EFM	Electronic Flow Measurement - Secondary device that records analog or digital readings to measure gas volume
EHS	Environmental, Health and Safety (Department)
EIAS	Electronic Industry Association Standards
Electrofusion	A heat fusion joining process that uses fittings in which the heating source is an integral part of the fitting and such fitting is made to ASTM Specification F 1055.

Electronic Bulletin Board	(EBB) - Communication system that allows parties to view pipeline information through personal computers and phone lines. An online connection allows the user to view information on a screen and to react by entering data, requesting new data and/or requesting files to be transferred.
ELM Database	Database where Measurement and SCADA real-time flow information is stored.
EMT	Electrical metallic tubing
Enterprise Content Management*	(ECM) – A system for managing documents and document change process.
Enterprise Information Management*	(EIM) – The framework that enables companies to link information assets together through common languages.
EPA	Environmental Protection Agency
ERL	Emergency Response Line (formerly known as the Emergency Response List) – System to be used to notify appropriate company personnel of a minor undesired event. See EHS Response Manual for more details.
ERL+	Emergency Response Line (formerly known as the Emergency Response List) – System to be used to notify appropriate company personnel of a major undesired event. See EHS Response Manual for more details.
ERP	Emergency Response Plan
ERW	Electric resistance welded pipe
ESD	Emergency shutdown
Excavation	Includes any operation in which earth, rock, or other material in or on the ground is moved, removed, or otherwise displaced by means of any tools, power equipment or explosives; excavation also includes grading, trenching, digging, ditching, drilling, auger boring, scraping, cable or pipe pulling in or plowing-in and tunneling to remove or disturb soil.
Excavator	Any person proposing to or engaging in excavation or demolition work for himself or for another person.
F	Fahrenheit - A temperature scale in which the temperature of melting ice is set at 32° and the temperature of boiling water at 212°. One Fahrenheit degree is equal to five-ninths of a Celsius degree.
Facility Manager™	Primary software application that allows qualified users to enter, query and modify data in PODS
Factory acceptance test	Basic functionality test on a product at the factory prior to shipment to the customer.
False right-of-way	A right-of-way that is not parallel to the pipeline alignment but that projects in a straight line beyond a bend far enough to allow a straight section of pipe to be pushed under a road, boring equipment to be set up, a stream section to be pushed or some other activity that would be hampered by tight bends in the alignment.
FBE	Fusion bonded epoxy
FE	Flange end

FERC	Federal Energy Regulatory Commission and any other governmental body or bodies succeeding to, lawfully exercising or superseding any powers of the Federal Energy Regulatory Commission.
FGCC	Federal Geodetic Control Committee
Field	A geographical area under which an oil or gas reservoir lies.
Flammable liquid (Class 1)	Any liquid with a flashpoint below 100°F (37.8°C). This includes all Class 1A, 1B and 1C flammable liquids
flg	Flange
Flowline	The pipe through which oil or gas travels from a well to production processing equipment (including measurement equipment), storage or a pipeline.
Flushing	Washing a pipe interior
FM	Factory Mutual
fps	Feet per second
ft	Foot, feet
FTP	File Transfer Protocol - A set of rules that allows two computers to talk to each other as a file transfer is carried out.
Gabion	Steel wire-mesh basket that holds stones or crushed rock to protect a bank or bottom from erosion.
Gas Industry Standards Board	(GISB) - An organization formed to create standard terms and conditions for interstate natural gas transactions with its primary initial focus on pipeline electronic bulletin board formats.
Gas Processing	A natural gas processing operation, other than production processing, operated for the purpose of commercially extracting natural gas liquids from the gas stream.
Gas Production Operation	Piping and equipment, extending downstream of the wellhead, used for production and preparation for transportation or delivery of hydrocarbon gas and/or liquids and includes the following processes: (a) extraction and recovery, lifting, stabilization, treatment, separation, production processing, storage, and measurement of hydrocarbon gas and/or liquids; and (b) associated production compression, gas lift, gas injection, or fuel gas supply.
Gas Production Processing	A commercial natural gas processing operation for the recovery of natural gas liquids from the gas and is limited to situations in which (a) there is no custody transfer of the gas, from production through processing and residue return; (b) there have been no intermediate production operations between the well and the processing facility; and (c) all residue gas goes back into the production and/or production support operations as fuel, gas lift gas, and/or injection.

Gas Treatment	The physical and/or chemical technique used to enhance separation of produced well fluids and removal of impurities (e.g., water, solids, basic sediment and water, sulfur compounds, carbon dioxide, etc.).
Gate valve	A general service valve used primarily for on-off, non-throttling service. The valve is closed by a flat face, vertical disc or gate that slides down through the valve to block the flow.
Gathering Line	Pipelines that transport gas from a gas production operation to a transmission line or main.
Gauge plate/bend plate pig	A utility pig mounted with flexible metal plate or plates of a specified diameter less than the minimum pipeline internal diameter and located along the pig body. Pipe bore restrictions smaller than plate diameter or short radius bends will permanently deflect the plate material.
Geometry pig	An electronic, in-line configured caliper pig designed to record conditions such as dents, flat spots, wrinkles, ovality, bend radius and angle and occasionally indications of significant internal corrosion by sensing 100% of the internal pipe surface shape.
Geometry pig criteria	Anomalies reported in the geometry pig survey will be evaluated for repair or removal based on the latest edition of Kinder Morgan's **O&M Procedure 213, Leaks, Pipe and Weld Defects and Equipment Damage**.
GIS	Geographic Information System
Governor control	A control that maintains a steady speed in a machine (as by controlling the supply of fuel).
GPM	Gallons per minute
GPS	Global positioning system – System used to identify the latitude and longitude of locations using GPS satellites.
GPTC Guide	Gas Piping Technology Committee Guide
GRI	Gas Research Institute
Grounding	Connecting one or more conductive objects to the ground to minimize potential differences between objects and the ground. Grounding dissipates the electrical charge to the ground.
Handhole	A re-enterable container, usually buried to at least grade level or lower, housing valves, cable, switches, etc.
Hard copy records*	Printed copy of a record that can be read without using mechanical assistance.
Hard surface road	(Definition under study)
HCA	High Consequence Area - An area established by one of the methods described in either paragraph 1. or 2. as follows: 1. An area defined as either: a. A Class 3 location under § 192.5 b. A Class 4 location under § 192.5 c. Any area in a Class 1 or Class 2 location where the potential impact radius is greater than 660 feet (200 meters) and the area within a potential impact circle contains 20 or more buildings intended for human occupancy

	d. Any area in a Class 1 or Class 2 location where the potential impact circle contains an identified site 2. The area within a potential impact circle containing either: a. Twenty or more buildings intended for human occupancy unless the exception in paragraph 4. applies b. An identified site 3. Where a potential impact circle is calculated under either method 1 or 2 to establish a high consequence area, the length of the high consequence area extends axially along the length of the pipeline from the outermost edge of the first potential impact circle that contains either an identified site or 20 or more buildings intended for human occupancy to the outermost edge of the last contiguous potential impact circle that contains either an identified site or 20 or more buildings intended for human occupancy. 4. If in identifying a high consequence area under 1. c. of this definition or 2. a. of this definition, the radius of the potential impact circle is greater than 660 feet (200 meters), the operator may identify a high consequence area based on a prorated number of buildings intended for human occupancy within a distance 660 feet (200 meters) from the centerline of the pipeline until December 17, 2006. If an operator chooses this approach, the operator must prorate the number of buildings intended for human occupancy based on the ratio of an area with a radius of 660 feet (200 meters) to the area of the potential impact circle (i.e., the prorated number of buildings intended for human occupancy is equal to [20 × (660 feet [or 200 meters]/ potential impact radius in feet [or meters])^2]).
HDD	Horizontal directional drilling
Heat exchanger	A device for transferring heat from one fluid to another without inter-mixing the two fluids.
High voltage	Voltage that is more than 13,800 volts nominal.
Highly hazardous chemical	Substance possessing toxic, flammable, reactive or explosive properties as specified under 29 CFR 1910.119(b)(1)
Highway	A highway is any hard-surfaced road (concrete, asphalt or chip and seal) that is maintained for public access. Gravel and dirt roads are not highways (per CPF No. 4-2003-1005)
Hi-pot	"High potential" test - A test designed to determine the highest voltage that can be applied to a conductor without electrically breaking down the insulation.
HLA	High liquid level alarm
HLSD	High liquid level shutdown
Holiday	An area where coating material is missing.

Hoop stress	Also known as Barlow's Formula. The stress in a pipe wall acting circumferentially in a plane perpendicular to the longitudinal axis of the pipe and produced by the pressure of the fluid in the pipe. Hoop stress calculation: S=PD/2t, where S=hoop stress in psi, P= internal pressure, D= outside diameter of the pipe in inches, t=normal wall thickness in inches. For branch welds, use the hoop stress in the carrier pipe to evaluate. For fillet welds, use the hoop stress of the pressure member to which the fillet weld is attached to evaluate. For a sleeve longitudinal weld, use the hoop stress of the underlying carrier pipe to evaluate NDT.
Hot tapping	The process of making branch piping connections to operating pipelines, mains or other facilities while in operation. Connecting the branch piping to the operating line and tapping the operating line is done while it is under gas pressure.
Hot work	Any work involving burning, welding, riveting, grinding or other similar fire- or spark-producing tools or operations, as well as work that produces a source of ignition, such as drilling, abrasive blasting and space heating.
HP	Horsepower
HVAC	Heating, ventilation and air-conditioning
Hydrate	A compound formed by the union of molecules of water with other molecules or atoms. Under certain conditions, natural gas may unite chemically with free water to form a hydrate; a solid compound resembling packed snow at temperatures above the freezing point of water.
Hydrocarbon	A chemical compound composed solely of carbon and hydrogen. The compounds having a small number of carbon and hydrogen atoms in their molecule are usually gaseous; those with a larger number of atoms are liquid and the compounds with the largest number of atoms are solid.
Hydroseeding	A turf establishment process in which mulch, seed, fertilizer and water are mixed in a tank, then pumped from the tank and sprayed on the ground.
Hydrostatic test	A test of equipment where the item is filled with liquid, subjected to suitable pressure and then shut in. If there is no loss of pressure during a stated period, the system is free of leaks. Also, a test to determine if a container will hold a certain pressure without deforming, usually 1-1/2 times its rated maximum working pressure.
Hz	Hertz – cycles per second
I^2T	Over-current vs. time
ICDA	Internal Corrosion Direct Assessment - A process an operator uses to identify area along the pipeline where fluid or other electrolyte introduced during normal operation or by an upset condition may reside and then focuses direct examination on the locations in covered segments where internal corrosion is most likely to exist. The process identifies the potential for internal corrosion caused by microorganisms or fluid with CO2, O2, hydrogen sulfide or other contaminants present in the gas.
ICDA Region	Extends from the location where liquid may first enter the pipeline and encompasses the entire area along the pipeline where internal corrosion may occur and where further evaluation is needed.
IC Engine	Internal-combustion engine

ICS	Incident Command System
ID	Instrument drive
Identified site	1. An outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period (days need not be consecutive). Examples include but are not limited to beaches, playgrounds, recreational facilities, camping grounds, outdoor theaters, stadiums, recreational areas near a body of water or areas outside a rural building such as a religious facility **or** 2. A building that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period (days and weeks need not be consecutive). Examples include, but are not limited to, religious facilities, office buildings, community centers, general stores, 4-H facilities or roller skating rinks **or** 3. A facility occupied by persons who are confined, are of impaired mobility or would be difficult to evacuate. Examples include but are not limited to hospitals, prisons, schools, day-care facilities, retirement facilities or assisted-living facilities.
ILI	In-line inspection – Pipeline inspection technique that uses devices known in the industry as smart pigs. These devices run inside the pipe and provide indications of metal loss, deformation and other defects
Improved roads	Roads with a filed public easement
In-Service Pipeline	Pipeline facilities pressurized and flowing gas or available-to-flow gas upon demand.
Inactivated (Deactivated) Pipeline	An inactivated pipeline is a pipeline that although currently not in use, will be maintained and serviced per 49 CFR Part 192 so the pipeline may be returned to service at a future date. Inactivating a pipeline does not require FERC approval.
Inactive records*	Those items of official information that are needed to meet long-term retention requirements but are no longer used on a routine basis. Examples of inactive records include such items as last year's accounts receivable invoices and terminated employee files. Inactive records include records in both paper and electronic format, including inactive electronic records stored on magnetic media. Inactive records transferred to the custody of Records Management may be stored offsite at an official information storage facility.

Incident (for compliance with 49 CFR 191 and 192)	An event that meets any of the three following criteria: (1) involves the release of gas from a pipeline, or of liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences: (i) A death; (ii) personal injury necessitating hospitalization that includes lodging and food as well as treatment; (iii) Estimated property damage of $50,000 or more, including loss to the operator and others, or both, but excluding cost of gas lost; (iv) Unintentional estimated gas loss of 3,000 Mcf or more; (2) An emergency that results in an emergency shutdown of an LNG facility. (3) An event that occurs on a gas pipeline facility or LNG facility and is considered significant in the judgment of the operator. Significant events could include, but are not limited to, events that result in the closure of a major highway or a mandatory evacuation of a community. The Vice President of Operations, Vice President of EHS, or designee will determine when an event is considered significant.
Incidental gathering	The additional downstream gathering pipeline sometimes needed to connect the outlet of an identified gathering endpoint with a transmission line, distribution line, or other pipeline facility.
Indices*	Keywords used to describe information.
Index	A fixed or movable part of a measuring instrument's indicating device whose position indicates the value of the measured quantity.
Indirect heater	A vessel consisting of fire tubes enclosing burners and a coil containing the gas to be heated. It is considered indirect because a liquid medium is used for heat transfer between the fire tube and coil. The fire tube transfers the heat the burner releases to the media, which then transfers the heat to the process though the process coil.
Internal combustion engine	A heat engine in which the pressure necessary to produce motion of the mechanism results from igniting or burning a fuel/air mixture within the engine cylinder.
Interruptible	Transporter has the right to stop, in whole or in part, receipt, transportation or delivery of natural gas at any time. Transporter shall provide as much advance notice as is practical to shipper, except as may otherwise be specifically provided for in the tariff.
Interstate pipeline	A natural gas pipeline that transports natural gas across state boundaries. The pipeline is subject to FERC jurisdiction under the Natural Gas Act and under the Natural Gas Policy Act.
I/O	Input/Output
IR	Infrared
ISA	Instrument Society of America

ISO	International Standards Organization – The organization that sets standards for many industries. For example, there are ISO standards for the Pascal and Prolog programming languages and ISO standards for sizes of computer paper.
Joule-Thomson Effect	The cooling that occurs when a compressed gas is allowed to expand in such a way that no external work is done. The effect is approximately 7°F per 100 psi pressure drop for natural gas.
KM	Kinder Morgan (formerly KMI or Kinder Morgan, Inc.)
Knowledge Management*	The practice of capturing and sharing intellectual information such as human best-practices and lessons-learned.
Latching solenoids	Use permanent magnets incorporated within the solenoid frame. The permanent magnets provide a magnetic field that acts on the plunger when it is seated and provides the latching or holding force.
Latrolet	A 45-degree thermowell
LEL	Lower Explosive Limit – The minimum amount of airborne chemical that must be present in the air/chemical mixture to make it explosive. The LEL of natural gas is between 4% and 5% gas in air. The explosive region extends from the LEL to the upper explosive limit (UEL).
Life cycle (of a record)*	The span of time of a record from its creation or receipt, through its useful life to its final disposition.
Line pack	The volume of gas that must be maintained within a pipeline or distribution system to ensure operation. Line packing increases the amount of gas in the system by increasing pressure to meet high demand for a short period. Also, inventory of gas in a pipeline or distribution system.
Liquefied natural gas	(LNG) – A liquid composed chiefly of natural gas (i.e., mostly methane). It must be put under low temperature and high pressure or under extremely low temperature and close to atmospheric pressure to liquefy.
Liquefied petroleum gas	(LPG) – A mixture of heavier, gaseous, paraffinic hydrocarbons, principally butane and propane. These gases are easily liquefied at moderate pressure and may be transported as liquids and converted to gases on release of the pressure.
Lockout	1. Placing a lockout device that prevents operating an energizing device in conformance with an established procedure to ensure that the energizing device's position cannot be changed and the equipment being controlled cannot operate until the lockout device is removed 2. Strict procedures for disabling electrical circuits or steam and hydraulic systems while equipment is being repaired or maintained.
Lowering-in	The process of laying pipe in a ditch in pipeline construction.
Low voltage	Voltage that is less than 600 volts nominal.
LTX	Low Temperature Extraction

L&U	Lost and Unaccounted for Gas – The difference between the sum of all input quantities of gas received into the transporter's system and the sum of all output quantities of gas delivered from the transporter's system, which difference excludes company-used gas and includes but is not limited to gas vented, storage loss and loss as a result of an event of force majeure.
MA	Milliamp – one milliamp = .001 amp. Sometimes abbreviated "ma."
Main	A distribution line that serves as a common source of supply for more than one service line.
Manifolds	Complex array of pipes and valves that allows station operators to direct incoming fluids from any receiving point to pieces of equipment or exit points.
Mainline automatic valve	A valve that closes automatically when the pipeline pressure drop meets or exceeds a particular rate in pounds per minute for a certain length of time.
MAEP	Maximum allowable emergency pressure – The maximum pressure allowed by the applicable code or manufacturer during an overpressure event.
MAOP	Maximum allowable operating pressure – The maximum pressure at which a pipeline or segment of a pipeline may be operated under 49 CFR Part 192.
MAWP	Maximum allowable working pressure
MBS	Mainline Border Station
MCC	Motor Control Center
MCFH	Thousand cubic feet per hour
Mechanical resonance	The natural harmonic frequency of one or more components.
Medium voltage	Voltage that is more than 600 volts but less than 13,800 volts nominal.
Megger	A test instrument for measuring the insulation resistance of conductors and other electrical equipment. Specifically, a mega-ohm (million ohms) meter. This is a registered trademark of the James Biddle Co.
Melt-out link	A fusible component that when melted due to a fire is designed to disconnect the circuit.
Mercaptans	Alkyl derivatives of hydrogen sulfide having the structure of a thioalcohol. Mercaptans are very weak acids that are slightly soluble in water and react with many metals to form insoluble mercaptides. Their overpowering odors make them useful as warning agents (odorants) for natural gas.
Metadata*	Keywords used to describe information.
Meter, inferential	A meter that operates by measuring another property of the gas flow and then "inferring" the volume of gas by a known relationship between the measured property and the gas volume. The two most common types of inferential meters are orifice meters and turbine meters.

Meter, orifice	An inferential meter for measuring flow in a pipeline and consisting of a primary element and secondary element. The primary elements include the orifice plate, orifice flanges or plate holder and the adjacent pipe sections. The secondary elements include equipment used to determine pressures, temperatures and other variables that must be known to measure gas accurately. There is a known relationship between pressure drop and flow rate for the plate. Therefore, a recording of flow rate versus time can be obtained and then integrated to establish volume.
Meter, positive displacement	A meter that indicates the volume of gas passed through it by alternately filling and emptying compartments of known size and totaling the number of cycles accomplished.
Meter, rotary	A meter that uses the principle of filling and emptying compartments of known size and totals the number of times the cycle is done, thereby indicating the volume of gas passing through the meter.
Meter station	Company-owned facility for measuring the flow of natural gas to the customer.
Meter, turbine	A velocity-measuring device in which the flow is parallel to the rotor axis and the speed of rotation is proportional to the rate of flow. The volume of gas measured is determined by the revolutions of the rotor and converting them to a continuously totaled volumetric reading.
MFL	Magnetic Flux Leakage – Type of in-line inspection technique that includes a magnetic field in a pipe wall between two poles of a magnet. Sensors record changes in the magnetic flux (flow) that can be used to evaluate metal loss.
MIC	Microbiologically Influenced Corrosion – Corrosion or deterioration of metals resulting from metabolic activity of microorganisms. Such corrosion may initiate or accelerate microbial activity.
Mild steel	A type of steel that has a lower proportion of carbon than ordinary steel, rendering it softer and more malleable.
MLU	Mid-life upgrade
MLV	Mainline valve. Also a Worthington engine (MLV 10).
MMBTU	One million British Thermal Units determined based on gross heating value, which is determined at 60°F when saturated with water vapor at an absolute pressure of 14.73 PSIA, adjusted for water content as delivered. (The letter M denotes a thousand; MM represents a thousand thousand or one million.) Generally accepted as a rough equivalent of an MCF.
MMCF	Million cubic feet
MMCF/D	Million cubic feet per day
MMCF/H	Million cubic feet per hour
MMI	Man Machine Interface – interface between an operator and a computer.
MMSCFD	Million standard cubic feet per day
MMSCFH	Million standard cubic feet per hour
MOA/MOU	Memorandum of Agreement/Memorandum of Understanding

MOC	Management of Change – Process that systematically recognizes and communicates to the necessary parties changes of a technical, physical, procedural or organizational nature that can impact system integrity.
Monitoring regulator	A pressure regulator set in series with another pressure regulator to automatically taking over control of the pressure downstream of the station in an emergency in case that pressure tends to exceed a set maximum.
Monument/Benchmark	See Benchmark/Monument
MOP	Maximum Operating Pressure in psig. The MOP is equal to or less than the Maximum Allowable Operating Pressure (MAOP) at which the line can operate.
MSS	Manufacturer's Standardization Society
MTBF	Mean time between failures
Navigable Waterway (for compliance with 49 CFR 191 and 192)	Interstate or Intrastate lakes, rivers, and streams used for commercial purposes (barging, commercial fishing, etc).
Navigable Waterway (for environmental compliance)	The EPA and Army Corp of Engineers definition of this term continues to change. Please consult the EHS and/or Legal Department for a case-by-case determination based upon your specific facts.
Natural gas	A naturally occurring mixture of hydrocarbon and non-hydrocarbon gases in porous formations beneath the earth's surface, often in association with petroleum. The principal constituent is methane.
NDE	Nondestructive Examination – Inspection technique that does not damage the item being examined. This technique includes visual, radiography, ultrasonic, electromagnetic and dye penetrant methods.
NDT	Nondestructive Testing
Near Miss	An undesired event that could have resulted in a loss under slightly different circumstances
NEC	National Electric Code
Needle valve	A valve that has a tapered needle-like plug that fits with precision on a seat. Accurate throttling of small flows is possible because the orifice formed between the tapered plug and its corresponding tapered seat can be varied in very narrow and precise increments.
NFPA	National Fire Protection Association
NGL	Natural gas liquids
NGPA	Natural Gas Policy Act
NOI	Notice of Intent
Nomination	A shipper's offer to move gas on a pipeline during a given period. Most nominations are made on a daily basis, although midday hourly nominations are possible on some systems.

Non-records*	Documents or other materials that do not support or document Kinder Morgan's business operations and do not have ongoing business, legal, compliance, operational or historical value and therefore are not retained long-term in accordance with the Records Retention Schedule. Examples of non-records may include: 1. Stocks of printed or reproduced documents (i.e., forms) kept for supply purposes. 2. Non-Company books, periodicals, newspapers, posters or pamphlets acquired and preserved solely for reference 3. Private materials neither made nor received by the Company in the transaction of business, such as employees' group insurance explanation of benefit forms
Nox	Nitrogen oxides – The sum of nitric oxide and nitrogen dioxide. The primary nitrogen pollutant emitted for the combustion process.
NPDES	National Pollutant Discharge Elimination System
NPS	Nominal pipe size
NPT	National Pipe Thread
NSA	Noise sensitive area
OD	Outside diameter
Odorant	Substance giving a readily perceptible odor at low concentrations in the material into which it is mixed and used as a warning indication of the presence of the material, such as natural gas.
Odorization facilities	All pipe, tubing, valves, fittings, vessels, pumps, fabricated assemblies, electrical facilities and building or concrete structures required for adding an odorant to natural gas.
OEM	Original equipment manufacturer
Office of record*	The organizational unit, i.e. business unit or department responsible for managing and retaining official records. Records may be in the custody of the office of record, another department or a third party but compliance with the retention program remains the responsibility of the office of record.
Official records*	The most complete version of a record, typically but not always the original, that the company retains to document its official position on the matter contained in the record.
Official record holder*	The organizational unit or individual responsible for managing and retaining official records.
Offsite storage*	A potentially secure location, remote from the primary location, at which inactive or vital records are stored.
Ohm	The unit used to measure resistance to electrical current.
O&M	Operating and Maintenance Manual (KM)
One-Call	State programs/agencies set up for calling in prior to excavating on or near a utility easement.

Open BSI	Bristol Systems Interconnect – System used to poll Bristol flow computers, Flow Automation flow computers (using Bristol protocol) and data concentrators for historical and real-time flow information.
OPP	Overpressure Protection – A device or equipment installed to prevent pressure in a pipe system or other facility from exceeding a predetermined limit.
Orifice flange	Set of flanges for orifice measurement built in accordance with AGA Report No. 3.
OSHA	Occupational Safety and Health Act (or Administration)
Out-of-Service Pipeline	A facility that is not currently being used for the transportation of natural gas, and that is not available to flow gas upon demand.
Overhead crane	Movable bridge carrying a movable or fixed hoisting mechanism that travels on an overhead fixed runway structure.
Paraffin	White waxy, odorless, tasteless substance obtained from petroleum and other oils.
Paraplow	A soil-loosening implement
Passivating	Acid treatment of stainless steel to remove contaminants and improve corrosion resistance.
PCBs	Polychlorinated biphenyls – A family of organic compounds used since 1926 in electric transformers as insulators and coolants; in lubricants, carbonless paper, adhesives and caulking compounds. They are also produced in certain combustion processes. PCBs are extremely persistent in the environment as they naturally break down and degrade very slowly.
Pcd	Printed circuit design
PCM	Pipeline Current Mapper
Peak shaving	Supplying gas to a system from an auxiliary source during periods of maximum demand to reduce the load or demand on the primary source of supply.
PE Pipe	A type of semi-rigid plastic pipe that meets the requirements of ASTM D 2513-A1 and ASTM D 1248, referred to as polyethylene pipe
Penetrometer	Apparatus for measuring the penetration number of a solid.
Perennial stream bank	Stream that has significant flow year round
Permanent easement	Permits permanent access to a property owner's land for pipeline installation or repair, as needed.
Permanent slope breakers	A method of erosion control that is installed permanently. See Slope breakers.
Permissive to crank	The start permissive screen displays all of the requirements that must be met before a unit start attempt is allowed.
PFI	Pipe Fitters Institute
PI, Pis	Point of Intersection, Points of Intersection
PIC	Potential Impact Circle – A circle of radius equal to the potential impact radius (PIR).

P&IDs	Piping and Instrumentation Diagrams
Pig	Any independent, self-contained device, tool or vehicle that moves through pipeline interiors for inspecting, dimensioning or cleaning. Pigs are usually barrel-shaped, made of metal and covered with metal brushes. They may also have rubber or plastic cups and may be made entirely of plastic. They are inserted into the pipeline by means of a device called a pig-trap and pushed through the line by pressure of flowing fluid or gas. The forward movement of the pig, together with its rotation, cleans rust, liquids and other undesired substances from the pipeline. A pig can be "smart" (see Smart pig) or "dumb" to perform a specific purpose.
Piggability	Ability of a pipeline or segment to be inspected by an ILI device
PIMS	Pipeline Integrity Management System (Database)
PIN	Point Identification Number assigned to a measurement station. The physical station consists of one or many meter runs.
Pinhole	A holiday in which no visual mechanical damage is evident.
Pipeline	All parts of those physical facilities through which gas flows, including pipe, valves and other appurtenances attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders and fabricated assemblies.
PIR	Potential Impact Radius – The radius of a circle within which the potential failure of a pipeline could have significant impact on people or property. PIR is determined by the formula r = 0.69 * (square root of ($p*d^2$)), where **r** is the radius of a circular area in feet surrounding the point of failure, **p** is the maximum allowable operating pressure (MAOP) in the pipeline segment in pounds per square inch and **d** is the nominal diameter of the pipeline in inches. Note: 0.69 is the factor for natural gas. This number will vary for other gases depending upon their heat of combustion. An operator transporting gas other than natural gas must use Section 3.2 of ASME/ANSI B31.8S to calculate the impact radius formula.
PIRAMID™	Comprehensive risk assessment model software by C-FER Technologies that calculates failure probability and consequence impact estimates based on pipeline attributes and historical data.
PLC	Programmable Logic Controller
PM	Project Manager – Individual responsible for managing the project. For any specific project, the Project Manager is the individual who possesses the authority to direct activities and expenditures on behalf of KM.
Pneumatic	Of or relating to air or other vapor gases.
Pneumatically controlled	Device or devices operated by air or gas as the primary control.
PODS	Pipeline Open Database Standard – Comprehensive database that stores physical information about the pipeline.
"Pop" pressure	The pressure at which the relief valve will open (on increasing pressure) and begin discharging.

Portal*	A website or service that offers a broad array of resources and services, such as e-mail, forums and search engines.
Ppm	Parts per million
Pressure drop	The drop in static pressure of the fluid (air, gas or water) due to friction or obstruction as the fluid flows through pipe, valves, fittings, regulators, burners and appliances.
Pressure relief valve	A self-operating valve that is installed in a process system to protect against overpressurizing the system.
Privileged records*	Records prepared by, for or at the request of an attorney for the purpose of rendering or obtaining legal advice. Privileged records also include records communicated to an attorney. Privileged records are also considered confidential.
Process	Any activity involving a highly hazardous chemical, including using, storing, manufacturing, handling or moving such chemicals on site. Includes any activity involving a group of vessels that is interconnected and/or separate vessels located such that a highly hazardous chemical could be involved in a potential catastrophic release
Production field	An area that is underlain by at least one reservoir containing natural gas or natural gas associated with crude oil.
Profilometer	An instrument for measuring the (relative) smoothness or roughness of a surface.
PROM	Programmable Read-Only Memory
Propane	Gaseous member of the paraffin series of hydrocarbons (C_3H_8) that when liquefied under pressure is one of the components of liquefied petroleum (LP) gas.
Prover	Apparatus used to prove or calibrate gas meters. A gas meter is tested for registration accuracy by passing a volume of air from a prover through it and comparing the registration of the meter index with the volume indicated by the prover. Prover types include bell provers, transfer provers, low pressure flange tap prover and sonic nozzle or critical flow provers.
Psia	Pounds per square inch absolute, using absolute zero as a base.
Psig	Pounds per square inch gauge (pressure in relationship to the ambient air pressure)
Public roads	(Definition under study)
Pup	A short piece of pipe (shorter than a full joint) that is the same diameter as the carrier pipe. It has a wall thickness that is compatible with the carrier pipe and is welded in the line.
PVC	Polyvinyl Chloride – A polymer of vinyl chloride that yields a flexible plastic.
Qualified Joiner	A person who has passed the Company-specified tests and is qualified to join plastic pipe with the appropriate material using an approved joining procedure

Records*	Information that is created or received and is evidence of business activities, transactions, operations, policies, decisions and/or obligations that have business, legal, operational, compliance or historical value that the company intends to retain as its official position on the matter contained in the record. Records may include paper and electronic correspondence, memoranda, reports, electronic transmissions, databases, videos, images and any other documentary materials, regardless of physical form or characteristics.
Records destruction hold*	The internal process for preserving certain records and other potentially relevant materials for audits, investigations and/or litigations that are anticipated, imminent or pending. A records hold temporarily replaces all other Records Management policies, including the Records Retention Schedule, until it is terminated.
Records destruction hold release*	When a litigation, regulatory or tax audit is completed, a destruction hold is released and the normal schedule for records destruction is reassigned.
Records disposition*	After records have reached the end of their retention period in active and/or inactive storage, they may be destroyed in a manner appropriate to their content.
Records management*	The systematic control of all records from their creation or receipt through their processing, distribution, organization, storage and retrieval to their ultimate disposition.
Records retention program*	A program established and maintained to provide policy, procedures and retention periods for records in an organization.
Records series*	A group of related records filed or used together as a unit and evaluated as a unit for retention purposes, e.g., a personnel file consisting of an application, reference letters, etc.
Regulator	A device for automatically controlling the pressure in or flow into a pipeline or system.
Relief valve	A valve designed to reduce the pressure differential across it quickly when such differential exceeds the predetermined maximum. May be used for either pressure or vacuum relief.
Remediation	Repair or mitigation activity an operator takes on a covered segment to limit or reduce the probability of an undesired event occurring or the expected consequences from the event.
Remote Control Valve	A valve that can be operated from a distant point by means of an electrical or pneumatic signal. This remote operation may be activated manually or automatically by certain preset conditions.
Repository*	A location for storing information such as documents, websites, media files, etc.
Reseat pressure	The pressure at which the relief valve will close (on decreasing pressure) once enough gas has been discharged to lower the pipeline pressure to the relief valve reseat pressure setting.
Retention*	Holding or keeping materials in possession, usually in a desired state or condition, according to operational, legal, regulatory and fiscal requirements.

Retention period*	The period of time a record must be kept to satisfy business, legal, regulatory and/or financial requirements.
Retention schedule*	Rules based upon laws, regulations, business requirements and sound judgment that provide the framework for the methodical retention and eventual disposition of company records at the end of their useful life in the ordinary course of business. The retention schedule drives establishing retention periods.
Reynold's number	A dimensionless expression used in predicting flow patterns
RGC	Rigid galvanized conduit
Rills	Troughs formed when erosion becomes concentrated due to the variation in surface contours or erodibility.
ROW	Right-of-Way (permanent)
RPM	Revolutions per minute
RSPA	Research and Special Programs Administration
RTD	Resistance Temperature Device - A sensor that uses materials that have a variable resistance depending on the temperature of the surrounding area and on the length of the material.
RTU	Remote Terminal Unit - An industrial computer used for data acquisition and control.
SCADA	Supervisory Control and Data Acquisition - A method by which data can be retrieved from the field and stored for later analysis. The SCADA system can also make control decisions.
SCC	Stress Corrosion Cracking - A form of environmentally-assisted cracking resulting from the combined action of a corrosive environment, pipe tensile stress, either applied or residual and specific pipeline grades of steel.
SCCDA	Stress Corrosion Cracking Direct Assessment - A process to assess a covered pipe segment for the presence of SCC, primarily by systematically gathering and analyzing excavation data for pipe having similar operational characteristics and residing in a similar physical environment.
SDWA	Safe Drinking Water Act
Sediment barriers	Material placed to filter small amounts of sediment from leaving a slope or construction site.
Sensitive period	Restrictions on access due to environmental or conservation efforts (i.e., during nesting season).
Separation	The physical and/or chemical technique used to segregate produced well fluids (oil, water, gas).
Separator	A vessel used to separate liquids and/or solids from a natural gas stream or to separate water from hydrocarbon liquids, typically by a filter separator to remove solids from natural gas, a coalescing filter separator to separate liquids from natural gas, or a slug catcher or scrubber to remove larger amounts of liquids from natural gas.

SER	Standard Electric Readout - Electronic measurement device used in conjunction with AAT turbine meters made by Rockwell/Equimeter/ Invensys/Sensus, which is now obsolete.
SES	Station Emergency Signal
Short term conditions	Any condition of service that proves to be more stringent than the specified maximum sustained operating temperature and design pressure.
SHPO	State Historic Preservation Officer
Single-chambered orifice fitting	Orifice fitting that requires depressurization to remove and inspect orifice plate.
Single path ultrasonic meter	Ultrasonic meter that can be hot tapped on a carrier pipe or installed as a pipeline component that has one set of transducers.
Slick bore method	A boring technique sometimes used for road crossings in which a large amount of liquid is pumped into the hole outside of the pipe to reduce friction.
Slope breakers	Material used to reduce runoff velocity and divert water off the construction right-of-way. Slope breakers may be constructed of materials such as soil, silt fence, hay or straw bales or sandbags.
Slugs	Intermittent releases or discharges of liquids/debris within a natural gas pipeline.
Smart pig	An instrumental inspection device or internal inspection pig. These pigs can detect certain irregularities or anomalies in the pipe wall. This type of pig records the existence, location and relative severity of the anomalies using recording equipment carried on board. The pig can later be recovered and any external anomalies can be examined visually to verify their existence and severity.
SMYS	Specified Minimum Yield Stress (or Strength) - Minimum yield strength of the steel in pipe as required by the pipe production specifications, lb/in.^{2}
Solenoid	A cylindrical coil of wire that resembles a bar magnet when it carries a current so that it draws a movable core into the coil when the current flows.
Sour Gas	Gas containing an appreciable quantity of hydrogen sulfide and/or Mercaptans.
Sour Gas (Texas RRC)	Any natural gas containing more than 1-1/2 grains of hydrogen sulfide per 100 cubic feet or more than 30 grains of total sulfur per 100 cubic feet shall be classified as Sour Gas Service.
SPCC	Spill Prevention Control and Countermeasure Plan
Specific Gravity (Relative Density)	1. The ratio of the weight of a given volume of a substance at a given temperature to the weight of an equal volume of a standard substance at the same temperature. Density of a substance to the density of a reference substance both at specified physical conditions. 2. The ratio of the mass of a given volume of a substance to the mass of a like volume of a standard substance, such as water or air.
SPRP	Spill Prevention and Response Procedure

SPU	Signal process unit
SQL	Structured Query Logic - A standard query language used by many programs that manipulate large databases.
SRB	Sulphate Reducing Bacteria
SS	Stainless steel
SSD	Station shutdown (without blowdown)
Stakeholder	Company employee who has final decision-making authority and has a stake in or may be affected by a given change to Company Standards and/or Procedures
Standard cubic foot	The cubic foot volume at base conditions of temperature and pressure (See Cubic Foot). SCFH = Standard Cubic Feet per Hour.
STARS	Online tool that collects information for undesired pipeline events or damage (note: STARS is not an abbreviation).
Straightening vanes	Round, square or other shape tubing installed axially inside the piping preceding an orifice or turbine meter to eliminate swirls and crosscurrents set up by the pipe fittings and valves. Proper installation of straightening vanes considerably reduces the amount of straight pipe required preceding the measuring element.
Stroking gas	Power gas that strokes a valve or pressure-operated equipment.
Structured Information*	Data that resides in databases.
Subject Matter Expert	(SME) - Individual who has expertise in a specific area of operation or engineering.
Survey	The process in determining route selection, site requirements, right-of way, road access, environmental considerations and permits for company use.
Survey Permission Line List	List identifying property owners who have granted permission to conduct survey activities across their lands.
Swabbing	A method of cleaning pipe interior by pulling rags, mops or other forms of swabbing material through the pipe.
Sweet natural gas	Natural gas containing such small amounts of sulfur compounds that it can be used without purification.
Switchgear	A station power distribution system to maintain and provide power as well as fault protection to various operations and station equipment.
SWPPP	Storm Water Pollution Prevention Plan
Tagout	Placing a descriptive tag on an energizing device in conformance with an established procedure to indicate that the energizing device and equipment may not be operated until the tag is removed.
Tap location	Up- or downstream from the plate used in orifice measurement.
Tariff	Compilation of all the effective rate schedules for a company, along with general terms and conditions of service.
Taxonomy*	A classification and/or categorization of information objects.

TBS	Town border station
TEFC	Totally enclosed fan-cooled
Temperature, absolute	Temperature above absolute zero. It has long been known from temperature-volume relationships that if the data were extrapolated to zero volume, the corresponding temperature would be about -273°C. If the sizes of the Celsius and Fahrenheit degrees are retained and the zero points shifted to -273°C, the Absolute Kelvin and Rankine scales are obtained. The exact SI (Systeme International d'Unites) values are K = 273.15 + °C and °R = 459.67 + °F.
Temperature, ambient	Environmental temperature unaffected by other heat sources, such as radiation from artificial objects.
Temperature compensated meters	These meters measure volume at pipeline conditions but they contain a device that will convert the volume at flowing temperature to a volume at base temperature. This device is a temperature-sensitive mechanism that continuously varies the diaphragm stroke to provide a temperature compensated volume output.
Temperature probe	A device placed into the gas stream that senses the flowing gas temperature.
Temporary slope breakers	Slope breakers that are intended for temporary use, to be removed after construction efforts are completed. See Slope breakers.
Therm	A unit of heating value equal to 100,000 British Thermal Units (BTU).
Threadolet	Female threaded weld-on fitting
Tie-ins	Final connection for two pipelines
Torque	The force that causes rotation or twisting; the rotary force in a mechanism.
Toxic Service	Process and or equipment that handles toxic substances
Toxic Substance	1. A substance that is poisonous if inhaled, swallowed, absorbed or introduced into the body. 2. A substance that has a deleterious affect on the mechanical integrity of the system if the appropriate materials are not specified and used.
Transducer	An element or device that receives information in the form of one physical quantity and converts it to information in the form of the same or other physical quantity.
Transmission pipeline	A network of pipelines distributing natural gas from an onshore station via compressor stations to storage centers or distribution points.
Transmitter	A transducer that responds to a measured variable by means of a sensing element and converts it to a standardized transmission signal that is a function only of the measurement.
Trench breakers	See trench plugs
Trench plugs	Barriers installed at regular intervals in pipe trenches, in which fill is placed to prevent erosion caused by the lateral movement of runoff in the open trench.
Trunnion valve	A type of ball valve designed to work under various operating conditions for ease of torque in opening or closing. Typically 2-inch and larger ball valves will be trunnion type.
UBC	Uniform Building Code

UEL	Upper Explosive Limit – The maximum amount of airborne chemical that can be present in an air/chemical mixture and still have it be explosive. The UEL of natural gas is 14% to 15% gas in air.
UM	Ultrasonic meter
Unimproved roads	Roads composed of indigenous/native soils and lacking a filed public easement.
Unofficial Records*	Convenience copies and duplicates of an official record. Unofficial records can be disposed of when they are no longer useful. They cannot be kept beyond the retention period established for the official record. Examples of unofficial records may include duplicates, drafts, work papers and reference materials
Unstructured Information*	Information such as documents (electronic or physical), spreadsheets, e-mails, instant messages, etc.
UPS	Uninterruptible Power Supply
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
V	Volts
Valve	A mechanical device for controlling the flow of fluids. Types include gate, ball, globe, needle and plug valves.
Variance	A variance to an existing procedure, standard or specification provides a license to someone for some specific reason associated with some specific task or project to perform that task in a manner contrary to the language contained in the existing procedure, standard or specification. The variance may also allow for a result or outcome that is different than that stated in the procedure, standard or specification.
VAX	Virtual Address Extension - Trademark name for Digital Equipment Corporation's line of computers (now obsolete).
VDC	Volts Direct Current
Vent lines	Pipes used to conduct vent discharge to a suitable location.
Venturi Effect	The drop in pressure resulting from the increased velocity of a fluid as it flows through a constricted section of a pipe.
VFD	Variable Frequency Drive
Viscosity	In a fluid in motion, the transfer of momentum from faster to slower layers results in a retarding effect or resistance to flow called viscosity. Viscosity is a shearing stress whose force varies with the rate at which the strain is changing. Thus, the unit of viscosity, the poise, is expressed in dyne-seconds per square centimeter. For gases, this important physical property increases with increasing pressure, temperature and molecular weight. Example: syrup is more viscous than water.

Vital records*	Those records that are required to continue business operations after a disaster. Vital records can be used to: 1. Recreate the Company's business, legal and financial position and/or 2. Ensure that the rights of the Company, its employees and customers are preserved. (Examples of vital records include payroll data and customer accounts.)
VOC	Volatile organic compound
VOM	Volatile organic material
VOS	Velocity of sound (speed of sound)
Walking/Working Surface	Any horizontal or vertical surface on which an employee walks or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel. Walking/working surfaces do not include ladders, vehicles or trailers from which employees perform job duties.
Waterway crossings - intermediate	To be determined in the Scope of Work. 2. FERC definition - includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction.
Waterway crossings – major	To be determined in the Scope of Work. 2. FERC definition - includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.
Waterway crossings – minor	To be determined in the Scope of Work. 2. FERC definition - includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction.
w.c.	Water column
WE	Weld end
W.E. x F.E.	Weld end by flange end
W.E. x S.E.	Weld end by screwed end
W.E. x W.E.	Weld end by weld end
Welding Inspector	A person the Company considers qualified by experience and training.
Wet	Natural gas produced from strata containing condensable hydrocarbons or other liquids. The term is subject to varying legal definitions as specified by certain state statutes. (Usually maximum allowable is 7 lbs./MMCF for water content and 0.02 gals/MMCF for natural gasoline.)
Wetlands	Land or areas containing much soil moisture. Wetland areas include areas that support vegetation typically found in saturated soils on at least a seasonal basis. Any area that holds standing water (any amount of water that waterfowl can land on) at any time during the year. Any land that historically had standing water and still grows the species of plants that thrive in water and seasonally wet areas.
Working files (drafts)*	Documents such as notes, calculations or drafts assembled or created and used in preparing or analyzing other documents. Usually retained by the originator at the point of use with limited retention value.

Workover	Remedial work or modifications to equipment within a well or pipeline relating to attempts to increase the rate of flow or production.
w.t.	Wall thickness

Table of Contents

1. Applicability

- ☒ Gathering
- ☒ Processing
- ☒ Transmission/Regulated Onshore Gathering
- ☒ Kinder Morgan Treating

This procedure applies to all Company operations and locations, contractors (and their subcontractors) and contract employees (refer to **O&M Procedure 102 – Contractor Safety**) when an undesired event occurs.

2. Scope

This procedure defines Company requirements for emergency reporting and any related investigations.

3. Core Information and Requirements

An undesired event is an event that results in any one of the following:

- Harm to people, fatalities involving Company employees and contractors, lost work days and/or modified duty days associated with injuries and illnesses, Occupational Safety and Hazard Administration (OSHA)-recordable incidents and first aid cases
- Damage to Company and/or third party (including customer's) facilities, equipment, property, vehicles (facilities can include pipelines and associated equipment)
- Environmental impacts, unexpected release of a chemical substance, gas or loss of product into the workplace or environment (Refer to **O&M Procedure 1030 – Unmeasured Gas Use/Loss Reporting** and **O&M Procedure 1201 – Environmental Release Response**)
- Operational process interruption
- Partial or full customer interruption
- A serious or potentially high loss near miss that could have resulted in any of the above conditions if it had occurred under slightly different circumstances (as determined by the Environmental, Health and Safety [EHS] representative or the affected area's senior Company official). Refer to **O&M Procedure 166 – Safety Hazard/Near Miss Reporting**; and/or

- A pipeline Safety-Related Condition meeting the requirements of **O&M Procedure 214 – Reporting Pipeline Safety-Related Conditions, Subsection 3.1.1 – Reporting Safety Related Conditions**

The Company requires internal reporting and investigating of any undesired event. Various agencies require reporting, including U.S. Department of Transportation (DOT), OSHA, Environmental Protection Agency (EPA) and implementing state or local agencies. The Company uses an incident-tracking database (**STARS**) and various forms for reporting, tracking, investigating and documenting undesired events. The **Emergency Response Line** (**ERL**) system is designed to facilitate real-time notification of undesired events that affected or potentially affected Company stakeholders.

Refer to Attachment 1 – ERL Communication Protocol for a timeline of actions taken and persons responsible for each phase of the event.

If an ERL call is necessary, it will be held on the dedicated emergency response conference line: **866-855-5544,** then **ERL1 (3751)** or **866-855-5544,** then **ERL2 (3752)** or dial **73005** for interoffice access and **1-800-525-3752 Dial 1** then **73005** for remote access.

3.1. Initial Response and Reporting

Response and reporting in a timely manner is important. EHS or Codes & Standards personnel will determine, on the initial ERL call, the response and reporting timeframe and who will be responsible for making the notifications.

1) Immediately, upon identification of undesired event:
   - Determine whether there is a hazard to persons or property.
   - Take whatever steps are necessary to make the immediate situation safe.
   - Determine whether any waterbodies have been impacted. If waterbodies have been impacted, initiate an **ERL** call immediately.
   - Follow applicable Company procedures. Refer to **O&M Procedure 1900 – Emergency Response** and the site-specific Emergency Response Manual for site-specific response actions.
2) Company personnel identifying the event will:
   - Notify their Supervisor. If the Supervisor cannot be reached immediately, contact Gas Control.
   - Determine event classification using Attachment 2 – Event Classification Chart.
   - Immediately contact Gas Control for any ERL/ERL+ events. Refer to Attachment 3 – Initial Gas Control Notification Checklist for baseline information requirements.

   Operations Management or the EHS representative will notify Gas Control of any event that they consider significant even if it does not meet any of the criteria listed in Subsection 3.2 – Determining ERL Notification Levels.
3) Gas Control personnel will initiate the **ERL** process, which will notify appropriate Company personnel to join the ERL conference call. Refer to Subsection 3.2 – Determining ERL Notification Levels.
4) Field Operations Management will convene and facilitate the ERL conference call participants will determine immediate actions and necessary follow-up activities and notifications. The on-site Company representative or designee will be asked to give details about the event. When the event includes unintentional gas loss, the **ERL Workbook** spreadsheet can be used to calculate estimated gas loss. Refer to Attachment 4 – Initial ERL Call Checklist.
5) Appropriate Company personnel will issue an update ERL message to schedule additional conference calls or conclude the event.
6) Company personnel will investigate the event in conformance with Subsection 3.4 – Investigation.

Refer to Attachment 1 – ERL Communication Protocol for a timeline of actions taken and persons responsible for each phase of the event.

Refer to Attachment 3 – Initial Gas Control Notification Checklist for Emergency Response Contact Telephone Numbers.

3.2. Determining ERL Notification Levels

The Corporate Crisis Response Plan categorizes events according to their severity. Level 0 (local) events do not require Gas Control involvement or ERL activation. Level I and Level II events require **ERL** or **ERL**+ (ERL Plus) activation respectively.

Gas Control will issue an **ERL** or **ERL**+ notification for any Level I or II event associated with a Company operation, including events incurred by third party contractors working for the Company. An 'Information-Only' ERL does not require a conference call.

Refer to Attachment 2 – Event Classification Chart for a list of ERL notification levels.

3.3. Additional Reporting Requirements

Report all undesired events, associated gas lost, and damage to Company facilities or property, including that caused by a third party, using the incident-tracking database.

3.3.1. Pipeline Facilities Events

A member of the Company's Codes and Standards or EHS department shall be responsible for reporting events classified as incidents, as defined in **P0010 – Master Glossary**, within the two-hour reporting limit.

A member of the EHS department shall be responsible for reporting EPA reportable events within 15 minutes of the event occurrence.

Environmental and additional State and Federal reporting requirements are listed in **O&M Procedure 1201 – Environmental Release Response**.

Each report shall include the following:

- The name of the Operating company
- Name(s) of person making report and their telephone numbers
- The location of the incident (the county that the incident occurred in, the nearest town and/or crossroads nearest the incident)
- The time of the incident
- The number of personal injuries or fatalities, if any
- The phone number of on-site Company contact
- Quantity of gas or other product released, if known
- Estimated property damage
- Other significant facts that are known and the extent of the damages

When the report is made telephonically, document the name of the person who took the call at the Regulatory Agency (e.g., NRC, APSC, LA DNR, TRRC, or the UTPSC), the time the call was made to the Regulatory Agency, and the Report Number under which the Regulatory Agency recorded the call.

3.3.1.1. Immediate Report to the National Response Center (NRC)

Incidents occurring on regulated pipelines and EPA reportable events shall be reported to the NRC.

When any portion of an underwater pipeline is exposed or constitutes a navigation hazard in the Gulf of Mexico and its inlets, a member of the Company's Codes and Standards or EHS department shall be responsible for reporting the event to the NRC as soon practicable but no longer than 24-hours after discovery.

NRC reports shall be made within the applicable reporting time limit telephonically by dialing 1-800-424-8802 or electronically at **http://www.nrc.uscg.mil/**.

When the report is made electronically, the NRC should send the reporting party a confirmation by e-mail within 45 minutes of receiving the online report. If an e-mail

confirmation is not received within 45 minutes, the reporting party will call 1-800-424-8802 to ensure that the NRC has received the report.

3.3.1.2. Incident Reporting to the Alabama Public Service Commission (APSC)

Incidents, undesired events causing damage in the amount of $5000 or more, or undesired events requiring the taking of any segment of a transmission pipeline out of service that occur on Intrastate pipelines regulated by the APSC shall be reported to the APSC by calling (334) 242 – 5778 weekdays from 8am to 5pm. After 5pm, weekends and holidays contact the nearest APSC Gas Pipeline Safety representative in the area. If there is no answer, go to the next nearest representative, etc. A list of Gas Pipeline Safety Contacts can be found on the APSC website: **http://www.psc.state.al.us/energy/gps/gasreports.htm**.

3.3.1.3. Incident Reporting to the Louisiana Department of Natural Resources (LA DNR)

Incidents occurring on Intrastate pipelines regulated by the LA DNR, shall be reported to the LA DNR by calling (225) 342 – 5585 during working hours and (225) 342 – 5505 after working hours.

3.3.1.4. Incident Reporting to the Railroad Commission of Texas (TRRC)

Incidents occurring on Texas Intrastate pipelines shall be reported to the TRRC by calling (512) 463 – 6788.

3.3.1.5. Incident Reporting to the Utah Division of Public Utilities (UTPSC)

Incidents occurring on Utah Intrastate pipelines regulated by the UTPSC shall be reported to the Utah Division of Public Utilities by calling (800) 874 – 0904.

3.3.1.6. Waiver or Special Permit Pipelines

Pipelines operating under waiver or special permits will notify the Regional Office of PHMSA within 24 hours of any otherwise non-reportable leaks on the pipeline. The Director of Codes and Standards or designee will make the contact with the appropriate PHMSA Regional Director.

3.3.2. Excavation Caused Damage

3.3.2.1. Colorado

Colorado One-Call State law requires that excavation-caused damage to Colorado Inter- or Intrastate pipelines be reported to the Utility Notification Center of Colorado (UNCC) within 90 days after the line has been repaired and service restored.

- The Operations Manager or designee shall report the damage using the incident-tracking database.
- The Director of Damage Prevention or designee will report excavation-caused damage via the **Common Ground Alliance Damage Reporting Tool** (DIRT) on a quarterly basis.

3.3.2.2. Texas

Each reporting location must report excavation-caused damage to all Texas intrastate pipelines within 10 working days of the event or of the operator's actual knowledge of the damage.

The Operations Manager or designee shall report the damage to the Company's Damage Prevention Group within 7 days of discovery using the **Texas Damage Reporting Form (TDRF) Operator Field Data**.

The Director of Damage Prevention or designee shall report the damage to the Texas Railroad Commission via

TDRF (**http://www.rrc.state.tx.us/formpr/index.html**), within 10 days of discovery.

3.3.3. Maximum Allowable Operating Pressure (MAOP) Exceedance

When the MAOP plus allowable buildup has been exceeded, a member of Codes and Standards will report the event to the DOT and the appropriate State authorities within five days. Refer to **O&M Procedure 703 – Pressure Limiting and Relief Devices and Inspections** Subsection 3.2.1 – Pipelines, and **O&M Procedure 219 – DOT and State Pipeline Reports**.

3.3.4. Motor Vehicle Accidents

Always report all property damage accidents, regardless of severity, that involve a third party (i.e., non-Company vehicle, person, cow, dog, mailbox, etc) to the 1-800-353-2556 Claims Reporting number.

First-party vehicle accidents, claims that do not involve a third party, do not need to be reported to the 800 Claims Reporting number.

Employees involved in motor vehicle accidents while on Company business, using Company rented or personal vehicles, must report the accident to their immediate supervisor and their EHS representative as soon as possible, regardless of damage severity.

All motor vehicle accidents occurring while on Company business or to Company vehicles, regardless of severity, must always be reported in the incident-tracking database within 24 hours. Reportable accidents include:

- Scratches, bumps, and dents
- Damage caused solely by rocks, gravel, or other materials thrown by vehicles and/or damage resulting solely from objects falling on a vehicle or from weather-related events
- Damage caused by vandalism or unknown parties

For detailed information regarding the Company-wide EHS policy, vehicle accident reporting and internal benchmarking refer to the **EHS Policy Manual**.

3.3.5. Injuries/Illnesses

All employee work-related injuries/illnesses will be reported to the immediate supervisor and entered into the incident-tracking database as soon as possible. The data entered into the incident-tracking database will be sent via automatic data transfer to the worker's compensation carrier. The incident-tracking database entry should be made within 24 hours. For those employees in the states of Ohio, Wyoming, and North Dakota, the 800 number (800 – 353 – 2556, Option 1) must be called (worker compensation is handled individually by these states and not the Company workers' compensation carrier).

Reportable injuries include, but are not limited to, the following:

- All injuries involving head, neck, shoulders, back, hips or knees, regardless of severity; no exceptions
- Injuries/illnesses requiring a physician's follow-up medical treatment or a prescription medication

Injuries that require first aid treatment only, (i.e., minor cuts and scrapes, dirt in eyes, stubbed or pinched fingers and insect bites) should be entered into the incident-tracking database as: "Record Only – No Medical Treatment" to prevent the incident-tracking database data from transferring to the workers' compensation carrier.

All potentially high-loss near-misses that could have resulted in injuries or actual injuries (including ones requiring first aid), illnesses, or fatalities must be reported to the immediate supervisor and the EHS representative by close of next business day.

3.3.6. Environmental Releases

Consult **O&M Procedure 1201 – Environmental Release Response** for additional guidelines regarding environmental release responses. Certain environmental releases (e.g., releases into water bodies) must be reported immediately following the event occurrence.

3.3.7. Regulatory Agency Interactions

Report all announced or unannounced federal, state, or local governmental agency inspection or investigation, any written correspondence from a governmental agency alleging potential or actual non-compliance, including but not limited to the following:

- Agency enforcement action or correspondence, including any citations, recommendations, warning letter, letter or notice of violation, permit exceedance or pipeline safety evaluation.
- Any proposed or final orders or agency agreements, including any administrative or compliance orders, consent orders, corrective action orders or agency settlements.
- Any regulatory agency information requests, including Clean Air Act Section 114 or Clean Water Act Section 308 requests or comparable information requests.
- Any agency inspection report alleging potential or actual non-compliance.
- Other agency or civil administrative actions, including criminal or civil investigation or lawsuit, complaint, indictment, conviction or notice of intent to sue.

All Regulatory Agency Interactions must be reported in the STARS incident reporting system on the same day or the business day after the occur or are received for evaluation by Corporate EHS regarding whether they are reportable to U.S. EPA under the Administrative Agreement . Subsequent correspondence or action under any of these Regulatory Agency Interactions must be re-entered into the STARS incident reporting system as a new event.

3.4. Investigation

The Corporate Crisis Response Plan categorizes events according to their severity. Level 0 (local) events are investigated at the discretion of local management. Level I and Level II events are investigated depending on the magnitude of the event. The supervisor and EHS representative will need to complete the investigation report in the incident-tracking database. Certain Level I and II events will require a more detailed and formalized investigation. Refer to the Company **Crisis Support Plan** and Attachment 2 – Event Classification Chart for a list of Level 0, I, and Level II events.

The Company will investigate all undesired events that result in or could have resulted in a fatality, injury or illness, major property damage, process/product loss or harm to the environment. Upon the advice of the legal department, such investigation may be conducted at the direction of the legal department or outside lawyers and pursuant to the attorney-client privilege and/or work product or other legal protection. The investigative process includes identifying root causes or causal factors that contributed to the occurrence, determining the necessary corrective actions and timely follow-up to ensure that corrective actions have been completed.

While lessons learned from conducting investigations may be shared with Company employees, all personnel shall hold specific, sensitive information (e.g., names of persons involved, specific locations, financial data, etc.) in strict confidence. The primary purpose of an investigation is not to find fault or place blame. Reports resulting from investigations may be discoverable by government investigators or third parties.

If, in the course of an investigation, evidence suggests the possibility that the occurrence was not an accident but an intentional violation of Company policy or procedures, negligence or illegal activity, such evidence will be immediately turned over to the appropriate Company officials or authorities.

During the investigation, determine immediate and basic (root) causes, and remedial actions using Company-approved investigation methodology and document in the incident-tracking database. Investigation reports should be attached in the incident-tracking database.

When an undesired event is reported to Gas Control, the extent of the investigation and who will conduct the investigation will be determined during the ERL conference call. PSM/RMP facilities' participants must include:

- At least one employee knowledgeable in the process involved
- Contract employee if the event involved contractor's work
- Other persons with appropriate knowledge and experience to properly investigate and analyze the event, if necessary

Depending on the extent of the event and investigation, the investigative team will:

- Gather all available event details
- Sketch the scene and/or take pictures when possible
- Collect and save physical evidence and pertinent data
    - If specimens are cleaned, use water only
    - Do not use a wire brush or oil
    - Do not fit parts back together during packaging for shipping
    - Carefully mark the direction of gas flow and pipe's orientation to 12 o'clock on specimens
- For significant incidents, evidence should be maintained in the location and position where found until the investigation is completed
- Interview witnesses and responsible parties, regarding the events leading up to and during the occurrence
- Address questions regarding machinery, personal protective equipment, tools and equipment, chemicals and environmental concerns, and process safety
- Review written procedures, job instructions, and specifications covering the operation being performed at the time of the event
- Review the attitudes, priorities, stress levels, physical condition, and perceptions of involved employees, including Control Center employees on duty at the time of the incident
- Consult with the Legal Department before beginning the investigation to determine if it is advisable to have attorneys involved and to protect the investigation as privileged

After collecting applicable information, the investigation team will prepare and write a report that accomplishes all of the following:

- Interprets the event details
- Identifies contributing factors/immediate cause(s)
- Determines the possible root cause(s)
- Develops recommended corrective actions for each cause or contributing factor
- Develops final recommendations that should consider risk and economic analysis
- Establishes individual responsibilities and completion dates for each recommendation
- Provides a mechanism that tracks each recommendation to completion

EHS and Codes & Standards will critique all emergency responses, as warranted. The critique should determine whether emergency procedures were followed and effective, and whether ERL protocol procedures and/or response changes are necessary. Submit any changes to the ADC in conformance with **O&M Procedure 001 – Action Decision Committee**.

4. Training

For training requirements and frequencies, refer to the Company **Training Matrix**.

Provide the information in this procedure to all employees during regularly scheduled safety training sessions:

- Upon policy implementation
- Whenever there is a change
- Once every three years thereafter

The incident-tracking database training, as needed, is available on the Company Intranet (**http://kmonline/ehs/Pages/EHSHotLinks.aspx**). Additional reference and training materials are also available at this site.

5. Documentation

Report all undesired events using the incident-tracking database. Additionally, use the applicable O&M forms or electronic systems to document the event. Attach applicable documentation in the incident-tracking database report. The area EHS representative will track the reporting process completion, determine if events are recordable, preventable, etc., and close the report in the incident-tracking database.

Use **O&M Form OM100-45 – Event/Incident Investigation Summary**, basic cause analysis model, or such other format as directed by the Legal Department for all investigations.

The EHS Department documents and tracks remedial actions and distributes reports, including "lessons learned", to other departments as needed and/or required.

The EHS Department maintains the incident-tracking database, including resolutions and remedial actions documentation for at least five years. Do not destroy documents before consulting the Legal and Insurance Risk Management departments.

After the required Legal and EHS review, the EHS Department will provide a copy of the final investigation report to affected PSM facilities for their files, to be maintained for at least five years.

5.1. Vehicle Accident, Injury/Illness, First Aid Only, Near-Miss, or Information-Only Events

Document vehicle accident, injury/illness, first aid only, near-miss or Information-Only events in the incident-tracking database.

Supervisors who are filing a report on behalf of an employee in their work group should use the incident-tracking database Production link, and use the employee lookup button in the injury or vehicle event to identify the employee involved with the event.

5.2. Property Damage

Report property damage (except pipeline-related damage or damage to motor vehicles) incurred by the Company or other parties to third parties, customers, Company facilities, equipment, tools, etc. using **O&M Form OM100-36 – Property Loss Report**. This includes damage resulting from residential or commercial fires.

Any loss, regardless of cause, that will or could exceed $25,000 must be documented by close of next business day after discovery. Delays could result in the denial by Company insurers of business interruption claims.

5.3. Gas Lost

Document estimated unintentional gas loss on **O&M Form OM100-45 – Event/Incident Investigation Summary**.

Report gas lost related to pipeline events in conformance with **O&M Procedure 1030 – Unmeasured Gas Use/Loss Reporting** using either **Online Field Ticketing – Unmeasured Gas** and/or **O&M Form OM1000-05 – Gas Lost Report** for all Company assets. Also report Gas lost in the incident-tracking database.

5.4. Pipeline Facility Events

5.4.1. DOT/TRRC Reportable Incidents

The Company's Codes and Standards Group shall submit Form PHMSA F 7100.2 – *Incident Report – Gas Transmission and Gathering Pipeline Systems* to the DOT and applicable Intrastate Agencies when applicable, as soon as practicable but not more than 30 days after a reportable incident has occurred in conformance with **O&M Procedure 219 – DOT and State Pipeline Reports**. When the incident involves a customer interruption, Codes and Standards will also provide a copy of the initial DOT report to the Vice President

of Regulatory Services and/or the Manager of Certificates. Supplemental and Final reporting will be submitted to the DOT in conformance with **O&M Procedure 219 – DOT and State Pipeline Reports**.

5.5. Regulatory Agency Notifications

Provide the appropriate Division Director of Operations and EHS representative with the following agency notification information:

- The agency notified
- The agency contact/person who took the call
- The notification time
- The report number
- Any other relevant details

Agency notification information should be included in the incident-tracking database report.

6. References

- 18 CFR 260.9(d)
- 29 CFR 1910.119
- 49 CFR Part 191.3, .5, .7, .15, .23, .25
- 49 CFR Part 192.605(d)(e), .615(a)(b), .617
- **APSC Rules and Regulations for Gas Pipeline Safety, Appendix A**
- Colorado Title 9, Article 1.5, Section 103 – UNCC Utility Damage Reporting
- Louisiana Administrative Code Title 43 Part XIII
- Texas Regulations Title 16 TAC 18.11
- **Utah Public Service Commission R746-409**
- **O&M Procedure 102 – Contractor Safety**
- **O&M Procedure 166 – Safety Hazard/Near Miss Reporting**
- **O&M Procedure 213 – Leaks, Pipe and Weld Defects and Equipment Damage**
- **O&M Procedure 219 – DOT and State Pipeline Reports**
- **O&M Procedure 1030 – Unmeasured Gas Use/Loss Reporting**
- **O&M Procedure 1201 – Environmental Release Response**
- **O&M Procedure 1900 – Emergency Response**
- **O&M Form OM100-36 – Property Loss Report**
- **O&M Form OM100-45 – Event/Incident Investigation Summary**
- **O&M Form OM1000-05 – Gas Lost Report**
- **EHS Policy Manual**
- **STARS (http://kmonline/ehs/Pages/STARS.aspx)**
- Site-Specific Emergency Manual
- **Online Field Ticketing – Unmeasured Gas**

Attachment 1 – ERL Communication Protocol

STEP	TIME	RESPONSIBILITY	ITEM
1		3rd Party, or Company Field Employee	Incident or Undesired Event (Level I, II, or Level undetermined) • 3rd party contacts Gas Control Center, or • Company employee contacts Supervisor, if the Supervisor cannot be reached immediately, contact Gas Control. • Company Supervisor or designee immediately contacts the Gas Control Center for notification of an undesired ERL/ERL+ event. • Refer to Attachment 3 – Initial Gas Control Notification Checklist for baseline information requirements.
2	At time of event notification	Gas Control Center	• Complete Gas Control Center Incident Information Sheet/Log • Ask if there are any agencies on the scene (State or Federal) • Repeat back information to ensure accuracy
3	As soon as possible after notification	Gas Control Center	• If contacted by 3rd party, confirm event with field or facility personnel. • Confirm contact information for Company event 1st responder.
4	As soon as possible after notification	Gas Control Center in consultation with Company Field Employee	Determine event reporting level (ERL or ERL +)
5	As soon as possible after notification	Gas Control Center	Send ERL or ERL+ notification as determined by ERL/ERL+ criteria using the **ERL intranet notification** tool. Schedule initial conference call as soon as possible, except for Info Only events. Incidents involving release or threatened release to water/waterbodies or environmental releases exceeding a reportable quantity require immediate ERL notification. "Call Now" must be selected when issuing the ERL.
6	At time specified in ERL notification message	Gas Control Center, Corporate On-Call, ERL or ERL+ personnel as appropriate	1st Conference Call: Except for Info Only events, an initial conference call will be conducted. Affected personnel call into the dedicated emergency response conference line number at 866-855-5544, then ERL1 (3751) or 866-855-5544, then ERL2 (3752) or dial extension 73005 for interoffice access. If multiple ERL calls occur at the same time, each call will be taken in order of event level or, when necessary, additional conference lines will be assigned. For ERL+ events, the Incident Commander may request that the conference call be moved to the "Secure Meet Me" Line. "Secure Meet Me" line procedures are described at the end of this protocol. The initial conference call will include at a minimum: • Gas Control Center, if event/incident impacts transportation or commercial operations (pipeline facility events) • Field or facility Operations (person with knowledge of events) • Corporate On-Call (EHS and Codes & Standards) • Operations Management (Supervisor or Manager) • EHS field representative • Representative for other groups, as appropriate (Engineering, Risk Engineering, Executive and/or senior management, Insurance, IT, Public Relations, Legal, Business Development) Field Operations will facilitate the meeting. The content of 1st conference call may or may not include: • Identify asset(s) and affected business unit(s); • Summarize known event details (refer to Attachment 4 – Initial ERL Call Checklist); • Determine: - Employee and public safety - Release to environment - Property damage (Company and/or third party collateral damage) - Agency reportablity, required reporting timeframe, and resources required - Making site safe - Commercial interruptions and system impact

STEP	TIME	RESPONSIBILITY	ITEM
			- Emergency Responders on site or required - Any media on site - Plans for restoring operations • If immediate agency reporting is required, the appropriate Corporate On-Call designee will drop off of the call to complete reporting (refer to Step 7). • If Emergency Responder notification is required, then the local field operations representative will notify emergency officials by calling 911. • If initial notification was an ERL, determine if ERL+ notification is necessary. • Determine if **Crisis Support Plan (CSP)** should be implemented. If the CSP is implemented, follow Plan guidelines, including the "Secure Meet Me" line procedures described at the end of this protocol. Otherwise: - Establish Incident Command System including an Incident Commander, if warranted - Determine time, meeting leader & participants for next conference call Persons who actively participate shall have the responsibility of communicating information to others in their respective groups as warranted.
7	As soon as possible	Corporate On-Call: • EHS • Codes & Standards	Notify appropriate regulatory agencies as soon as possible: • EPA (via NRC) and OSHA notifications • Applicable state and local agencies • DOT (via NRC) related notifications • APSC notifications • LA DNR notifications • TRRC notifications • UT Division of Public Utilities notifications Document agency notifications: • Agency Notified • Agency Contact • Notification Time • Report Details, including the Report Number
8	Immediately after 1st conference call	Corporate On-Call, or Gas Control Center	Send ERL or ERL+ notification with update and/or 2nd conference call time. Event closure updates should be sent as Info Only. When event or operational status updates require a 2nd conference call schedule a 2nd conference call at designated time.
9	At time specified in ERL notification	Participants and meeting leader as identified in 1st conference call	2nd Conference Call: Affected personnel call into the dedicated emergency response conference line number The content of 2nd conference call may or may not include: • Review event details including damage, security, injury updates • Identify response resources • Verify all governmental agencies have been notified in the required time frame • Determine investigation team and team leader • Determine Legal investigation direction • Determine Corporate Communication requirements • Determine Risk Management requirements • Determine pipeline system configuration and customer demand requirements • Determine plans for return to operations • Identify person who will develop applicable event/incident reports • Determine need for 3rd conference call, time and participants
10	Immediately after 2nd conference call	Corporate On-Call	Send ERL or ERL+ notification to update information about the event.
11	As required by regulation	As determined by 2nd conference call	Develop written event/incident reports. Distribute as required.

STEP	TIME	RESPONSIBILITY	ITEM
12	As required by incident complexity	Investigation Leader	Develop investigation report. Distribute as appropriate.
13	When final investigation report complete	Investigation Leader	Communicate lessons learned.
14	After last ERL-related conference call	Facilitated by EHS	Critique all ERL+ and ERL responses as warranted. Determine whether emergency procedures were followed and effective.
15	Immediately after critique completed	EHS, Codes & Standards, and/or Operations	Determine whether ERL protocol procedures and/or response changes are necessary. Modify responses as described in Company procedures, if necessary.
16	After all of the above are completed		Incident/Undesired Event closed

Refer all media inquires to Company Corporate Communications.

Kinder Morgan Corporate Communications Contact Information

	Work	Cell
Larry Pierce	39407 (713-369-9407)	281-330-2981
Joe Hollier	39176 (713-369-9176)	713-823-5419
Emily Mir	38060 (713-369-8060)	713-823-6565
Richard Wheatley	713-420-6828	832-643-8929

"Secure Meet Me Line Procedures"

If multiple ERL calls occur at the same time, each call will be taken in order of event level or, when necessary, additional conference lines will be assigned.

For ERL+ events, the Incident Commander may request that the conference call be moved to the "Secure Meet Me" Line.

When an emergency situation develops, two 32-member "Secure Meet Me" teleconference lines will be made available. To prepare these "Secure Meet Me" teleconference lines the following communication procedures will be followed:

1. The Control Center involved in the second event will contact the Network Operations Center (303-914-4747 or 64747), and inform them that the ERL conference line (866-855-5544, then ERL1 (3751) or 866-855-5544, then ERL2 (3752) or interoffice extension 73005) is being used for another emergency. Control Center will request the "Secure Meet Me Bridge Lines." Allow 10 minutes for configuration of the "Secure Meet Me" lines before inviting conferees.

   Lakewood conferees line: 303-763-3429 (63429), PC 2899

   Houston conferees line: 713-369-9630 (39630), PC 2899

2. Control Center will initiate an ERL/ERL+ inviting the ERL/ERL+ responders to call the "Secure Meet Me" line at a designated time.

If the emergency necessitates the implementation of the CSP, follow procedures as described in Section 4.0 of the CSP.

Attachment 2 – Event Classification Chart

Classification	Level 0	Level I – ERL	Level II – ERL+
BODILY INJURY/ILLNESS – as the result of work-related activities involving Company equipment or facilities			
Local first aid only; including any employee or contractor injured with no in-patient hospitalization[1]	X		
Any employee or contractor injury or illness that requires in-patient hospitalization		X	
The death of any employee or contractor, or the in-patient hospitalization of three or more employees or contractors			X
Any fatality or injury to a member of the public			X
LINE HITS			
Any confirmed line hit		X	
Suspected line hit involving or caused by Company facilities, personnel or equipment (INFO Only ERL at a minimum)		X	
3rd Party ROW encroachments in close proximity to company pipelines/facilities (INFO Only ERL at a minimum)		X	
PROPERTY DAMAGE – involving or caused by Company facilities, personnel, or equipment			
Any confirmed line hit		X	
Damage to third party property that local Operations personnel deem significant		X	
Where the estimated property damage to Company equipment, vehicles or facilities; or Company's portion of the repairs, cost (including cost of gas released), spill remediation and/or emergency response is likely to be $5,000 or more		X	
In Texas, any fire to a tank or receptacle which destroys crude oil, natural gas, condensate, or other geothermal resources		X	
Major fire, rupture or explosion that involves Company, public or private property			X
ENVIRONMENTAL RELEASE (O&M Procedure 1201 – Environmental Release Response)[2]			
Excluding Kansas, any unplanned release of gas, product or chemical release on site, no off-site impact, no impact to water, and less than known reportable quantity	X		
In Kansas, any unplanned release of gas, product or chemical release on site or off-site equal to or greater than 0.5 gals with no impact to water.		X	
Any product or chemical release into a river, stream, creek, pond or other water body. (The ERL call must be immediate, "Call Now" must be selected when issuing the ERL)		X	
Any unplanned release of gas, product or chemical release when either the quantity released or the reportable quantity is unknown, or is above a regulatory reporting threshold		X	
A unplanned release product or chemical release exceeding a reportable quantity from a PSM/RMP facility (Casper and Douglas plants, Searcy plant and Texas City plant), (The ERL call must be immediate, "Call Now" must be selected when issuing the ERL)		X	
Any product or chemical release/spill when the release occurs in Kansas		X	
Any unplanned station ESD		X	
NEWS MEDIA COVERAGE			
No immediate media attention	X		
Local media attention only		X	
Regional or National media or public attention			X
OPERATIONS INTERRUPTION			
Removing a pipeline from service resulting in an unplanned customer outage		X	
Unplanned major operations disruption or shutdown, or service interruption to a wholesale customer, town distribution system, government installation or industrial plant			X
OTHER			
Evacuations or unplanned road closure that result in significant impact to the public		X	
Abnormal operation (O&M Procedure 1902 – Abnormal Operation)		X	

Classification	Level 0	Level I – ERL	Level II – ERL+
MAOP Exceedance ≥ 104%		X	
Hydrostatic test failure		X	
SECURITY ONLY			
Security events, which include: 1) Suspicious surveillance of a facility with indications of criminal/terrorist activities; 2) Bomb threats; 3) Hostile threats against the company or personnel; 4) Security breach where someone is found in the facility; 5) Suspicious package found at the facility; 6) Theft of chemicals or hazardous materials		X	
Significant security event that involves: change in the U.S. Threat Level; sabotage, violent attacks on or destruction of property and people hijackings/hostage taking, intentional release of chemical, biological, radioactive agents			X
INFORMATION ONLY (ERL notifications that do not require a conference call)			
Minor fires (e.g., small grass fires, transformer poles, small pumps, or single piece of equipment, activation of any fire or smoke detecting device), that involves Company, public or private property		X	
Discovery of exposed underwater pipeline or pipeline that is hazardous to navigation (**O&M Procedure 216 – Shallow Water Inspection Survey** and **O&M Procedure 217 – Underwater Crossing Inspection**)		X	
MAOP Exceedance 102 < 104%		X	
Unannounced agency inspections (e.g., OSHA, EPA or state agency, DOT/PHMSA, etc.)		X	

[1] In-patient hospitalization means hospitalization that requires admittance and an overnight stay.

[2] EPA reportable events must be reported to the NRC within 15 minutes of the event occurrence.

Attachment 3 – Initial Gas Control Notification Checklist

Provide the following Information when making a Call to Gas Control; however, notification SHOULD NOT BE DELAYED to collect the information

- Who is reporting the event?
- Describe the event/what happened?
- Which Entity is affected?
- Where on the pipeline did the event occur?
  Provide information in relation to the pipeline and/or pipeline facilities.
- When did the event occur?
- Who is the contact for additional information?

Emergency Response Contact Telephone Numbers - Gas Control

Company	Gas Control Number
Camino Real – Natural Gas	800-568-7512
Camino Real – Products	800-265-6000
Cheyenne Plains Gas Pipeline Company (CP)	877-712-2288
Colorado Interstate Gas (CIG)	877-712-2288
El Paso Midstream Investment Company LLC (Altamont Gathering)	800-568-7512
El Paso Natural Gas (EPNG)	800-334-8047
KM Crude & Condensate	800-265-6000
KinderHawk Field Services LLC (KH)	866-775-5784
KM Louisiana Pipeline LLC (KMLP)	800-733-2490
KM North Texas Pipeline (KMNTP)	800-633-0184
KM Tejas Pipeline LLC (TEJAS)	800-568-7512
KM Texas Pipeline LLC (KMTP)	800-633-0184
KM Treating (Treating)	800-633-0184
Midcontinent Express Pipeline LLC (MEP)	800-733-2490
Mojave Pipeline (MOJAVE)	800-334-8047
Natural Gas Pipeline Company of America LLC (NGPL)	800-733-2490
Ruby Pipeline	877-712-2288
Southern Natural Gas (SNG)	800-252-5960
Tennessee Gas Pipeline (TGP)	800-231-2800
TransColorado Gas Transmission Company LLC	800-944-4817
Wyoming Interstate (WIC)	877-712-2288

Kinder Morgan Corporate Communications Contact Information

Name	Work	Cell
Larry Pierce	39407 (713-369-9407)	281-330-2981
Joe Hollier	39176 (713-369-9176)	713-823-5419
Emily Mir	38060 (713-369-8060)	713-823-6565
Richard Wheatley	713-420-6828	832-643-8929

Attachment 4 – Initial ERL Call Checklist

ERL Call in Number: 866-855-5544, then ERL1 (3751) or 866-855-5544, then ERL2 (3752) or 800-525-3752 Dial 1 then 73005

The following information will be discussed on the ERL call; however, the ERL call SHOULD NOT BE DELAYED to collect the information

- **Discovery Date and Time**
- **Location** (enough information to identify the site)
  - State
  - County
  - Address or nearest town
  - Company Description (Station, Index)
  - Nearest Crossroads
  - Latitude & Longitude
  - Pipeline Type (Transmission or Gathering)
  - Class Location
  - Located in HCA
  - Weather Conditions
- **Natural Gas Released**
  - Gas Lost (MCF)
    - Release ≥ 3,000 mcf (PHMSA incident reporting required)
    - Environmental Reporting (State or Federal)
  - Operating Pressure (psig)
  - Leak/Relief Diameter (inches)
  - Venting Time
  - For Blowdowns: pipe length, pipe diameter
- **Release/Spill (Other than Natural Gas)**
  - Product Released/Spilled
  - Volume Released (gal/bbs)
  - Sheen on any water body
    - Water body name
  - Actions taken to stop/clean release
- **Bodily Injury/Illness**
  - Number of Injured
  - Nature of Injuries
  - Name(s) of Injured
  - Job Title(s) of Injured
  - Death/Inpatient Hospitalization Required
  - Family Notified
- **Property Damage/Repairs**, estimated costs, not including gas released
- **Service Interrupted/Customer Impact**
- **Waiver/Special Permit Requirements**
- **Roads Closed**
- **Public Evacuation**
- **Media Involvement**
- **Local/State/Federal Involvement**
- **Control Center Actions or Fatigue**
- **Drug/Alcohol Testing Required**
- **OQ Verification Required**
- **Local Company Contact**, when event is reportable to a regulatory agency
- **Determine necessity, level, and assignment of follow-up investigation**

Table of Contents

1. Applicability

- ☐ Gathering
- ☐ Processing
- ☒ Transmission/Regulated Onshore Gathering

2. Scope

The Operator Qualification (OQ) procedure is a reference document to the Company Operator Qualification Program, as well as an instructional tool for gaining management approval for OQ Program changes and communicating to affected personnel. The Company OQ Program (Plan) complies with the DOT Operator Qualification Rule. Regarding Integrity Management, employees OQ qualified in appropriate covered tasks are qualified to perform those tasks in High Consequence Areas.

3. Core Information and Requirements

The Company Operator Qualification Program and all of its associated documents are located at **http://kmonline/oq/**.

The core requirements are:

- Those who perform OQ-covered tasks (Company and contract employees) must be documented as qualified to perform such tasks
- Non-qualified individuals must be evaluated using the evaluation methods identified in Appendix A: Table of Gas Covered Tasks of the Company OQ Program, before they are allowed to perform the task without being directed and observed by an OQ qualified individual. Non-qualified individuals may perform OQ-covered tasks if they are directed and observed by a qualified individual.
- Non-qualified individuals may perform OQ-covered tasks if they are directed and observed by a qualified individual in accordance with the span of control limits defined in Company OQ Program, Appendix A: Table of Gas Covered Tasks.
- The interval for requalification is 3 years unless otherwise specified in the Company OQ Program, Appendix A: Table of Gas Covered Tasks.
- Qualification records for individuals with current OQ qualifications and the records of individuals no longer performing the covered task will be maintained for a period of 5 years.
- As a result of the acquisition of El Paso Corporation by Kinder Morgan, each respective company's OQ Programs will remain in effect until such time as a transition can be completed to a comprehensive Kinder Morgan Program. The Op Qual Management shall be responsible for the review and transition plan of the two operator's qualification programs into one. Based upon the results of this review, the Op Qual Management shall establish a transition period during which time any differences between the respective Operator Qualification Plans will be resolved, and the qualification and documentation process for the qualification of the employees established. At the conclusion of the transition period, all Kinder Morgan employees shall follow all provisions of the Kinder Morgan OQ Program.

3.1. Communicating Change

Changes to this procedure will be made using the Action Decision Committee (ADC) process described in **O&M Procedure 001 – Standards Modification**.

OQ Program changes that need management approval and must be communicated to affected Field Operations personnel will be made using the OQ MOC process and the Intranet web application (Refer to section 6 of the **Company OQ Program**).

Field Operations changes that require management approval and that have an effect on OQ must be communicated to affected personnel using the appropriate business unit MOC Process.

3.2. Communication Process

The OQ Administrator will follow these steps when there are significant changes in the Company OQ Program:

- Present the change to the OQ Core Team (comprised of representatives from all Kinder Morgan business units subject to the **Company OQ Program**) to gain management approval of a significant change to the Company OQ Program.
- Communicate the approved changes to the **Company OQ Program** to affected personnel
- Submit significant changes as described in section 6.3 of the **Company OQ Program** to the appropriate PHMSA and State Agency contacts.

4. Training

Not applicable

5. Documentation

Refer to **O&M Procedure 001 – Standards Modification** or Section 6 of the **Company OQ Program** for proper documentation depending on the process being followed.

6. References

- 49 CFR Part 192, Subpart N
- **O&M Procedure 001 – Standards Modification**
- **http://kmonline/oq/**

KINDER MORGAN

Operator Qualification Program
For Facilities Subject to DOT Parts 192 and 195

NOTE: The Kinder Morgan Operator Qualification Program was reviewed by various DOT/OPS regulatory agencies in Lakewood, Colorado, on May 8, 2001 and September 15-16, 2003 and in Houston TX on April 25-26, 2006.

Revised 4/27/01, 5/18/01, 4/24/02, 8/28/02, 10/10/02, 10/25/02, 6/30/03, 7/21/03, 10/31/03, 12/17/04, 02/04/05, 11/26/07, 08/25/08,09/20/10, 11/20/12

Kinder Morgan Companies Covered by this OQ Plan

Kinder Morgan Products Pipelines
Pacific Region (including SFPP, LP; CalNev Pipeline; Carson Terminal; LA Harbor Terminal; Willbridge Terminal; Linnton Terminal)
Plantation Pipe Line
Southeast Terminals (including Roanoke, Newington, Richmond 1 and Richmond 2)
Central Florida Pipeline
KM Cochin, LLC
Cypress Pipeline

Kinder Morgan C02 Company
Cortez Pipeline
Canyon Reef Pipeline
Central Basin Pipeline
Wink Pipeline

Kinder Morgan Liquid Terminals
Galena Park, TX
Pasadena, TX
Argo, IL
Carteret, NJ
Perth Amboy, NJ
St. Gabriel, LA

Kinder Morgan Natural Gas Pipelines
KM Interstate Gas Transmission Pipeline
Trailblazer Pipeline
Natural Gas Pipeline Company of America
Rockies Express Pipeline, LLC
Intrastate Gas Transmission Pipelines (including Transcolorado Pipeline, KM Texas Pipeline, and Tejas Intrastate Texas Pipeline)

Kinder Morgan Operator Qualification Program

Appendices:

A. Covered Task List – natural gas
B. Covered Task List – hazardous liquids
C. Work Performance History Evaluation Form – natural gas
D. Work Performance History Evaluation form – hazardous liquids
E. Procedures for Contractor Compliance with OQ
F. Required OQ "Action" Plan Elements for Contractors

1. SCOPE

Kinder Morgan's Operator Qualification (OQ) Program was developed to comply with the Office of Pipeline Safety of the U. S. Department of Transportation's (DOT) Qualification of Pipeline Personnel Regulation (49 CFR Part 192 Subpart N and Part 195 Subpart G). This Program applies to Kinder Morgan's DOT facilities and employees of Kinder Morgan Incorporated (natural gas transmission and distribution pipelines and retail operations) and Kinder Morgan Energy Partners (hazardous liquids pipelines) as shown above and hereinafter collectively referred to as KM.

KM fundamentally believes that its employees and contractors are technically qualified to perform their work assignments on KM's pipeline facilities, based on the current training program, on KM's safety record and on KM's operational record. KM's OQ Program is designed to ensure that all individuals working on KM's DOT-regulated pipeline facilities are OQ-qualified to perform specific covered tasks, to document that qualification and to reduce the probability and consequences of incidents and accidents. All KM employees as well as all Contractors performing these covered tasks will be OQ-qualified under this Program before they perform any covered tasks. This plan will be periodically reviewed and revised to reflect changes in KM's OQ Program.

2. COVERED TASKS

For the purposes of this Program, a covered task is an activity that (a) is performed directly on the pipeline facility, (b) is an operation or maintenance task, (c) is performed as a requirement of either Part 192 or Part 195, and (d) which affects the operation or integrity of the pipeline. See Section 10 for more details.

2.1. Covered Task Lists

KM has identified activities which are covered tasks for KM's pipeline facilities. A generic covered task list was obtained from American Petroleum Institute's Consortium on Operator Qualifications (API-COOQ, for liquids) and from the Midwest Energy Association (MEA, for gas) and was modified specifically for KM by a select group of KM Subject Matter Experts (SME) representing the skill categories of the covered tasks. KM's manuals (operations, maintenance, DOT Compliance) were reviewed by the SME's to ensure all covered tasks performed by KM employees and contractors were included in the covered task list. The list of covered tasks for natural gas operations is in Appendix A and for hazardous liquid operations is in Appendix B.

2.2. Covered Task Principles

The covered task list was developed with two principals in mind. First, the list should include all covered tasks performed by KM employees and contractors. Second, a covered task should be developed so that anyone OQ-qualified in that covered task

is able to perform all parts of that covered task. (Initially, a covered task may describe a broad area of expertise which includes several sub-tasks that would not be performed by all individuals performing the broad covered task. Therefore, a sub-task may be broken out into a separate new covered task in order to more effectively assign evaluation requirements.) Additionally, a covered task may be written in general terms for several types of components with evaluations written for specific types of components. These specific evaluations will be identified as such in the evaluation title.

2.3. Abnormal Operating Conditions

AOCs are covered in two ways. First, several AOCs are associated with the actual performance of a task, and are included as knowledge questions and skills checklist steps within the evaluations for that task. In addition, there are other AOCs that an individual could encounter while performing a covered task but which are not directly related to that task. These AOCs are listed in Section 10.

Training on how to recognize and respond to AOCs is provided initially to new employees and regularly to all individuals who may encounter an AOC on the job. Contractors are trained on site specific AOCs in accordance with Section 2.7 of Kinder Morgan's Contractor Safety Manual.

AOCs are considered during investigation of a DOT accident/incident to ensure the AOCs identified and used in evaluating individuals are representative of those that could reasonably be anticipated during performance of covered tasks. Any noted deficiencies are recorded in Kinder Morgan's Incident/Near Miss database (STARs), and an automatic notification email is sent to the OQ Administrator.

2.4. Covered Task Assignments

Since job responsibilities may vary based on location regardless of job title, covered tasks will be assigned on a per-employee basis by the employee's supervisor. See App. G & H of this plan.

2.5. Essential Variables-Equipment

KM has a wide variety of equipment throughout the Company. The OQ Development Team, composed of field subject matter experts representing all operations groups, recognized that most of the equipment within each equipment group (such as high level alarms, line locators or gauging tools) has enough similarities that each equipment group may be evaluated using the same evaluation tools, even though the equipment may have different brand names. In evaluating the proper use of the equipment, reference back to the manufacturer's instruction for use, maintenance, repair and calibration is essential. For many of these equipment groups, the manufacturer's instructions are the primary source of information, and these instructions have not been included in many of KM's procedures, due to the obvious disadvantages of duplicating information in several different manuals or files. KM's OQ Development Team used an informal analysis of essential variables to determine if an equipment group needed individual evaluation tools.

2.6. Essential Variables-Operations

KM's operations also vary throughout the Company. Some pipelines are operated and controlled from a central location, with Field control only during emergencies or communication failures. Other pipelines are operated and controlled entirely from the Field, with monitoring and preparation of delivery information and pumping instructions performed at a central location. Many of the pipelines in each area have similar hydraulics and operating characteristics which are specific to that area and are consistent among all of the pipelines in that area. On such similar pipelines, a successful skill evaluation on one pipeline is sufficient to show success in operating the other pipelines, in that those pipelines have the same essential variables. The grouping of pipelines by essential variables shall be approved by the Regional Director or the Director of Products Movement, who will notify KM's OQ Administrator of each grouping.

3. EVALUATION PROCESS

3.1. Types of Qualifications

3.1.1. Transitional OQ qualification

Individual(s) who performed the specific covered task prior to October 28, 1999 will be evaluated for this level of OQ qualification on that specific covered task by October 28, 2002. This OQ qualification can be met by a satisfactory review of work history. If the review of work history indicates no problems in an Evaluatee's performance of the covered task, that Evaluatee will be transitionally OQ qualified. If there are OQ qualification problems documented as a result of the review of work history, the Evaluatee must attain initial OQ qualifications. See Section 3.2.3 for more details about the work performance history evaluation.

3.1.2. Initial OQ qualification

Individual(s) who have not successfully performed the specific covered task on KM's pipeline facilities prior to August 27, 1999 will be evaluated for this OQ qualification level. This OQ qualification level cannot be met by reviewing work history as the sole evaluation method; the evaluation must include one of the other evaluation methods. Individual(s) will receive training, as appropriate, in preparation for initial qualification evaluations, as part of KM's training program. Trainees will not be allowed to independently perform covered tasks until qualification evaluations are passed.

3.1.3. Subsequent OQ qualification

In KM's OQ Program, each covered task will be assigned a subsequent OQ qualification interval. This interval will initially be three years for each covered

task (three years was chosen to be consistent with the existing Process Safety Management (PSM) program). However, the interval can be modified by the OQ Administrator based on periodic studies of covered task variables; such as, critical nature, how often performed, complexity, and safety sensitivity.

3.2. Types of Evaluations

KM employees and contractors performing covered tasks are OQ-qualified by evaluating their knowledge, skill and ability. On most tasks this is accomplished by using a knowledge test and skill evaluation. The following are all of KM's evaluation methods:

3.2.1. Knowledge Test

The Evaluatee will respond in writing to a written evaluation question. The preferred type of question will be multiple choice, but other types of questions will be acceptable. The number of questions on each test will vary depending on the complexity of the task, and Kinder Morgan employees are expected to get an 80% or better grade to pass. Contractor employees are expected to meet the pass/fail criterion established by the Kinder Morgan approved Vendor or Industry organization. This evaluation may be either computer-based or paper copy.

3.2.2. Oral Exam

The Evaluatee will respond orally to the questions. The Evaluator or Proctor will transcribe the Evaluatee's answer onto the appropriate form.

3.2.3. Work Performance History Review

An Evaluatee will pass a work performance history evaluation upon the verification that the Evaluatee has performed the covered task and that the files do not contain an indication of unsatisfactory performance. The Evaluatee will not pass a work performance history evaluation if an indication of unsatisfactory performance has been identified. That individual must then take the OQ qualification evaluation in one or more of the other approved evaluation methods.

3.2.3.1. KM has developed guidelines to minimize subjectivity and to maximize objectivity and consistency during work performance history reviews throughout the company, as follows:

- For a transitional OQ qualification, the Evaluatee must have been successfully performing this covered task as part of his/her normal job description prior to August 27, 1999. This would be determined through the Supervisor's specific knowledge of the Evaluatee's job requirements or by an interview with a previous Supervisor or Team Leader, as appropriate. This evaluation will be sufficient for the transitional qualification only and is appropriate until October 28, 2002, after which a work performance history evaluation will not suffice as the sole evaluation method.

- For any OQ qualification which includes a work performance history evaluation, the Evaluatee's performance of this covered task must be verified by the Evaluatee's Supervisor as satisfactory, and is indicated by:
    - knowledge of the Evaluatee's actual performance of this covered task and
    - the lack of a memo or note or appraisal or other record indicating the substandard performance of that task.
    - performance of that covered task.
- The records reviewed during the work performance history evaluation will primarily be the Evaluatee's personnel files and the DOT incident/accident files. Research of additional records, such as training records, accident near-miss reports, records for DOT- required inspections, line patrol reports, operating error investigations, valve maintenance records, valve inspection and calibration records, rectifier reading records or electrical test station reading records are useful if available.
- During the records review for work performance history evaluation, appropriate records will be reviewed for the preceding period of the subsequent OQ qualification interval for that covered task (currently three (3) years). For a transitional OQ qualification, records generated between August 1996 and August 1999 will be reviewed.
- Records generated during the period between August 1999 and the date of the transitional OQ qualification evaluation may be used to support records generated prior to August 1999 but cannot be the only records reviewed during a prior work performance history evaluation for a transitional OQ qualification.
- Use of forms in Appendix C & D to conduct Work Performance History Review.

3.2.4. Skills Checklist

A trained Evaluator will utilize a validated, step-by-step skills checklist to evaluate the Evaluatee either by:

- performance on the job – The Evaluator will utilize the skills checklist for that covered task to determine that all appropriate steps have been performed. The Evaluator can allow a discussion of the actual process rather than have the Evaluatee actually perform the complete process, due to restrictions on the availability of specific components or equipment, pipeline systems or other necessary items. Evaluators are trained to utilize actual performance of the task as the first priority and to minimize use of discussion of performance. Or

- performance on a simulator – The simulator may also provide a pass/no pass grade of the Evaluatee's performance.

3.2.5. Certification by Vendors or Industry Organizations

Numerous Vendors and Industry organizations such as MEA, API, National Center for Construction Education and Research (NCCER), National Association of Corrosion Engineers (NACE) or American Society of Mechanical Engineers (ASME) have existing programs which pertain to specific covered tasks. The OQ Administrator will review all requests to utilize Vendor and Industry organization programs. If a Vendor or an Industry organization qualification is to be used for KM's evaluation, KM will obtain a copy of the qualification program and review it with appropriate KM Subject Matter Experts before that qualification can be accepted as part of this OQ Program. Once the Vendor or Industry organization program is approved by the OQ Administrator, an Evaluatee will be considered OQ qualified for that specific covered task when the qualification documentation is received. The OQ Administrator will monitor all approved Vendor and Industry programs and review any changes to ensure continued compatibility with KM's OQ Program. See Appendix F for the list of Vendor or Industry organization programs approved for KM employees' OQ Evaluations.

3.3. Re-evaluation

3.3.1. Re-evaluation at subsequent Intervals

OQ qualified Evaluatees who perform the specific covered task will be evaluated before or during the final year of the subsequent OQ qualification interval for that task (third year). If the subsequent OQ qualification does not take place before December 31 of the third (or final) year of the interval, the Evaluatee will be deemed unqualified to perform that task.

This OQ qualification level cannot be met by reviewing work history as the sole evaluation method; the evaluation must include one of the other evaluation methods.

Each Evaluatee should be aware of his/her own schedule for subsequent OQ qualification. The Evaluatee will be able to coordinate subsequent OQ evaluations with their trained KM Evaluator and/or Proctor and their Regional OQ Coordinator. However, the individual's direct Supervisor will be responsible for ensuring that the individual remains current in his/her OQ qualifications.

3.3.2. Re-Evaluation after a Failed OQ qualification

If an Evaluatee fails an evaluation on a covered task, their OQ qualification on that task is revoked. They must then follow existing KM policies and procedures for retraining, as appropriate, and then successfully complete the failed evaluation before their OQ qualification is re-instated. If no specific policies and procedures for retraining exist, the individual must notify the Supervisor and must review the reference material for that covered task and discuss the failed questions with a Subject Matter Expert before going through

the evaluation process again. The employee must spend a period of time retraining, at the discretion of local management, before being allowed to retake a failed evaluation. Under normal circumstances, this period of retraining and re-evaluation time should be 24 to 48 hours. A non-OQ qualified individual may perform a covered task under the guidelines listed in Section 4.

3.3.3. Post-Accident Re-evaluation

Each DOT accident/incident will be reviewed in accordance with KM's procedure, which may vary slightly by KM Business Unit. In most cases, an employee involved in a DOT accident/incident involving one or more covered tasks should be suspended from performing such covered tasks until a root cause for the accident/incident is determined. This includes any individual(s) who was performing the task(s) firsthand or directing and observing the performance of the task(s). If the investigation determines that the actions of an OQ qualified individual performing or directing and observing the performance of a covered task(s) contributed to an accident/incident, that individual's OQ qualification(s) on the specific covered task(s) identified will be immediately revoked by notifying the OQ Administrator, who will enter the revocation into the record keeping system. The revocation will continue until that individual(s) has been requalified on the covered task(s) in question, following requirements in 3.3.2 above. The method of re-qualification will be determined by the covered employee's supervisor in consultation with the OQ Administrator. An individual with revoked OQ qualification(s) may continue to perform other covered tasks for which they are still OQ-qualified. A non-OQ qualified individual may perform covered task(s) under the guidelines listed in Section 4.

3.3.4. Unsatisfactory Performance Re-evaluation

An OQ qualified individual would be placed in this category for reasons including but not limited to unsatisfactory performance of a covered task or if KM Management believes the individual can no longer satisfactorily perform the covered task. KM Management will discuss the Evaluatee's performance with the OQ Administrator, and if they agree, the individual's OQ qualification on that specific covered task will be revoked. The revocation will continue until that individual has been re-OQ qualified on the covered task(s) in question, following requirements in 3.3.2 above. The method of re-qualification will be determined by the employee's supervisor in consultation with the OQ Administrator. An individual with a revoked OQ qualification may continue to perform other covered tasks for which he/she is still OQ-qualified. A non-OQ qualified individual may perform a covered task under the guidelines listed in Section 4.

3.3.5. Re-evaluation for inability to perform a task

Re-evaluation and re-qualification may be required if an Employee meets one of the following criteria:

- Has spent excessive time away from a job due to disability, special assignment, or a change in job duties. Excessive time is considered on a case by case and task by task basis with consideration given to task

difficulty, employee's prior experience and the nature of their absence from the job.

- Significant changes to equipment or procedures has altered an employees ability to perform a covered task
- If there is reason to believe an individual is no longer qualified to perform a Covered Task, the Manager/Supervisor will conduct a review and determine whether training, re-qualification and/or other action is warranted

3.4. Evaluator and Proctor Criteria

KM Proctors and Evaluators are trained and certified by the OQ Staff. Either a Proctor or an Evaluator will administrate an evaluation, depending on the type of evaluation being administered. Neither the Evaluator nor the Proctor needs to be OQ qualified for a covered task nor does the Evaluator or Proctor need to be able to actually perform the covered task in order to successfully evaluate the Evaluatee. However, if the Evaluator or the Proctor actually performs the covered task, he/she will need to be OQ qualified just like all other individuals who perform that covered task

3.4.1. Evaluator Criteria

An evaluator will be chosen base on the following factors:

- he/she has the required knowledge, through training or experience, to ascertain the Evaluatee's ability to perform the specific details of the covered task and to recognize and react to abnormal operation conditions that might occur while performing that covered task
- communication ability
- personal integrity
- specific approval of the nomination by KM management
- completion of the KM-approved training course for Evaluators

3.4.2. Proctor Criteria

A Proctor will be chosen based on the following factors:

- communication ability
- personal integrity
- specific approval of the nomination by KM management
- completion of the KM-approved training course for Proctors

3.4.3. Knowledge Evaluation

For a written evaluation, the Proctor must know the criteria for taking a written evaluation, such as reference material the Evaluatee can have access to, the physical requirements for a suitable evaluation location (appropriate quiet area, adequate chair/desk/table for sitting and writing, no phone access, etc.), time

limit for evaluation and questions about the evaluation from the Evaluatee which the Proctor may answer.

Under certain circumstances, it may be desirable for the Proctor to read the written evaluation to the Evaluatee and to write the Evaluatee's response on the appropriate form. In this situation, knowledge of the evaluation material is not required. However, the Proctor must be able to follow the requirements for administrating an oral evaluation. The approval of the OQ Administrator must be received in writing prior to a Proctor reading the written evaluation to the Evaluatee.

3.4.4. Oral Evaluation

For an oral evaluation, the Proctor must be able to speak clearly and be able to read the questions without biasing the question, know the criteria for giving an oral evaluation such as reference material the Evaluatee can have access to, the physical requirements for a suitable evaluation location (quiet, adequate chair/desk/table for sitting and writing, no phone access, etc.), time limit for evaluation and questions about the evaluation from the Evaluatee which the Proctor may answer.

If an oral evaluation is designed so that a decision must be made about the completeness of the Evaluatee's answer, an Evaluator must administer the evaluation.

3.4.5. Work Performance History Evaluation

For evaluation by a review of work performance history, the Supervisor/Manager performing the evaluation must be aware of the Evaluatee's work history in that covered task and must be able to interpret documents from the appropriate files and records as described in Section 3.2.3. This may not be used as the sole method of qualification.

3.4.6. Skills Evaluation

For evaluation using the skill evaluation, the Evaluator must be able to explain the evaluation items on the performance checklist and to observe the Evaluatee's performance without biasing the evaluation.

3.4.7. Observation of On-the-Job Performance

For evaluation by observation during performance on the job or during job training refer to Section 3.4.6. This may not be used as the sole method of qualification.

3.5. Guidelines for Transfer or Promotion of OQ Qualified Individuals

When an individual with OQ qualifications transfers to another location or is promoted to another position, that individual's new Supervisor will use KM guidelines to determine which OQ qualifications will transfer to the new location or position. If any OQ qualifications do not transfer to the new position or location, the Supervisor will advise the OQ Administrator, who will remove the OQ qualification for that covered task. The individual must pass the initial evaluation before he/she

can perform that covered task, except as a non-OQ qualified worker. The OQ Administrator will develop these guidelines.

3.6. Guidelines for New Hires of OQ Qualified Individuals

When an individual with OQ qualifications is newly hired by KM, that individual's OQ qualifications do not automatically transfer to KM. The new individual's Supervisor, in conjunction with the OQ Administrator, must review any available documentation for that individual's OQ qualifications and will decide if any of the OQ qualifications will transfer to KM. The new individual must pass an initial OQ qualification for any covered tasks where approved OQ qualifications are absent. If new employees are acquired by acquisition of a complete company, that individual's OQ qualifications and the new company's OQ Program will be reviewed for compatibility. Comparable qualifications will be transferred. Non-transferred qualifications will be evaluated as initial qualifications before the employee is allowed to independently perform covered, non-transferred, tasks.

4. USE OF NON-OQ QUALIFIED WORKERS

Any individual (including KM employees or Contractors), who does not have the appropriate OQ qualification, cannot perform that covered task without direction and observation by an OQ qualified individual who can take immediate corrective action when necessary. KM will allow individuals that are not OQ qualified to perform a covered task for KM provided the following conditions are met:

- The non-OQ qualified worker(s) must be directed and observed by an individual that is OQ qualified in that specific covered task.
- The OQ qualified individual observing the non-OQ qualified worker(s) must be able to recognize and react to abnormal conditions and take immediate corrective action when necessary.
- The OQ qualified individual must be able to effectively communicate direction of covered task activities and reaction to AOCs to non-OQ qualified worker(s). This may require the ability to communicate with workers who speak and comprehend languages other than English either directly or through the use of a translator.

The Span of Control (the number of Non-OQ qualified persons a single OQ qualified person can effectively observe to meet the intent of this Section) is listed in Appendix A: Table of Gas Covered Tasks and Appendix B: Hazardous Liquids List of Covered Tasks. The OQ qualified individual can reduce the task span of control depending upon work conditions and complexity of the task.

5. RECORD KEEPING

5.1. Record Retention

The record of prior OQ qualifications for individuals with current OQ qualifications and the records of individuals no longer performing the covered task will be maintained for a period of five years

5.2. ISNetworld

KM is using the ISNetworld record keeping software system to document the OQ qualification of KM employees and contractors performing covered tasks on KM's pipeline facility. The documentation will include the following items:

- identification of the OQ qualified individual
- the list of covered tasks that individual is OQ qualified to perform
- the date of the current OQ qualification for each covered task
- the evaluation method(s) used to OQ qualify that individual for each covered task.

5.3. Supporting documentation

Supporting documentation will be kept for five years and includes:

- Retention of work performance history evaluation – The Work Performance History Evaluation form (see App. C and D) will be retained, in either paper copy or electronic format, for the current OQ qualification.
- Retention of skills evaluation checklist in use at the time of the evaluation.
- Retention of computer-based evaluations used at the time of the evaluation.
- Retention of Vendor or outside Industry organization certifications – Documentation supporting the current OQ qualification will be accessible in either paper copy or electronic format.
- Retention of Evaluator identification and type of evaluation.
- Supporting documentation for contractors will be maintained per the guidelines established by the third party vendors conducting the evaluations as reviewed by KM prior to being approved as an acceptable vendor.

6. MANAGEMENT OF CHANGE

Changes to the covered tasks, to the evaluation tools and to the OQ Program will be made in accordance with the appropriate corporate or regional Management of Change (MOC) policy. Due to the possibility of acquisition of additional companies by KM, it might be desirable to retain different MOC policies within KM.

6.1. Modifications to the Covered Tasks

Specific procedures for certain covered tasks may change over time due to new or revised company policies and procedures, new equipment, new vendor recommendations, new safety considerations, and/or new regulations. The OQ Administrator, in conjunction with the OQ Coordinators, KM Corporate Engineering Codes and Standards personnel and other Field personnel, will ensure these changes are developed and communicated to the appropriate OQ qualified personnel according to the appropriate MOC policy. The OQ Administrator, along with the appropriate SME's, will also determine if the changes are substantive enough to require re-qualification of OQ qualified individuals already performing the task being modified. If the changes do require re-qualification, the OQ Administrator

will communicate to those individuals, and their supervisors, that they cannot perform the covered task independently until re-qualified.

6.2. Modifications to the Program

KM's OQ Program may be modified by the OQ Administrator as a result of experience with the OQ Program (for both content and format), as covered tasks are added or deleted, as specific employee's responsibilities change, and as regulations change. When such a change is made, a modified copy of the Program will be made available by the OQ Administrator to all affected individuals. Changes will be identified in the body of the Program in order to facilitate the awareness of the changes. All program modifications will be made according to the appropriate MOC policy and will indicate the severity of the modification as it relates to OQ. All affected individuals will be notified immediately if the modification requires re-qualification. Modifications that affect contract personnel will be communicated through ISNetworld's contractor notification system, as well as through field personnel overseeing contractor OQ work (see App. E).

6.3. In the event of a significant change being made to the KM OQ Program, a copy of the revised program will be forwarded to PHMSA or appropriate state agency for review. Significant changes could include (but are not necessarily limited to) the following:

- an increase in evaluation intervals,
- a change in the number of covered tasks identified by the operator,
- a change in the evaluation methods or criteria for performing covered tasks;
- an increase in span of control ratios
- wholesale changes made to an OQ Plan or Program, whether due to an overall effort to improve program performance, or due to a merger or acquisition that results in incorporating the best features of the competing plans and programs.

7. ADMINISTRATION OF OQ PROGRAM

7.1. OQ Administrator's Responsibilities

The OQ Administrator will have several OQ Coordinators who will be located in the field and will support the OQ Administrator, identify areas where the Program or specific tasks need to be modified, and perform other tasks as listed in their job description.

- The OQ Administrator must approve each case of a Proctor reading a written evaluation to an Evaluatee and writing the Evaluatee's response prior to this technique being utilized by a Proctor.
- The OQ Administrator will set up a procedure to ensure that each employee and each Supervisor is aware of the employee's current OQ qualifications and of the employee's schedule for subsequent OQ qualification.
- The OQ Administrator will have additional responsibilities as described in this Program.

7.2. Employee's Responsibilities

- Each individual with OQ qualifications should be aware of his/her own schedule for subsequent OQ qualification.
- Each employee is responsible for knowing what the covered tasks are and for which covered tasks they are OQ qualified.
- Each employee is responsible to notify the Supervisor of all evaluations, whether or not the evaluation was successfully passed.
- Each employee is responsible for notifying the Supervisor if they are assigned any covered tasks for which they are not OQ qualified.
- Each employee is also responsible for notifying the OQ Administrator through the Management of Change process of any changes in equipment, technology, procedures or technique which could affect the OQ program, covered task evaluations and identified abnormal operating conditions.

7.3. Supervisor's Responsibilities

- The individual's direct Supervisor will be responsible for ensuring that the individual remains current in his/her OQ qualifications.
- The Supervisor is responsible for knowing which covered tasks his/her employees are OQ qualified for, with regards to making work assignments.
- The Supervisor is also responsible for notifying the OQ Administrator through the Management of Change process of any changes in equipment, technology, procedures or technique which could affect the OQ program, covered task evaluations and identified abnormal operating conditions.

8. CONTRACTORS

For the purposes of OQ, the term contractor includes individuals who are not KM employees and who perform covered tasks on KM facilities. Contractors recognized as "Mom and Pops" by KM are exempt from the requirements of this section.

8.1. Contractor OQ Action Plan

Each Contractor performing covered tasks on KM's pipeline facility must have an action plan (See appendix F) that is compatible with KM's OQ Program. Before a Contractor's personnel may perform a covered task on KM's pipeline facility, without being directed and observed by a qualified individual, KM personnel will perform an initial audit of the Contractor's OQ action plan by:

- reviewing the Contractor's OQ action plan to ensure it complies with KM's OQ Program and
- verifying that the Contractor has identified the covered tasks that their employees will be performing for KM and
- verifying that OQ qualified Contractor's employees are included in the Contractor's OQ action plan.

The Contractor must contact ISNetworld for guidance to follow KM's Procedures for Contractor Compliance with OQ (appendix E of KM's OQ Program) and submittal of ISN OQ reports.

8.2. Contractor Employees Performing Covered Tasks

Once the Contractor's OQ action plan has been approved by KM, the Contractor has several options to enable their employees to perform covered tasks for KM including:

- Qualification of their employees through a third party vendor approved by the KM OQ Administrator. A list of currently approved vendors is shown in Appendix F.
- Provide Contractor's employees who are OQ qualified and can direct and observe an OQ Non-qualified individual perform that covered task, under the guidelines of Section 4, including provision for communication with workers who speak and comprehend languages other than English either directly or through the use of a contractor provided translator.

The following two options are only available in rare circumstances and must be approved by KM's OQ Administrator before the Contractor will be allowed to utilize them.

- Qualification of their employees through the Contractor's in-house evaluation process, including in-house evaluators that are either qualified in the covered task being evaluated or are subject matter experts in the covered task.
- Have the Contractor's employee pass KM's evaluation.

8.3. Contractor Notification of Changes

Contractors performing covered tasks for KM will be notified of any modifications to KM's OQ Plan or covered tasks as described in Section 6.

8.4. Contractor Audits

KM's OQ Department will conduct periodic audits of Contractor's OQ action plan to ensure continued compliance with KM's OQ Program.

8.5. Contractor Record Keeping

Record keeping for Contractors' employees' OQ qualifications must be accessible by KM personnel at any time and shall be maintained in ISNetworld as described in Sections 5.1 and 5.2.

9. MUTUAL ASSISTANCE AGREEMENTS

When mutual assistance agreements with other pipeline operators involve covered tasks, those pipeline operators will be required to meet certain requirements to ensure their employee qualifications are compatible with KM's OQ Program. Before the pipeline operator's personnel may perform a covered task on KM's pipeline facility, without being directed and observed by a qualified individual, KM's OQ Department will perform an initial audit of the pipeline operator's OQ program by:

- reviewing the pipeline operator's OQ program to ensure it is compatible with KM's OQ Program and
- verifying that the pipeline operator has identified the covered tasks that their employee(s) will be performing for KM and
- obtaining copies of the employee(s) qualification records from the pipeline operator to verify they are qualified to perform the identified covered tasks.

10. DEFINITIONS

- *Covered Task*

A Covered task is a discrete activity performed by an individual or group of individuals; has a beginning and ending point; has two or more steps; is performed over a short period of time; can be observed and measured; results in a product, service or decision, identified by KM, that meets all four of the following requirements:

- Is performed on a pipeline facility –any activity that is performed by an individual or group of individuals whose performance directly impacts the pipeline facility.
  - Pipeline facility includes new and existing pipe, rights-of-way and any equipment, facility or building used in the transportation of natural gas or hazardous liquid.
  - Activity means physical, visual or mental effort performed by an individual whose performance directly impacts the pipeline facility.
  - Removed from the facility means that a part of the pipeline system is physically removed from its original position on the pipeline system and taken off the facility.
  - Pipeline system means all parts of a pipeline facility through which natural gas or hazardous liquid moves in transportation. Natural gas or hazardous liquid does not have to be present in order for that component to be physically connected to a pipeline system.
- Is an operations or maintenance task – activities done (1) to perform a function on a pipeline facility or (2) to provide upkeep of a pipeline facility. A "new construction task" changes to an operations and maintenance task when the new pipeline facility is being commissioned or during the act of connecting to an active pipeline facility. The following are not operations and maintenance tasks:
  - Activities on pipelines that have never been in service
  - Fabrication of new installations
  - Replacement upgrades that increase pipeline capacity/throughput
  - Non-operational emergency response activities
- Is performed as a requirement in 49 CFR Part 192 or 195 – only those tasks specifically required to be addressed in Part 192 for gas lines or in Part 195 for hazardous liquids lines.

- Affects the operation or integrity of the pipeline – any activity, or omission of an activity, that could directly or indirectly cause the release of natural gas or hazardous liquids to the environment or result in a hazard to persons or property.
    - Pipeline (pipeline system as defined by regulation) means all parts of a pipeline facility through which natural gas or hazardous liquid moves in transportation (line pipe, valves, appurtenances, pumps, meters, tanks, etc.). Natural gas or hazardous liquid does not have to be present in order for that component to be physically connected to a pipeline system.
    - An effect can be either immediate or delayed.
    - The integrity of the pipeline refers to the pipeline's ability to operate safely and to withstand stresses imposed during operations

- *Operation* – the starting, stopping and monitoring of the pipeline system. The operation of the pipeline refers to any changed conditions in the pipeline, such as pressure or flowrate.
- *Evaluation* – a process, established and documented by KM, to determine an individual's knowledge, skill and ability to perform a covered task.
- *Qualified* – an individual has passed an evaluation and:
    - Can perform assigned covered tasks and
    - Can recognize and react to abnormal operating conditions and
    - Compliance documentation is completed.
- *Individual* – a person, who on behalf of KM, performs one or more Covered Tasks on a pipeline facility operated by KM. This includes regular employees, part-time employees and contractors.
- *Mom and Pops* – a contractor company who has two or less employees, who perform OQ covered tasks for KM, but are trained, as appropriate, and qualified, using KM OQ evaluation tools. Qualification records for "Mom and Pops" will reside within KM's OQ recordkeeping system.
- *Abnormal operating condition (AOC)* – a condition identified by KM that may indicate a malfunction of a component or deviation from normal operations that may indicate an operating condition that could exceed design limits or could result in hazard(s) to persons, property or the environment.
    - Note: A deviation from normal operations does not necessarily mean an abnormal operating condition exists as long as conditions are within the parameters identified by KM.
    - Items listed below may be indications of an abnormal condition or may create an abnormal operating condition related to a specific Covered Task. Employees and contractors are trained and evaluated to recognize and properly respond to AOCs. The general AOC categories below are evaluated using a knowledge test, while specific AOCs are evaluated in the knowledge tests and skills checklists associated with specific covered task evaluations.
    - Abnormal Operating Conditions fall into the following categories:

- Unexpected hydrocarbon encountered (unauthorized release, vapors, hazardous atmosphere and contamination)
- Unexpected pressure deviations (increase, decrease, high, low, absent)
- Activation of a safety device (pressure relief, emergency shut downs, high pressure shutdowns, case pressure shutdowns, high temperature shutdowns)
- Unexplained flow rate deviations (high flow, low flow, no flow)
- Unexplained status change (unit start-up, unit shut-down, valve open, valve close, gravity change, tank level, temperature, flash, haze, sediment and water, co-mingling of product, etc.)
- Fire / explosion
- Interruption or failure of Communications / Control system / Power
- Pipeline system damage (line hit, lighting strikes, tornado, flood, earthquake, etc)
- Abnormal facility condition (exposed pipe, low cathodic protection levels, missing line markers, frayed wires, line crossing, atmospheric corrosion, pipeline support, exposed river crossing)
- Component failure or malfunctioning component (field and SCADA components including meter failure)
- Earth movement or washouts that have exposed pipe or could effect pipeline integrity, including strain and stress due to external load.