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November 25, 2009

SENT VIA FEDERAL EXPRESS AND FACSIMILE (816) 329-3831

Mr. Ivan A. Huntoon
Director, Central Region
Pipeline and Hazardous Materials Safety Administration
901 Locust Street, Suite 462
Kansas City, MO 64106-2641

Re: Response to October 28, 2009 Notice of Probable Violation; Request for Hearing

Dear Mr. Huntoon:

This letter is on behalf of our client, Enterprise Products Operating LLC, ("Enterprise") in response to the Notice of Probable Violation, Proposed Civil Penalty and Proposed Compliance Order ("NOPV") issued by the Pipeline and Hazardous Materials Safety Administration ("PHMSA") and received by Enterprise on October 28, 2009. Enterprise files this Response to the NOPV and Request for Hearing ("Enterprise's Response") under 49 C.F.R. § 190.211, by overnight courier and facsimile transmission on November 25, 2009. Enterprise's Response is therefore timely filed. 49 C.F.R. §§ 190.5(c); 190.209. In support of Enterprise's Response, Enterprise respectfully shows PHMSA the following:

Background Information

Enterprise performed a bypass of its 12-inch "Brown" line in Clark County, Kansas, approximately three miles north of Englewood, Kansas, at Mile Post 362 after a maintenance pig lodged in the mainline valve setting at approximately 8:54 p.m. on September 7, 2009. The process and procedures necessary for planning and installing the bypass were set forth in Enterprise's Job Plan for this bypass project. In addition, Enterprise followed applicable procedures included in its Operations and Maintenance manual and its Operator Qualification ("OQ") program. A copy of the Job Plan and an Addendum to that Job Plan, are attached hereto as Attachment 1.

The Job Plan specified that the work be "performed in a good and workmanlike manner enforcing all company policies, procedures, specifications, and guidelines." Attachment 1, p.1.

As part of the bypass installation, "new tested piping and valve" were installed. *Id.* at p. 4. Tie-in welds were subjected to non-destructive testing ("NDT"). *Id.* As part of the preparation for the bypass project, a tailgate safety meeting was conducted, which included a review of the safety checklist; mill certification papers were obtained for the sleeve material; operator qualification ("OQ") documentation was prepared; contractor drug testing information was obtained; and other tasks were performed. *Id.* at pp. 4-5. The Job Plan and its Addendum include a list of all OQ tasks to be performed and the employees or contractors that were assigned to perform the respective tasks. *Id.* at p. 7. Training for these OQ tasks was verified. *Id.* at p. 6.

Enterprise based the materials to be used in performing the bypass project on past practices and a working knowledge of the potentially applied forces in relation to the design properties of 2-inch Schedule 80 pipe, along with industry standards and acceptable engineering practices. Enterprise used this knowledge in determining that the piping and fittings selected for the project were suitable for the fluids and pressures to be encountered and addressed by the bypass project.

Summary of Enterprise's Response to PHMSA's NOPV

Enterprise took all reasonable steps to ensure that the bypass project was completed in a safe manner. Its Operations and Maintenance Manual appropriately addressed pipeline repairs, including pipe threading. The assembly of threaded pipe connections is not a "covered task" that must be included in Enterprise's OQ program, because it does not meet the regulatory four-part test to be a covered task. Because the assembly of threaded pipe connections does not meet the four-part test, API's Operator Qualification Committee's recently denied a request to include this "task" among its "Recommended Covered Task List." Further, given the circumstances of the incident, Enterprise was not required to conduct drug testing on the individuals participating in the bypass project. Personnel trained in evaluating indicators of the use of controlled substances observed no indication that personnel that had been working on the bypass were impaired. In summary, Enterprise complied with its regulatory requirements in planning for and completing the bypass project. PHMSA's alleged violations should be dismissed.

Setting aside the above discussion as to the merit of the alleged violations identified in the NOPV, PHMSA's proposed penalties are excessive. The penalties are based on an inaccurate assessment of the incident's impact on the general public. PHMSA has failed to properly consider the efforts Enterprise took to prevent the incident and to minimize its impact. In addition, the penalties are based on a determination that joining pipe-threaded joints is a "covered task." This determination is not supported by the applicable regulations and is inconsistent with best industry practices identified at the time. PHMSA's proposed penalty for the alleged drug testing violation is excessive in comparison to penalties assessed under similar circumstances and fails to consider the particular roles played by the personnel participating in the bypass project.

Enterprise further contests the Proposed Compliance Order. Enterprise has modified its Operations and Maintenance manual as proposed in Paragraph 1 of the Proposed Compliance Order. Each of the other provisions in the Proposed Compliance Order arises from PHMSA's determination that the act of joining pipe-threaded joints is a "covered task." Because Enterprise is contesting this determination, Enterprise is also contesting the Proposed Compliance Order.

Enterprise requests an informal conference and a formal hearing to contest the alleged violations, the proposed penalty and the proposed compliance order.

PHMSA's Allegations

PHMSA has alleged violations of 49 C.F.R. §§ 195.422, 195.402, 195.505, and 199.105, arising from an incident occurring on September 11, 2007, at the "Brown" line in Clark County, Kansas, approximately three miles north of Englewood, Kansas, at Mile Post 362. These alleged violations are addressed as follows:

49 C.F.R. § 195.422 – Pipeline Repairs

PHMSA has alleged that Enterprise failed to ensure that the installation of a bypass was made in a safe manner, so as to prevent damage to persons or property, as evidenced by the failure that occurred on September 11, 2009. As set forth in the Job Plan, Enterprise took extensive steps to ensure that the bypass project was "performed in a good and workmanlike manner enforcing all company policies, procedures, specifications, and guidelines." As discussed in further detail below, Enterprise's actions complied with its regulatory requirements in planning for and completing the bypass project. While it is indisputable that an accident occurred, this does not mean that the repairs were not made in a safe manner so as to prevent damage to persons or property. The repairs were performed safely. Further, there was no damage to persons or property caused by the materials released from the pipeline.

Enterprise completed its work on the bypass project at approximately 3:20 p.m. on September 10, 2009. There was no sign of leakage. At approximately 6:00 p.m., Enterprise determined that the bypass did not provide for sufficient flow of product. The line was shut in and the personnel left the site at 7:20 p.m. No indication of leakage was evident. However, a release occurred at approximately 12:13 a.m. on September 11, 2009. No personnel were on-site at the time of the release.

Under PHMSA's analysis, any accident following a pipeline repair would constitute a violation of 49 C.F.R. § 195.422. This conclusion is inappropriate, arbitrary and capricious. Enterprise took every reasonable precaution to ensure that the bypass project was performed safely. As examples, Enterprise conducted a tailgate safety meeting, including a review of the safety checklist; obtained mill certification papers for the sleeve material; prepared operator qualification ("OQ") documentation; obtained contractor drug testing information; and performed other safety-related tasks to prepare for the bypass project. Attachment 1, pp. 4-5.

The Job Plan and its Addendum included a detailed list of OQ tasks to be performed and the employee or contractor that was assigned to perform the respective tasks. *Id.* at p. 7. Training for these OQ tasks were verified. *Id.* at p. 6. The training records for the personnel participating in the bypass project are attached hereto as Attachment 2.

In addition, as discussed in further detail below, Enterprise's Operations and Maintenance manual addresses the tasks necessary to complete the bypass project. The OQ documentation and the operational requirements included in the Operations and Maintenance manual were reviewed prior to the commencement of the bypass project and were implemented.

The occurrence of the accident is not a sufficient basis upon which to establish a violation of 49 C.F.R. § 195.422. Enterprise respectfully requests that PHMSA's alleged violation in this regard be dismissed.

49 C.F.R. § 195.402 – Procedural Manual for Operations, Maintenance and Emergencies

PHMSA has alleged that Enterprise failed to include written procedures in its Operations and Maintenance manual that provide for adequate safety when installing threaded pipefittings in connection with performing maintenance and repairs to its pipeline system. Enterprise's Operations and Maintenance manual does address these issues. It includes provisions requiring that "all repairs to the pipeline system will be made in a manner that is safe and will prevent injury to persons or damage to property" and specifies, "No valve, pipe or fitting shall be used for repair or replacement in the pipeline facilities, unless it is designed, constructed and tested as required in the Company Engineering Design Standards." Further, the manual states, "Repairs shall be made in accordance with ANSI B31.4, Paragraph 434.5 (new construction) or Paragraph 451.6." A copy of these portions of Enterprise's Operations and Maintenance manual is attached hereto as Attachment 3.

The October 2002 version of ANSI B31.4 has been incorporated by reference by PHMSA. 49 C.F.R. §§ 195.3, 195.452(h)(4)(i). A copy of these standards is attached as Attachment 4. ANSI B31.4, Paragraph 434 applies to new construction and replacements of existing systems. ANSI B31.4, Paragraph 434.1 ANSI B31.4, Paragraph 434.5 states, in pertinent part:

(a) Fabricated items such as scraper traps, manifolds, volume chambers, etc., shall be inspected before assembly into the mainline or manifolding and defects shall be repaired in accordance with provisions of the standard or specification applicable to their manufacture.

(b) Pipe shall be inspected before coating and before assembly into the mainline or manifolding. Distortion, buckling, denting, flattening, gouging, grooves, or notches, and all defects of this nature, shall be prevented, repaired, or eliminated as specified herein.

(1) Injurious gouges, grooves, or notches shall be removed. These defects may be repaired by the use of welding procedures ... or removed by grinding, provided the resulting wall thickness is not less than permitted by the material specifications.

(2) When conditions outlined in para. 434.5(b)(1) cannot be met, the damaged portion shall be removed as a cylinder. ...

(3) Notches or laminations on the pipe ends shall not be repaired. The damaged end shall be removed as a cylinder and the pipe end properly rebeveled. ...

ANSI B31.4, Paragraph 434.5.

Enterprise's Operations and Maintenance manual addressed the operational requirements applicable to installing threaded pipefittings in connection with performing maintenance and repairs to its pipeline system. The manual's references to the Company Engineering Design Standards and to ANSI B31.4, Paragraph 434.5 provided additional guidance as to the requirements to be met in completing the bypass project. Enterprise's OQ documentation further documented the tasks to be performed to complete the bypass project.

Through the OQ documentation and the Operations and Maintenance manual, Enterprise complied with the requirements of 49 C.F.R. § 195.402. Enterprise respectfully requests that PHMSA's alleged violation in this regard be dismissed.

49 C.F.R. § 195.505 – Qualification Program

In Allegation Nos. 3 and 4, PHMSA has alleged that Enterprise failed to include pipefitting in the list of covered tasks as part of its OQ program, that the assembly of threaded pipe connections would be a part of the pipefitting task, and that Enterprise failed to ensure that the individuals performing the pipefitting covered task were qualified.

Enterprise agrees that performing general pipeline repair activities is a covered task. Accordingly, in preparation for performing the bypass project, Enterprise identified a series of covered tasks in its Job Plan, attached hereto as Attachment 1. A copy of the covered tasks is attached hereto as Attachment 5.

However, the act of joining pipe-threaded joints is not a "covered task" in and of itself under the provisions of 49 C.F.R. § 195.501(b). It is, at best, a procedure utilized in performing general pipeline maintenance.

Under PHMSA's four-part test, a "covered task" is "an activity, identified by the operator, that:

- Is performed on a pipeline facility;

- Is an operations or maintenance task;
- Is performed as a requirement of this part; and
- Affects the operation or integrity of the pipeline."

49 C.F.R. § 195.501(b). The activity must meet all four parts to be a covered task.

As PHMSA has noted, whenever an operator discovers any condition that could adversely affect the safe operation of its pipeline system, it shall correct the condition within a reasonable time. 49 C.F.R. § 195.401(b). The procedures used to correct the condition are simply that – procedures. They are not covered tasks unless they meet the four-part test. This conclusion is supported by API's list of Covered Tasks that fall under the heading entitled "Perform General Pipeline Repair Activities," a copy of which is attached hereto as Attachment 6. There is no requirement in 49 C.F.R. Part 195 that requires the act of joining pipe-threaded joints. It is a particular procedure or component that is performed as part of general pipeline repair activities.

Enterprise's conclusion in this regard is supported by a recent action of the API Operator Qualification Committee ("OQC"). The OQC was asked to consider whether to add "Joining of Pipe-Threaded Joints" to its list of "covered tasks" addressed in its Guidance Document for the Qualification of Liquid Pipeline Personnel. After careful consideration, it declined to do so based on its inability to "find a DOT reference for this task." Through this analysis, API's OQC determined that the act of joining pipe-threaded joints was not performed as a requirement of 49 C.F.R. Part 195. A copy of the OQC's consideration of this issue is attached hereto as Attachment 7.

In addition, vendors that provide materials for the qualification of covered tasks refer to the API covered task list. Materials were not available that could be used as a method for qualification of personnel who perform this task. This in itself would make it extremely difficult to meet qualification requirements if pipefitting were a covered task.

It should be noted that the series of covered tasks identified by Enterprise in its Job Plan are far more detailed than the applicable "covered tasks" included in API's Guidance Document for the Qualification of Liquid Pipeline Personnel. Enterprise respectfully requests that the Regional Director compare Enterprise's covered tasks attached hereto as Attachment 5, with the applicable API covered tasks, attached hereto as Attachment 8. Enterprise's efforts to document the tasks necessary to complete the bypass project was far more detailed than typical and widely accepted industry practices. Further, PHMSA inspections in 2003 and 2008 reviewed Enterprise's OQ program and found no deficiency in Enterprise's OQ Program due to its failure to include a covered task for the act of joining pipe-threaded joints or pipefitting, more generally. Indeed, PHMSA and Enterprise discussed as part of the 2008 review whether pipefitting should be categorized as a covered task. Because of the fact that pipefitting did not meet the four-part

test, Enterprise had not included pipefitting as a covered task, and PHMSA did not issue any deficiency in this regard.

In addition, the OQ training records for the employees and contractors that participated in the bypass project, attached hereto as Attachment 2, demonstrate the extensive efforts taken by Enterprise to ensure that the personnel were qualified to perform the tasks necessary to complete the bypass project.

Enterprise respectfully requests that PHMSA's alleged violations in this regard be dismissed.

49 C.F.R. § 199.105 – Drug Tests Required

PHMSA has alleged that Enterprise failed to conduct post-accident drug testing of the nine employees that were involved in the bypass project.[1] Given the circumstances of the incident, Enterprise was not required to conduct drug testing on the individuals participating in the bypass project. The bypass piping had been placed into service at approximately 3:20 p.m. on September 10, 2007 without incident or any sign of leakage. When the desired flow rate was not achieved, the line was shut in. Personnel left the site at approximately 7:20 p.m. Through its contractor, Liquid Control, Enterprise received notification of a possible release at approximately 12:13 a.m. on September 11, 2007. No personnel were on-site at the time of the incident. Based on the best information available immediately after the accident, there was no indication at the time that the performance of any of the employees contributed to the incident.

In addition, Enterprise's employees had received drug and alcohol employee education. For example, Project Supervisor Roger Belveal and Safety Coordinator Roman Cantu received Drug and Alcohol Supervisor Training designed to assist these supervisors in recognizing the physical, behavioral, speech, and performance indicators of probable alcohol misuse and use of controlled substances. Mr. Belveal and Mr. Cantu had no indication that any of the personnel that had been working on the bypass project were impaired. Documentation regarding these training sessions is attached hereto as Attachment 9.

Enterprise respectfully requests that PHMSA's alleged violation in this regard be dismissed.

PHMSA's Proposed Civil Penalties

PHMSA has proposed civil penalties in the amount of $466,200. PHMSA has proposed a penalty of $100,000 for the alleged violation of 49 C.F.R. § 195.422; $133,100 for the alleged

[1] It is unclear whether PHMSA's allegation is that nine or twelve individuals should have tested for drugs. At the first portion of drug testing allegation, it states that nine employees were not tested for drugs. At the end of the allegation, PHMSA states that Enterprise indicated that twelve people were involved with planning, supervising and installing the bypass.

violation of 49 C.F.R. § 195.402; $133,100 for the alleged violation of 49 C.F.R. § 195.505 for Enterprise's alleged failure to ensure that individuals performing covered tasks are qualified;[2] and $100,000 for the alleged violation of 49 C.F.R. § 199.105.

PHMSA has not specified the basis for its penalty calculations. However, PHMSA's introduction in its Notice states that approximately 14,763 barrels of natural gas liquid were released. Enterprise has reported that the actual release totaled approximately 6,000 barrels. Due to the nature of the material released in the incident, the vast majority of this material evaporated almost instantly after release. There was no documented impact to human health. PHMSA noted that State Highway 283 was closed for five days. State Highway 283 enters from Oklahoma south of Englewood in Clark County and passes through largely unpopulated areas of the county. This road is lightly traveled and its closure had minimal impact on the general public. Further, it should be noted that Enterprise reimbursed the Oklahoma Department of Transportation for its costs associated with the incident.

In addition, Enterprise took significant action to prevent the occurrence and to minimize its impact. As noted above, Enterprise's preparations far exceeded industry norms through its detailed listing of covered tasks, and its extensive Job Plan. In addition, Enterprise has modified its Operating Procedures to more specifically address Pipeline Taps and Branch Connections, with a specific reference to ASME B1.20.1. A copy of Enterprise's revised procedure and ASME B1.20.1 are attached hereto as Attachments 10 and 11, respectively.

As discussed above, Enterprise respectfully disagrees with the alleged violations in the NOPV. Setting this aside, should a penalty be assessed, these facts should be considered in mitigating the proposed penalty for each of the violations. In addition, Enterprise has specific objections to the penalties assessed for the alleged violation of 49 C.F.R. §§ 195.402, 195.505, and 195.105.

With respect to 49 C.F.R. §§ 195.402, 195.505, it is clear that there is significant dispute as to whether the act of joining pipe-threaded joints is a "covered task." As discussed above, recently the API expressly declined to include this act as a covered task to be included in its Guidance Document for the Qualification of Liquid Pipeline Personnel. It is clear that this act is not commonly perceived within Enterprise's industry as a covered task. As a result, there is no recognized standard for the "task." No training program has been designed to address this "task" and there are no available qualification assessment tools. The standard, the training and the qualification assessment tools would typically be developed by third-party providers using the covered task list developed by the API OQ Committee, who has expressly declined to recognize the act of joining pipe-threaded joints as a "covered task," because it does not meet the regulatory four-part test.

[2] PHMSA has not assessed a penalty for Enterprise's alleged failure to identify the pipefitting or assembly of threaded pipe connections as a covered task.

As a result, to comply under PHMSA's "covered task" determination, each operator would have had to anticipate PHMSA's determination and individually develop a standard, a training program and qualification assessment tools. Because of the varied locations of Enterprise's operations (and that of similarly situated pipeline operators), this training program would likely have to be implemented on a case-by-case basis, as pipeline maintenance operations arose. Such a requirement is unreasonable, arbitrary and capricious, and potentially dangerous given that some maintenance events must be completed quickly to minimize imminent threats to the public. Finally, it must be recognized that Enterprise hired its contractors only after evaluating them to ensure they were qualified to do the job. In addition to illustrating why no violation occurred, these circumstances justify a significant reduction in any penalties proposed for these alleged violations.

With respect to 49 C.F.R. § 195.105, PHMSA's proposed penalty of $100,000 is excessive. In a prior action, under similar circumstances, PHMSA assessed a penalty of $20,000 for a violation of this provision. Attached hereto as Attachment 12 is a Final Order against AGL Resources, Inc. Further, PHMSA has determined that each of the nine or twelve[3] individuals involved with planning, supervising and installing the bypass should have been drug tested. Based on the best information available immediately after the accident, there was no indication at the time that the performance of any of these individuals contributed to the incident. There is no indication, even today, that the incident was caused by any failure in planning or supervising the bypass. At a minimum, any penalty should be based on the number of individuals that actually participated in the installation of the bypass, rather than the planning and supervision of the work. PHMSA should be required to clarify its allegation so that Enterprise can be on fair notice of the nature of this allegation. Under any interpretation of PHMSA's allegation, however, PHMSA's proposed penalty for this alleged violation is excessive and should be reduced.

PHMSA's Proposed Compliance Order

PHMSA's Proposed Compliance Order is based on a determination that pipefitting is a "covered task" under 49 C.F.R. Part 195. As set forth in more detail above, Enterprise disputes this determination. As a result, Enterprise cannot agree to any of the provisions of the Proposed Compliance Order. Should PHMSA decide that pipefitting should be treated as a covered task, Enterprise respectfully requests that PHMSA do so through the regulatory process as compared to seeking to impose such an isolated individual requirement on Enterprise via a compliance order. Using the regulatory process would provide for an industry-wide global change, which would in turn allow for the development of appropriate training and qualification assessment tools.

[3] *See* Footnote 1.

Enterprise's Request for Hearing and Representation by Counsel

Enterprise respectfully contests each of the violations alleged in PHMSA's NOPV issued in this matter, as well as the penalties and the Compliance Order proposed in the NOPV. Enterprise has included herein a statement of the issues that Enterprise intends to raise at the hearing. Enterprise respectfully requests that a hearing be held to address these issues, pursuant to 49 C.F.R. § 190.211. Enterprise will be represented by counsel at the hearing.

Without waiving its right to a hearing, Enterprise respectfully requests the opportunity to meet with PHMSA's staff in an informal conference in an effort to resolve this matter prior to a hearing.

Please contact me if you have any questions or need any further information.

Very truly yours,

Eddie Lewis

Edward C. Lewis

ECL/jnb
Enclosure

Section 1

JOB PLAN

Job/Project:	12" brown line Double stopple	Date Prepared:	9-7-07
Prepared By:	Matt Hamon / Dain Gipson	Date Distributed:	9-8-07
Requested By:	Operations, Commercial	Revision #:	0

Note: Ensure that job plan is prepared and distributed on all non-routine scheduled projects 48 hours in advance for review. Job plan and all applicable permits will be available in proximity to the job site.

Work Order #:		Scope/Objective:	Excavate pipeline, Perform Hot Tap/ set double stopple on the 12" Brown Line, at AM 262 valve setting and investigate by cutting into line removing blockage from valve.

1. Schedule: (Estimated Start/Stop Dates & Timeline)

Begin:	End:	Job Description:
9-8-07	9-14-07	Issue emergency one call, safely excavate pipeline on both sides of AM 262 valve setting, perform UT testing on excavated pipeline to determine proper location for split Tees, install split tees, install 2" TOR bypass for flow, install PLIDCO Tapped Sleeves, set double stopple, blow down piping purge with nitrogen, cut into 12" pipe between valve and check investigate blockage and remove.

2. Detailed Step by Step Procedure:

Specification / Procedures:

Section – 1.3 General Safety Rules
Section – 2.1 – 2.4 Incident Reporting
Section – 2.3 Vehicle Safety
Section – 3.1 Chain and Sling Inspection
Section – 3.3 Energy Isolation Standard
Section - 3.6 Heavy Motorized Equipment
Section - 3.4 Excavation and Trenching
Section – 3.9 PPE
Section – 4.4 Benzene Management
Section – 3.10.10 Hose and Coupling
Section – 3.12 Work Permit Systems
Section – 5.3 Emergency Action Plans
Section - 6.2 Job Planning Process
Section – 6.3 Preparation of Equipment for Maintenance Repairs
Section- 6.4Underground line cutting

Work will be performed at the direction of operations and third party inspection personnel.
Company and third party inspection personnel will assess pipeline and see that all work activity is performed in a good and workmanlike manner enforcing all company policies, procedures, specifications, and guidelines.

One Call:
The Contractor will be provided directions to the dig site and complete the one call based on information provided from Operations.
The Chief Inspector will verify that one-call information has been cleared and that all known utilities have responded.

The excavation contractor will provide One-Call documentation to the on-site Chief Inspector.
Prior to initiating any excavation, the excavation contractor will check the Enterprise alignment sheets and survey the property section lines for the presence of any foreign utilities which may not have been reported, and then scan the area to be excavated with a line locator.
The excavation contractor will clearly mark ALL Enterprise Pipelines in the area of the excavation and will verify depth of all utilities and pipelines to be excavated by the method of probing. ALL EXCAVATORS TO HAVE A BAR ACROSS EXCAVATOR TEETH
The excavation contractor will have a Competent Person at the location of each excavation for but not limited to the following purposes; excavation evaluation, atmospheric conditions (as defined below), and must be able to recognize any hazardous condition that may present itself.
The competent person must be able to take appropriate measures to correct these conditions or stop all activity until such a time the conditions can be appropriately managed.

Due to unforeseen circumstances causing the uncontrolled release of hydrocarbons into the immediate area, the following changes in scope will apply. The order which the items listed below may change due to various circumstances encountered during the activities. Wind direction and resources.

A warm zone boundary shall be established between the release site and all personnel intending to perform work activities. The boundary shall be continuously monitored for LEL, to ensure the safety of all personnel performing the activities.

All contract personnel shall be escorted into the warm zone area by company personnel utilizing LEL monitoring equipment.

In the event circumstances change the work activities will be halted and the site will be reviewed to determine if additional scope changes are needed.

Additional excavations will be required to install tapped clamp on sleeves and a secondary stopple fitting upstream of the valve setting at AM 362.

A 12" 600# Tapped Clamp on Sleeve (TDW style or PLIDCO style) (East #1) will be installed on 12" carrier line, downstream of valve setting at AM 362, but upstream of weld-on stopple fitting. The 12" carrier line shall be prepared and have a UT evaluation on the area where the PLIDCO/TDW Clamp on fitting will be installed, to ensure a sealing surface and pipe thickness.

A second 12" 600# Tapped Clamp on Sleeve (TDW style or PLIDCO style) (West #2) will be installed on 12" carrier line upstream of valve setting at AM 362, but downstream of the secondary weld-on stopple fitting. The 12" carrier line shall be prepared and have a UT evaluation on the area where the PLIDCO/TDW Clamp on fitting will be installed, to ensure a sealing surface and pipe thickness.

A third 12 " 600 #Tapped Clamp on sleeve (TDW style or PLIDCO style) (West #3) will be installed on 12" carrier line downstream of second tapped clamp on sleeve but upstream of original west weld-on stopple fitting. This tap will serve as an additional flaring location on the section of pipe between the valve setting at AM 354 and valve setting at AM 362.
In the event a third Tapped Clamp on sleeve is needed, the same type will be utilized. This clamp on sleeve would also be installed between the upstream secondary weld-on stopple fitting and the valve setting at AM 362.

A secondary weld-on stopple fitting will be installed approx. 3500 feet upstream of the original weld-on stopple fitting on the upstream side of the block valve at AM 362 due to proximity of the release. The carrier pipe shall be cleaned and prepared for UT evaluation.

Upon completion of installing the downstream (East #1) Tapped Clamp on Sleeve, the Tapped clamp on sleeve shall be tested with inert gas to a pressure of the Carrier line pressure + 50 PSIG to ensure we have a seal on carrier pipe. After a successful nitrogen test the carrier pipe will be tapped with a 101 tapping machine. This tap will serve as the tie-in point for the nitrogen displacement. The nitrogen truck will then be moved into place and be

utilized to displace the hydrocarbon vapors between the valve setting (AM 362) and valve setting (AM 373) where the vapors are being flared. Once the required flow of Nitrogen across the weld-on stopple fitting has been established and the flow has been determined to be maintainable, but the pressure does not exceed the pressure upstream of the obstructing pig, then the welding will begin on the circumferential welds on the stopple fitting. The nitrogen flow will continue and shall be monitored per the parameters established in the PAL (pre-assessment letter) until both circumferential welds on the fitting have been completed. The 12 hour waiting period for MT testing on the stopple fitting circumferential welds will began at that time, and original job scope will be in effect for this section.

Upon completion of installing the upstream (West #3) Tapped Clamp on Sleeve, the Tapped clamp on sleeve shall be tested with inert gas to a pressure of the carrier line pressure + 50 PSIG to ensure we have a seal on the carrier pipe. After a successful nitrogen test, the carrier pipe will be tapped with a 101 tapping machine. This tap will serve as an additional tie-in point for flaring the upstream section of pipe, AM 354 to AM 362.

Upon completion of installing the upstream (West #2) Tapped Clamp on Sleeve, the Tapped clamp on sleeve shall be tested with inert gas to a pressure of the carrier line pressure + 50 PSIG to ensure we have a seal on the carrier pipe. After a successful nitrogen test, the carrier pipe will be tapped with a 101 tapping machine. This tap will serve as the tie-in point for the nitrogen displacement. The nitrogen truck will then be moved into place and utilized to displace the hydrocarbon vapors between the valve setting (AM 362) and valve setting (AM 373) where the vapors are being flared. Once the required flow of Nitrogen across the secondary Weld-on stopple fitting has been established and the flow has been determined to be maintainable then the welding will begin on the circumferential welds on the stopple fitting. The nitrogen flow will continue and shall be monitored per the parameters established in the PAL (pre-assessment letter) until both circumferential welds on the fitting have been completed. The 12 hour waiting period for MT testing on the stopple fitting circumferential welds will began at that time. And the original job scope will be in effect for this section.

If deemed safe to begin excavating, the pipeline will be clearly spotted by means of probing.
Note! If soil contamination is discovered during excavation process, please contact the environmental contact in the OBS organizational chart.
Once a safe ditch, in accordance with OSHA standards and Company guidelines (refer to the Excavation Safety procedure and OSHA excavation handbook 29 CFR parts 1926.650 through 1926.652) is verified by the competent person the pipeline coating will be removed from the pipeline. The Chief Inspector with record the safe ditch verification as part of the completion of the daily excavation check list.
Enterprise Personnel and Contract Personnel must complete a Confined Space permit for all excavations 4' or greater in depth and/or if the work to be performed requires the entrant's head to be below grade level, before anyone enters the trench. Once the coating is removed from the pipeline, the sandblasting crew will blast the pipe to a near white finish.
Once the pipeline has been cleaned the crews will prepare the pipe for split tee installation:

The evaluator shall calibrate the UT machine prior to the evaluation.
Once UT has been performed and carrier pipe has been evaluated installation of split tees may start.
NOTE: A Pre Assessment Letter must be acquired before split tees can be installed.

Prior to applying split tees, the Operations Designee and or Competent Person will check flammability levels in the ditch by use of a Lower Explosive Limit (LEL) meter. The following atmospheric condition must be present prior to entering the ditch and or welding: The combustible gas level must be no greater than 0% of the lower explosive limit (LEL). The oxygen content must be between 19.5 and 23.5% before entry is permitted, and the hydrogen sulfide concentration must not exceed 0 ppm. Calibration documentation for the meter must be available.

If an atmospheric condition is recognized, personnel will immediately get clear of danger and contact Operations Control and Area Operations. Once Area Operations has been notified, Company and Contract personnel will ensure that roads are blocked and secured, and that no one enters danger zone until site as been deemed safe.

Prior to welding the circumferential welds on the split tee (stopple fittings), it may be necessary to install a 2" TOR to TOR bypass line to ensure that flow parameters are meet, as per the PAL (pre-assessment letter).

Following the installation, the split tee circumferential will be completed and then will be given 12 hours prior to NDT of the new maintenance welds before the Hot taps are made. The line shall be properly supported prior to installation of hot tap equipment.
Hot Tap will be performed on the 12" Split Tees with the line flowing.
The 2" TOR will be used to aid in blowing down the isolated section of piping.
Sweeping of the tapped split tee will be done to remove cuttings from the hot tap.
A pressure test will be conducted on stopple equipment and split t.
Both 12 " stopples will be set, and hydraulic hoses disconnected, and a tag put on plugging machine to provide LO/TO of Stopple Equipment.

When stopple is set & locked out, Operations will make appropriate notifications and then begin the blow down / flaring of isolated pipe segment.
Once zero pressure is indicated and verified by Operations, nitrogen will be connected at a connection on the existing scraper trap and injected through the piping.
Operations will verify the LEL and benzene readings after nitrogen purging
In the event LEL or Benzene is greater than zero at the location where hot work is to occur, an air mover will be connected to the 2" TOR fitting and an air compressor turned on to provide a Ventura effect to remove remaining hydrocarbons. The purging process will continue until LEL and Benzene levels are zero.

The following tasks will be performed to remove & install piping and valves:

LO/TO will be applied by all affected personnel
Once zero LEL and Benzene is verified by Operations, the existing will be removed and restriction removed.
New tested piping and valve will be installed
Tie-in welds will be NDT.

The following tasks will be performed to complete the job;

After NDT of welds, all LO/TO will be removed.
TD Williamson personnel will unlock stopple equipment and purge isolated line segment through plugging machine via 2" TOR fitting.
Retrieve stopple cup
Install Completion Plug on 2" TOR and 12" Split Tee

The following can occur simultaneously:
Coatings applied to underground fittings
Backfill of excavation.

Documentation:
The following documentation will be gathered and placed into a project book and sent to Pipeline Integrity in Houston for record retention.

- Daily Contractor Attendance Report (Chief Inspector)
- Maintenance Report (each and every dig) (Chief Inspector)
- Photographs of anomaly investigation and completion (Chief Inspector)
- Daily Tailgate Safety Meeting Checklist (Chief Inspector)
- Mill certification papers for sleeve material (Chief Inspector)
- One Call documentation (Chief Inspector)
- OQ documentation (Chief Inspector)
- Contractor drug testing information (Chief Inspector)
- Excavation Checklist (Chief Inspector)
- X-ray documentation (Chief Inspector)
- NDE and Corrosion assessment information (Chief Inspector)

- Welder qualification papers (Chief Inspector)
- Confined Space Entry form (Enterprise Operations Personnel)
- Hot Work Permit (Enterprise Operations Personnel)
- General Work permit (Enterprise Operations Personnel)
- LOTO (Isolation Blind List all Parties Involved)
- Excavator Permit (Contractor)

Tail Gate Safety Meeting: A tailgate safety meeting will be held each morning at a location that will detail evacuation routes, gathering points, and inform personnel and the contractor of the nearest upstream and downstream block valve. All those attending the tailgate safety meeting will be required to sign the safety meeting form. The inspector will fill a daily form and have on hand at all times. A daily safety checklist will be reviewed each morning, which will help in developing the emergency plan. Initial emergency notifications will be made to Operations Control.

3. Communications: (Identify and confirm receipt of relevant applicable information prior to starting job/project)

Department	Name	Office	Cellular	Pager
Pipeline Control/Operations Control (required)	South End	800-331-3032		
Scheduling	Chip Aryain	713-381-8731	713-376-9250	
Marketing/Commercial	NA			
Real Estate Services	Nancy Greer		913-488-6810	
Landowner/Tenant				
One Call Notification	Enerpipe		806-679-3682	
Field Operations (required)	Mike Schlatter Audie Dobbs		620-727-1773 620-388-1783	
Maintenance Operations (required)	Dain Gipson Matt Hamon		806-898-5191 806-898-5190	
Safety/PSM Coordinator (required)	Roman Cantu		806-898-5763	
Environmental (required)	Randy Davis		816-808-0501	
Corrosion Technician				
Engineering	NA			
Contractors:				
Enerpipe	Bill Keel		806-679-3682	
Tulsa Inspection	Gary Donelson		432-425-8671	

5. Downtime Request/Notifications: (All downtime events – downtime requests/notifications should be copied to all affected parties.)

No downtime will be required for this project

6. Resources: (Identify party responsible for providing required resources.)

Equipment Contract:	Enerpipe
Materials:	Enterprise

7.	**Safety:**			
a.	**Required Permits and/or Checklists: (check all that apply)**			
	☒ General	☒ Hot Work		☒ Confined Space
	Isolation Blind List (LO/TO)	☒ Yes	☐ No	☐ N/A
	Blind List Attached	☒ Yes	☐ No	☐ N/A
	Daily Excavation Checklist	☒ Yes	☐ No	☐ N/A
	Pipe Coating Analyzed (for asbestos)	☒ Yes	☐ No	☐ N/A
b.	**Agencies: (i.e. state and federal regulatory agencies (EPA, DOT, or State Environmental Agencies) when required to be notified for permitting issues.)**			
c.	**PPE Equipment (check appropriate box)**			
	☒ Level 1: Safety Glasses or Chemical Goggles, Hard Hat, FRC Garments, Safety Toe Shoes/Boots			
	☐ Level 2: Chemical Goggles and Face Shield, Hard Hat, FRC Garments, Safety Toe Shoes/Boots, Rubber or Neoprene Gloves, Splash Aprons			
	☐ Level 3: Chemical Goggles and Face Shield, Hard Hat, FRC Garments, Rubber Safety Toe Shoes/Boots, Rubber or Neoprene Gloves, Full Slicker Suit or Chemical Suit			
	☐ Other: Special PPE Equipment			
	Level 1 PPE at minimum. Additional PPE may be required if specified by MSDS or job/task requirements.			
d.	**Respiratory Protection: (check all that apply)**			
	Required:	☐ Yes	☒ No	☐ N/A
	Type Required:			
e.	**MSDS**			
	Provided: Upon Request	☐ Yes	☒ No	☐ N/A
	Management of Change (PSM/RMP/SEMP):	☐ Yes	☒ No	☐ If yes, MOCR #
f.	**Emergency Plan:**			
	Site Specific Plan Reviewed? At Jobsite	☒ Yes	☐ No	☐ N/A
	Area Evacuation Procedure Reviewed? (i.e., wind direction topography, vehicle placement) At Jobsite	☒ Yes	☐ No	☐ N/A
	Evacuation Rally Point (List)			
	Established at Daily Tailgate Meeting and communicated to all personnel			
	Evacuation Alarm Method (List) (i.e., air horn, siren, radio, etc.)			
	Established at Daily Tailgate Meeting and communicated to all personnel			

g.	**Contractor Authorization to Work:**			
	Contractor Safety Orientation Verified: At Jobsite	☒ Yes	☐ No	
	Drug Card Verified: (*EPCO*'s E-Card) At Jobsite	☒ Yes	☐ No	
	Qualified Craftsman Verified (i.e., competent person, crane certified operator, equipment operator, tested welder, etc.):	☒ Yes	☐ No	☐ N/A
	Other procedures attached (Specific Welding Requirements, etc.)	☐ Yes	☒ No	☐ N/A
8.	**Training:**			
	Note: Verify there are personnel present that comply with OQ training requirements prior to commencing any work activities.			
a.	**Identify and List all OQ Tasks to be Performed:**			

Employee/Contractor	OQ Task Number to be Performed	Span of Control Verified	Training Verified By
Bill Keel	LGC 111, 112, 113, 397	Yes	K. Fulton
Gary Donelson	LGM 319, 327, 329, 331, 333, 335, 371, 391, LGC 111,	Yes	K. Fulton
Larry Smith	LGI 203 205 211 201 207 213 LGM 111 112 331 327 391	Yes	M Hamon
Glenn Wolf / Manny Jesus	LGM 201,203,207	Yes	M Hamon
Jeremy Lyons	LGM 337,339	Yes	M Hamon
Dain Gipson / Matt Hamon	LGM 367	Yes	M Hamon

9.	**Approvals:**	
	Operations Supervisor/Designee:	
	Area Safety/PSM Coordinator:	
10.	**Post Job Completion:**	
	As-Builts Completed By:	
	Post Job Review Conducted By:	

Addendum to Job plan 12"Brown Line double stopple.
9-17-07
Rev 1

We are making contractor change and following will apply.
Strike Enerpipe and add Piping Technology

Contractor : Piping Technology
OQ qualified personel

Matt Hamon: LGC 116 LGM 367

Ronnie Reed: LGC 116 LGM 367

Darryl DePeel: LGC 111, 112, 113, LGM 319, 327, 335, 391

Jimmie Walker: LGI 201, 203, 205, 211, 213

Section 2

Enterprise

1) Roger Belveal
2) Anthony Lucas
3) Alan Siemer
4) Dain Gipson
5) Matthew Hamon
6) Roman Cantu

Contractors

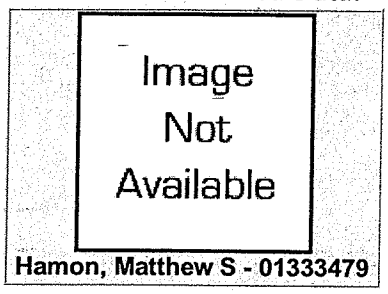
1) Larry Smith (McDaniel Services Welding Inspector)
2) Bill Keel (Enerpipe)
3) Charlie Miller (Enerpipe)
4) James Lynch (Enerpipe)
5) Carlos Garcia (Enerpipe)
6) Humberto Romero (Enerpipe)

This is an archived OQ report. The data is applicable as of 3/30/2008 11:44:04 PM Central Time (US)

ISNETWORLD OQ REPORT
Form ID: 101947-AO-2F018FAC

Run Date: 3/30/2008 11:44:04 PM
Contractor: EPCO Holdings, Inc.
Report For: EPCO Holdings, Inc.
Job Site/Project: EPCO General - All Areas - All Areas (JS-6408)

V is for Verified Data.
NV is for Non-Verified Data.



Hamon, Matthew S - 01333479

OQ Task	Qualification Method	Evaluation Date	Expiration Date
2.1 - Inspect and verify test lead continuity	EPCO : E2.1(5) - Inspect and verify test lead continuity (5 Year)	3/31/2003	3/31/2008
2.2 - Repair damaged test leads	EPCO : E2.2(5) - Repair damaged test leads (5 Year)	3/31/2003	3/31/2008
2.3 - Install test leads by non-exothermic welding methods	EPCO : E2.3(5) - Install test leads by non-exothermic welding methods (5 Year)	3/31/2003	3/31/2008
2.4 - Install test leads by exothermic welding methods	EPCO : E2.4(5) - Install test leads by exothermic welding methods (5 Year)	3/31/2003	3/31/2008
5.1 - Inspect for physical damage on buried or submerged pipe	EPCO : E5.1(5) - Inspect for physical damage on buried or submerged pipe (5 Year)	12/15/2003	12/15/2008
5.2 - Inspect for external corrosion on buried or submerged pipe	EPCO : E5.2(5) - Inspect for external corrosion on buried or submerged pipe (5 Year)	12/15/2003	12/15/2008
5.3 - Inspect the condition of external coating on buried or submerged pipe	EPCO : E5.3(5) - Inspect the condition of external coating on buried or submerged pipe (5 Year)	12/15/2003	12/15/2008
7.1 - Visual inspection of atmospheric coating	EPCO : E7.1(5) - Visual inspection of atmospheric coating (5 Year)	12/15/2003	12/15/2008

7.2 - Prepare surface for atmospheric coating using hand and power tools	EPCO : E7.2(5) - Prepare surface for atmospheric coating using hand and power tools (5 Year)	11/9/2003	11/9/2008
7.3 - Perform water pressure cleaning	EPCO : E7.3(5) - Perform water pressure cleaning (5 Year)	11/9/2003	11/9/2008
7.4 - Prepare surface for atmospheric coating by abrasive blasting	EPCO : E7.4(5) - Prepare surface for atmospheric coating by abrasive blasting (5 Year)	11/9/2003	11/9/2008
7.5 - Apply atmospheric coating using hand application methods	EPCO : E7.5(5) - Apply atmospheric coating using hand application methods (5 Year)	11/9/2003	11/9/2008
7.6 - Apply atmospheric coating using spray applications	EPCO : E7.6(5) - Apply atmospheric coating using spray applications (5 Year)	11/9/2003	11/9/2008
7.7 - Use coating inspection tools	EPCO : E7.7(5) - Use coating inspection tools (5 Year)	11/9/2003	11/9/2008
8.1 - Measure pit depth with pit gauge	EPCO : E8.1(5) - Measure pit depth with pit gauge (5 Year)	12/15/2003	12/15/2008
8.2 - Measure wall thickness with handheld ultrasonic meter	EPCO : E8.2(5) - Measure wall thickness with handheld ultrasonic meter (5 Year)	12/15/2003	12/15/2008
10.1 - Insert and remove coupons	EPCO : E10.1(5) - Insert and remove coupons (5 Year)	12/16/2003	12/16/2008
10.2 - Monitor probes (on-line)	EPCO : E10.2(5) - Monitor probes (on-line) (5 Year)	12/16/2003	12/16/2008
13.1 - Prepare surface for coating using hand and power tools	EPCO : E13.1(5) - Prepare surface for coating using hand and power tools (5 Year)	11/9/2003	11/9/2008
13.2 - Perform water pressure cleaning	EPCO : E13.2(5) - Perform water pressure cleaning (5 Year)	11/9/2003	11/9/2008
13.3 - Prepare surface for coating by abrasive blasting	EPCO : E13.3(5) - Prepare surface for coating by abrasive blasting (5 Year)	11/9/2003	11/9/2008
13.4 - Apply coating using hand application methods	EPCO : E13.4(5) - Apply coating using hand application methods (5 Year)	11/9/2003	11/9/2008
13.5 - Apply coating using spray applications	EPCO : E13.5(5) - Apply coating using spray applications (5 Year)	11/9/2003	11/9/2008
14.1 - Locate line	EPCO : E14.1(5) - Locate line (5 Year)	4/4/2006	4/4/2011
14.2 - Install marker	EPCO : E14.2(5) - Install marker (5 Year)	4/4/2006	4/4/2011
14.3 - Inspect and maintain marker	EPCO : E14.3(5) - Inspect and maintain marker (5 Year)	4/4/2006	4/4/2011
14.4 - Inspect and maintain aerial line markers	EPCO : E14.4(5) - Inspect and maintain aerial line markers (5 Year)	4/4/2006	4/4/2011
15.1 - Visual inspection of the surface	EPCO : E15.1(5) - Visual inspection of the surface (5 Year)	11/11/2003	11/11/2008
15.2 - Reporting protocols	EPCO : E15.2(5) - Reporting protocols (5 Year)	11/11/2003	11/11/2008

16.1 - Use of probing equipment	EPCO : E16.1(5) - Use of probing equipment (5 Year)	4/4/2006	4/4/2011
16.2 - Use of sonar equipment	EPCO : E16.2(5) - Use of sonar equipment (5 Year)	4/4/2006	4/4/2011
16.3 - Reporting protocols (Line Locating)	EPCO : E16.3(5) - Reporting protocols (5 Year)	4/4/2006	4/4/2011
17.1 - Locate Line (Temporary Markers)	EPCO : E17.1(5) - Locate line (5 Year)	11/11/2003	11/11/2008
17.2 - Install marker (Temporary Markers)	EPCO : E17.2(5) - Install marker (5 Year)	11/11/2003	11/11/2008
17.3 - Inspect and maintain marker (Temporary Markers)	EPCO : E17.3(5) - Inspect and maintain marker (5 Year)	11/11/2003	11/11/2008
19.1 - Valve body winterization or corrosion inhibition	EPCO : E19.1(5) - Valve body winterization or corrosion inhibition (5 Year)	10/29/2003	10/29/2008
19.2 - Valve lubrication	EPCO : E19.2(5) - Valve lubrication (5 Year)	10/29/2003	10/29/2008
19.3 - Valve seat sealing	EPCO : E19.3(5) - Valve seat sealing (5 Year)	10/29/2003	10/29/2008
19.4 - Valve stem packing maintenance	EPCO : E19.4(5) - Valve stem packing maintenance (5 Year)	10/29/2003	10/29/2008
19.5 - Actuator/operator adjustment, electric	EPCO : E19.5(5) - Actuator/operator adjustment, electric (5 Year)	10/29/2003	10/29/2008
19.6 - Actuator/operator adjustment, pneumatic	EPCO : E19.6(5) - Actuator/operator adjustment, pneumatic (5 Year)	10/29/2003	10/29/2008
19.7 - Actuator/operator adjustment, hydraulic	EPCO : E19.7(5) - Actuator/operator adjustment, hydraulic (5 Year)	10/29/2003	10/29/2008
20.1 - Routine walk-around inspection	EPCO : E20.1(5) - Routine walk-around inspection (5 Year)	10/29/2003	10/29/2008
20.2 - External integrity inspection	EPCO : E20.2(5) - External integrity inspection (5 Year)	10/29/2003	10/29/2008
20.3 - Function test valve	EPCO : E20.3(5) - Function test valve (5 Year)	10/29/2003	10/29/2008
20.4 - Leak test valve	EPCO : E20.4(5) - Leak test valve (5 Year)	10/29/2003	10/29/2008
21.1 - Repair valve actuator/operator, pneumatic	EPCO : E21.1(5) - Repair valve actuator/operator, pneumatic (5 Year)	10/29/2003	10/29/2008
21.2 - Disassembly/Re-Assembly of valve	EPCO : E21.2(5) - Disassembly/Re-Assembly of valve (5 Year)	11/11/2003	11/11/2008
21.3 - Internal inspection of valve	EPCO : E21.3(5) - Internal inspection of valve (5 Year)	11/11/2003	11/11/2008
21.4 - Repair valve actuator/operator, hydraulic	EPCO : E21.4(5) - Repair valve actuator/operator, hydraulic (5 Year)	10/29/2003	10/29/2008
21.5 - Repair valve actuator/operator, electric	EPCO : E21.5(5) - Repair valve actuator/operator, electric (5 Year)	10/29/2003	10/29/2008

23.1 - Maintain/repair relief valves	EPCO : E23.1(5) - Maintain/repair relief valves (5 Year)	10/23/2003	10/23/2008
23.2 - Maintain/repair pressure limiting devices	EPCO : E23.2(5) - Maintain/repair pressure limiting devices (5 Year)	11/10/2003	11/10/2008
24.1 - Inspect, Test, Repair And Calibrate Pressure-Limiting Devices	EPCO : E24.1(5)	11/10/2003	11/10/2008
24.2 - Inspect, Test, Repair and Calibrate Relief Devices	EPCO : E24.2(5)	11/10/2003	11/10/2008
25.1 - Inspect, test and calibrate pressure switches	EPCO : E25.1(5) - Inspect, test and calibrate pressure switches (5 Year)	11/10/2003	11/10/2008
25.2 - Inspect, test and calibrate pressure transmitters	EPCO : E25.2(5) - Inspect, test and calibrate pressure transmitters (5 Year)	11/10/2003	11/10/2008
26 - Verify or set protection parameters for programmable controllers and/or other instrumentation control loops	EPCO : E26(5) - Verify or set protection parameters for programmable controllers and/or other instrumentation control loops (5 Year)	5/15/2003	5/15/2008
28 - Provide security for pipeline facilities	EPCO : E28(5) - Provide security for pipeline facilities (5 Year)	9/6/2003	9/6/2008
29.1 - Launching in-line inspection devices	EPCO : E29.1(5) - Launching in-line inspection devices (5 Year)	6/30/2003	6/30/2008
29.2 - Receiving in-line inspection devices	EPCO : E29.2(5) - Receiving in-line inspection devices (5 Year)	6/30/2003	6/30/2008
30 - Test overfill protective devices	EPCO : E30(5) - Test overfill protective devices (5 Year)	11/10/2003	11/10/2008
31 - Inspect and calibrate overfill protective devices	EPCO : E31(5) - Inspect and calibrate overfill protective devices (5 Year)	11/10/2003	11/10/2008
32.0 - Monitor Excavation Activities	EPCO : E32(5)	11/10/2003	11/10/2008
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	EPCO : E35(5) - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling (5 Year)	11/11/2003	11/11/2008
37 - Installation or repair of support structures on existing above ground components	EPCO : E37(5) - Installation or repair of support structures on existing above ground components (5 Year)	3/31/2003	3/31/2008
39 - Backfilling a trench following maintenance	EPCO : E39(5) - Backfilling a trench following maintenance (5 Year)	11/11/2003	11/11/2008
40.1 - Tight fitting sleeve	EPCO : E40.1(5) - Tight fitting sleeve (5 Year)	4/18/2006	4/18/2011
40.2 - Oversleeve	EPCO : E40.2(5) - Oversleeve (5 Year)	4/18/2006	4/18/2011
40.3 - Clock spring	EPCO : E40.3(5) - Clock spring (5 Year)	10/24/2006	10/24/2011
42.5 - Repair of a previously repaired area	EPCO : E42.5(5) - Repair of a previously repaired	4/29/2006	4/29/2011

	area (5 Year)		
42.6 - Replacement of a weld or cylinder of pipe	EPCO : E42.6(5) - Replacement of a weld or cylinder of pipe (5 Year)	4/29/2006	4/29/2011
43.1 - Start-up of a pipeline	EPCO : E43.1(5) - Start-up of a pipeline (5 Year)	12/2/2003	12/2/2008
43.2 - Shut-down of a pipeline	EPCO : E43.2(5) - Shut-down of a pipeline (5 Year)	12/2/2003	12/2/2008
43.3 - Monitor pressures, flows, communications and line integrity and maintain them within allowable limits	EPCO : E43.3(5) - Monitor pressures, flows, communications and line integrity and maintain them within allowable limits (5 Year)	12/2/2003	12/2/2008
43.4 - Manually or remotely open or close valves or other equipment	EPCO : E43.4(5) - Manually or remotely open or close valves or other equipment (5 Year)	12/2/2003	12/2/2008
114.1 - Visual Inspection Of The Surface (Right of Way)	EPCO : E114.1(5) - Visual Inspection Of The Surface (Right of Way) (5 Year)	11/11/2003	11/11/2008
117.1 - Purge Gas From Pipeline	EPCO : E117.1(5) - Purge Gas From Pipeline (5 Year)	4/28/2006	4/28/2011
117.2 - Purge Air From Pipeline	EPCO : E117.2(5) - Purge Air From Pipeline (5 Year)	4/28/2006	4/28/2011
143.1 - (Gas Field) Start-Up Of A Pipeline	EPCO : E143.1(5) - (Gas Field) Start-Up Of A Pipeline (5 Year)	12/2/2003	12/2/2008
143.2 - (Gas Field) Shutdown Of A Pipeline	EPCO : E143.2(5) - (Gas Field) Shutdown Of A Pipeline (5 Year)	12/2/2003	12/2/2008
143.3 - (Gas Field) Monitor Pressures, Flows, Communications, And Line Integrity, And Maintain Them Within Allowable Limits	EPCO : E143.3(5) - (Gas Field) Monitor Pressures, Flows, Communications, And Line Integrity, And Maintain Them Within Allowable Limits (5 Year)	12/2/2003	12/2/2008
143.4 - (Gas Field) Manuall Or Remotely Open Or Close Valves Or Other Equipment	EPCO : E143.4(5) - (Gas Field) Manuall Or Remotely Open Or Close Valves Or Other Equipment (5 Year)	12/2/2003	12/2/2008

Automatically Generated OQ Report

This is an archived OQ report. The data is applicable as of 3/30/2008 11:44:04 PM Central Time (US)

Send this report to a user through communication manager.

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ISNETWORLD OQ REPORT

Form ID: 101947-AO-8EEB4264

Run Date: 3/30/2008 10:49:52 PM
Contractor: EPCO Holdings, Inc.
Report For: EPCO Holdings, Inc.
Job Site/Project: EPCO General - All Areas - All Areas (JS-6408)

V is for Verified Data.
NV is for Non-Verified Data.

Cantu, Roman J - 01333907

OQ Task	Qualification Method	Evaluation Date	Expiration Date
14.1 - Locate line	EPCO : E14.1(5) - Locate line (5 Year)	8/26/2003	8/26/2008
14.2 - Install marker	EPCO : E14.2(5) - Install marker (5 Year)	8/26/2003	8/26/2008
14.3 - Inspect and maintain marker	EPCO : E14.3(5) - Inspect and maintain marker (5 Year)	8/26/2003	8/26/2008
14.4 - Inspect and maintain aerial line markers	EPCO : E14.4(5) - Inspect and maintain aerial line markers (5 Year)	8/26/2003	8/26/2008
15.1 - Visual inspection of the surface	EPCO : E15.1(5) - Visual inspection of the surface (5 Year)	8/26/2003	8/26/2008
15.2 - Reporting protocols	EPCO : E15.2(5) - Reporting protocols (5 Year)	8/26/2003	8/26/2008
16.1 - Use of probing equipment	EPCO : E16.1(5) - Use of probing equipment (5 Year)	12/16/2003	12/16/2008
16.2 - Use of sonar equipment	EPCO : E16.2(5) - Use of sonar equipment (5 Year)	12/16/2003	12/16/2008
16.3 - Reporting protocols (Line Locating)	EPCO : E16.3(5) - Reporting protocols (5 Year)	12/16/2003	12/16/2008

17.1 - Locate Line (Temporary Markers)	EPCO : E17.1(5) - Locate line (5 Year)	12/16/2003	12/16/2008
17.2 - Install marker (Temporary Markers)	EPCO : E17.2(5) - Install marker (5 Year)	12/16/2003	12/16/2008
17.3 - Inspect and maintain marker (Temporary Markers)	EPCO : E17.3(5) - Inspect and maintain marker (5 Year)	12/16/2003	12/16/2008
43.4 - Manually or remotely open or close valves or other equipment	EPCO : E43.4(5) - Manually or remotely open or close valves or other equipment (5 Year)	8/26/2003	8/26/2008
114.1 - Visual Inspection Of The Surface (Right of Way)	EPCO : E114.1(5) - Visual Inspection Of The Surface (Right of Way) (5 Year)	8/26/2003	8/26/2008
143.4 - (Gas Field) Manuall Or Remotely Open Or Close Valves Or Other Equipment	EPCO : E143.4(5) - (Gas Field) Manuall Or Remotely Open Or Close Valves Or Other Equipment (5 Year)	8/26/2003	8/26/2008

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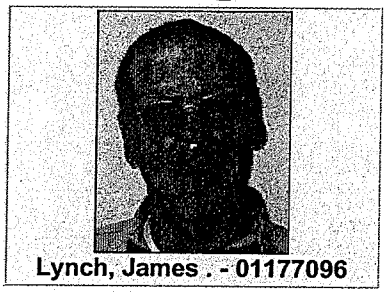
ISNETWORLD OQ REPORT
Form ID: 101558-AO-62AE14D6

Run Date:	**6/3/2007 1:59:10 AM**
Contractor:	**Enerpipe, LTD**
Report For:	**EPCO Holdings, Inc.**
Job Site/Project:	**Pipeline Rehabilitation - Rehab Projects (JS-1378)**

V is for Verified Data.
NV is for Non-Verified Data.



Lynch, James . - 01177096

OQ Task	Qualification Method	Evaluation Date	Expirati Date
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Written Assessments: AOCF ()	11/29/2005	11/29/200
	- AND -		
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Performance Verifications: PV383 (PV383)	4/2/2007	4/2/2010
	- AND -		
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Written Assessments: PMT (38)	11/29/2005	11/29/200
40.1 - Tight fitting sleeve	NCCER Written Assessments: AOCF ()	11/29/2005	11/29/200
	- AND -		
40.1 - Tight fitting sleeve	NCCER Performance Verifications: PV401 (PV401)	4/2/2007	7/2/2090
	- AND -		
40.1 - Tight fitting sleeve	NCCER Written Assessments: PMT (40)	11/29/2005	11/29/200
40.2 - Oversleeve	NCCER Written Assessments: AOCF ()	11/29/2005	11/29/200
	- AND -		
40.2 - Oversleeve	NCCER Performance Verifications: PV402 (PV402)	4/2/2007	7/2/2090
	- AND -		

40.2 - Oversleeve	NCCER Written Assessments: PMT (40)	11/29/2005	11/29/200

Automatically Generated OQ Report

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ISNETWORLD OQ REPORT
Form ID: 101558-AO-A889A139

Run Date: 8/18/2007 1:09:18 AM
Contractor: Enerpipe, LTD
Report For: EPCO Holdings, Inc.
Job Site/Project: Pipeline Rehabilitation - Rehab Projects (JS-1378)

V is for Verified Data.
NV is for Non-Verified Data.

Keel, Bill . () - 00789568

OQ Task	Qualification Method	Evaluation Date	Expirati Date
7.2 - Prepare surface for atmospheric coating using hand and power tools	NCCER Written Assessments: PMT (7.2) (7.3) (7.4)	9/15/2005	9/15/200
	- AND -		
7.2 - Prepare surface for atmospheric coating using hand and power tools	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
7.2 - Prepare surface for atmospheric coating using hand and power tools	NCCER Performance Verifications: PV072 (PV072)	3/23/2007	6/23/209
7.4 - Prepare surface for atmospheric coating by abrasive blasting	NCCER Written Assessments: PMT (7.2) (7.3) (7.4)	9/15/2005	9/15/200
	- AND -		
7.4 - Prepare surface for atmospheric coating by abrasive blasting	NCCER Performance Verifications: PV074 (PV074)	3/23/2007	6/23/209
	- AND -		
7.4 - Prepare surface for atmospheric coating by abrasive blasting	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
9.5 - Repair shorted casings	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		

9.5 - Repair shorted casings	NCCER Written Assessments: PMT (9.5)	9/15/2005	9/15/200
	- AND -		
9.5 - Repair shorted casings	NCCER Performance Verifications: PV095 (PV095)	3/23/2007	6/23/209
14.1 - Locate line	NCCER Written Assessments: PMT (14)	9/15/2005	9/15/200
	- AND -		
14.1 - Locate line	NCCER Performance Verifications: PV141 (PV141)	3/23/2007	3/23/201
	- AND -		
14.1 - Locate line	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
14.2 - Install marker	NCCER Written Assessments: PMT (14)	9/15/2005	9/15/200
	- AND -		
14.2 - Install marker	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
14.2 - Install marker	NCCER Performance Verifications: PV142 (PV142)	3/23/2007	6/23/209
14.3 - Inspect and maintain marker	NCCER Written Assessments: PMT (14)	9/15/2005	9/15/200
	- AND -		
14.3 - Inspect and maintain marker	NCCER Performance Verifications: PV143 (PV143)	3/23/2007	6/23/209
	- AND -		
14.3 - Inspect and maintain marker	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
14.4 - Inspect and maintain aerial line markers	NCCER Written Assessments: PMT (14)	9/15/2005	9/15/200
	- AND -		
14.4 - Inspect and maintain aerial line markers	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
14.4 - Inspect and maintain aerial line markers	NCCER Performance Verifications: PV144 (PV144)	3/23/2007	6/23/209
17.1 - Locate line	NCCER Written Assessments: PMT (17)	9/15/2005	9/15/200
	- AND -		
17.1 - Locate line	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
17.1 - Locate line	NCCER Performance Verifications: PV171 (PV171)	3/23/2007	3/23/201
17.2 - Install marker	NCCER Written Assessments: PMT (17)	9/15/2005	9/15/200
	- AND -		
17.2 - Install marker	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
17.2 - Install marker	NCCER Performance Verifications: PV172 (PV172)	3/23/2007	6/23/209
17.3 - Inspect and maintain marker	NCCER Written Assessments: PMT (17)	9/15/2005	9/15/200
	- AND -		
17.3 - Inspect and maintain marker	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
17.3 - Inspect and maintain marker	NCCER Performance Verifications: PV173 (PV173)	3/23/2007	6/23/209
18.1 - Utilize leak survey techniques	NCCER Written Assessments: PMT (18)	9/15/2005	9/15/200
	- AND -		
18.1 - Utilize leak survey techniques	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
18.1 - Utilize leak survey techniques	NCCER Performance Verifications: PV181 (PV181)	3/23/2007	6/23/209
18.2 - Monitor for pressure loss	NCCER Written Assessments: PMT (18)	9/15/2005	9/15/200
	- AND -		
18.2 - Monitor for pressure loss	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		

18.2 - Monitor for pressure loss	NCCER Performance Verifications: PV182 (PV182)	3/23/2007	6/23/209
33.1 - Determine allowable line pressure in section to be moved	NCCER Written Assessments: PMT (33)	9/15/2005	9/15/200
	- AND -		
33.1 - Determine allowable line pressure in section to be moved	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
33.1 - Determine allowable line pressure in section to be moved	NCCER Performance Verifications: PV331 (PV331)	3/23/2007	6/23/209
33.2 - Preparation for movement activities	NCCER Written Assessments: PMT (33)	9/15/2005	9/15/200
	- AND -		
33.2 - Preparation for movement activities	NCCER Performance Verifications: PV332 (PV332)	3/23/2007	6/23/209
	- AND -		
33.2 - Preparation for movement activities	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
33.3 - Moving in-service pipeline	NCCER Written Assessments: PMT (33)	9/15/2005	9/15/200
	- AND -		
33.3 - Moving in-service pipeline	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
33.3 - Moving in-service pipeline	NCCER Performance Verifications: PV333 (PV333)	3/23/2007	6/23/209
34 - Inspect existing pipe following movement	NCCER Written Assessments: PMT (34)	9/15/2005	9/15/200
	- AND -		
34 - Inspect existing pipe following movement	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
34 - Inspect existing pipe following movement	NCCER Performance Verifications: PV340 (PV340)	3/23/2007	6/23/209
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	NCCER Written Assessments: PMT (35)	9/15/2005	9/15/200
	- AND -		
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	NCCER Performance Verifications: PV350 (PV350)	3/23/2007	6/23/209
36.1 - Safe disconnect of pipeline facilities	NCCER Written Assessments: PMT (36)	9/15/2005	9/15/200
	- AND -		
36.1 - Safe disconnect of pipeline facilities	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
36.1 - Safe disconnect of pipeline facilities	NCCER Performance Verifications: PV361 (PV361)	3/23/2007	6/23/209
36.2 - Purging of pipeline facilities	NCCER Written Assessments: PMT (36)	9/15/2005	9/15/200
	- AND -		
36.2 - Purging of pipeline facilities	NCCER Performance Verifications: PV362 (PV362)	3/23/2007	6/23/209
	- AND -		
36.2 - Purging of pipeline facilities	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
36.3 - Sealing a disconnected portion of pipeline	NCCER Written Assessments: PMT (36)	9/15/2005	9/15/200
	- AND -		
36.3 - Sealing a disconnected portion of pipeline	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
36.3 - Sealing a disconnected portion of pipeline	NCCER Performance Verifications: PV363 (PV363)	3/23/2007	6/23/209

37 - Installation or repair of support structures on existing above ground components	NCCER Written Assessments: PMT (37)	9/15/2005	9/15/200
	- AND -		
37 - Installation or repair of support structures on existing above ground components	NCCER Performance Verifications: PV370 (PV370)	3/23/2007	6/23/209
	- AND -		
37 - Installation or repair of support structures on existing above ground components	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
38.1 - Visually inspect pipe and pipe components	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
38.1 - Visually inspect pipe and pipe components	NCCER Written Assessments: PMT (38)	9/15/2005	9/15/200
	- AND -		
38.1 - Visually inspect pipe and pipe components	NCCER Performance Verifications: PV381 (PV381)	3/23/2007	6/23/209
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Written Assessments: PMT (38)	9/15/2005	9/15/200
	- AND -		
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Performance Verifications: PV383 (PV383)	3/23/2007	3/23/201
39 - Backfilling a trench following maintenance	NCCER Written Assessments: PMT (39)	9/15/2005	9/15/200
	- AND -		
39 - Backfilling a trench following maintenance	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
39 - Backfilling a trench following maintenance	NCCER Performance Verifications: PV390 (PV390)	3/23/2007	6/23/209
40.1 - Tight fitting sleeve	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
40.1 - Tight fitting sleeve	NCCER Performance Verifications: PV401 (PV401)	3/23/2007	6/23/209
	- AND -		
40.1 - Tight fitting sleeve	NCCER Written Assessments: PMT (40)	9/15/2005	9/15/200
40.2 - Oversleeve	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200
	- AND -		
40.2 - Oversleeve	NCCER Written Assessments: PMT (40)	9/15/2005	9/15/200
	- AND -		
40.2 - Oversleeve	NCCER Performance Verifications: PV402 (PV402)	3/23/2007	6/23/209
41 - Conduct pressure test	NCCER Written Assessments: PMT (41)	9/15/2005	9/15/200
	- AND -		
41 - Conduct pressure test	NCCER Performance Verifications: PV410 (PV410)	3/23/2007	6/23/209
	- AND -		
41 - Conduct pressure test	NCCER Written Assessments: AOCF ()	9/15/2005	9/15/200

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ISNETWORLD OQ REPORT
Form ID: 101558-AO-03D78E77

Run Date: 8/18/2007 1:07:22 AM
Contractor: Enerpipe, LTD
Report For: EPCO Holdings, Inc.
Job Site/Project: Pipeline Rehabilitation - Rehab Projects (JS-1378)

V is for Verified Data.
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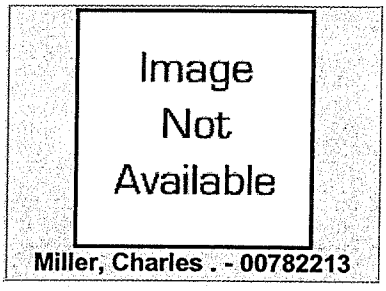

Miller, Charles . - 00782213

OQ Task	Qualification Method	Evaluation Date	Expirati Date
7.2 - Prepare surface for atmospheric coating using hand and power tools	NCCER Written Assessments: PMT (7.2) (7.3) (7.4)	9/27/2005	9/27/200
	- AND -		
7.2 - Prepare surface for atmospheric coating using hand and power tools	NCCER Performance Verifications: PV072 (PV072)	3/23/2007	6/23/209
	- AND -		
7.2 - Prepare surface for atmospheric coating using hand and power tools	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
7.4 - Prepare surface for atmospheric coating by abrasive blasting	NCCER Written Assessments: PMT (7.2) (7.3) (7.4)	9/27/2005	9/27/200
	- AND -		
7.4 - Prepare surface for atmospheric coating by abrasive blasting	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
7.4 - Prepare surface for atmospheric coating by abrasive blasting	NCCER Performance Verifications: PV074 (PV074)	3/23/2007	6/23/209
9.5 - Repair shorted casings	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		

9.5 - Repair shorted casings	NCCER Performance Verifications: PV095 (PV095)	3/23/2007	6/23/209
	- AND -		
9.5 - Repair shorted casings	NCCER Written Assessments: PMT (9.5)	9/27/2005	9/27/200
13.1 - Prepare surface for coating using hand and power tools	NCCER Written Assessments: PMT (13)	9/27/2005	9/27/200
	- AND -		
13.1 - Prepare surface for coating using hand and power tools	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
13.1 - Prepare surface for coating using hand and power tools	NCCER Performance Verifications: PV131 (PV131)	3/23/2007	6/23/209
13.3 - Prepare surface for coating by abrasive blasting	NCCER Written Assessments: PMT (13)	9/27/2005	9/27/200
	- AND -		
13.3 - Prepare surface for coating by abrasive blasting	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
13.3 - Prepare surface for coating by abrasive blasting	NCCER Performance Verifications: PV133 (PV133)	3/23/2007	6/23/209
13.4 - Apply coating using hand application methods	NCCER Written Assessments: PMT (13)	9/27/2005	9/27/200
	- AND -		
13.4 - Apply coating using hand application methods	NCCER Performance Verifications: PV134 (PV134)	3/23/2007	6/23/209
	- AND -		
13.4 - Apply coating using hand application methods	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
13.5 - Apply coating using spray applications	NCCER Written Assessments: PMT (13)	9/27/2005	9/27/200
	- AND -		
13.5 - Apply coating using spray applications	NCCER Performance Verifications: PV135 (PV135)	3/23/2007	6/23/209
	- AND -		
13.5 - Apply coating using spray applications	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
14.1 - Locate line	NCCER Written Assessments: PMT (14)	9/27/2005	9/27/200
	- AND -		
14.1 - Locate line	NCCER Performance Verifications: PV141 (PV141)	3/23/2007	3/23/201
	- AND -		
14.1 - Locate line	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
14.2 - Install marker	NCCER Written Assessments: PMT (14)	9/27/2005	9/27/200
	- AND -		
14.2 - Install marker	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
14.2 - Install marker	NCCER Performance Verifications: PV142 (PV142)	3/23/2007	6/23/209
14.3 - Inspect and maintain marker	NCCER Written Assessments: PMT (14)	9/27/2005	9/27/200
	- AND -		
14.3 - Inspect and maintain marker	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
14.3 - Inspect and maintain marker	NCCER Performance Verifications: PV143 (PV143)	3/23/2007	6/23/209
14.4 - Inspect and maintain aerial line markers	NCCER Written Assessments: PMT (14)	9/27/2005	9/27/200
	- AND -		
14.4 - Inspect and maintain aerial line markers	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		

14.4 - Inspect and maintain aerial line markers	NCCER Performance Verifications: PV144 (PV144)	3/23/2007	6/23/209
16.1 - Use of probing equipment	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
16.1 - Use of probing equipment	NCCER Performance Verifications: PV161 (PV161)	9/12/2006	9/12/200
	- AND -		
16.1 - Use of probing equipment	NCCER Written Assessments: PMT (16)	9/27/2005	9/27/200
17.1 - Locate line	NCCER Written Assessments: PMT (17)	9/27/2005	9/27/200
	- AND -		
17.1 - Locate line	NCCER Performance Verifications: PV171 (PV171)	3/23/2007	3/23/201
	- AND -		
17.1 - Locate line	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
17.2 - Install marker	NCCER Written Assessments: PMT (17)	9/27/2005	9/27/200
	- AND -		
17.2 - Install marker	NCCER Performance Verifications: PV172 (PV172)	3/23/2007	6/23/209
	- AND -		
17.2 - Install marker	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
17.3 - Inspect and maintain marker	NCCER Written Assessments: PMT (17)	9/27/2005	9/27/200
	- AND -		
17.3 - Inspect and maintain marker	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
17.3 - Inspect and maintain marker	NCCER Performance Verifications: PV173 (PV173)	3/23/2007	6/23/209
18.1 - Utilize leak survey techniques	NCCER Written Assessments: PMT (18)	9/27/2005	9/27/200
	- AND -		
18.1 - Utilize leak survey techniques	NCCER Performance Verifications: PV181 (PV181)	3/23/2007	6/23/209
	- AND -		
18.1 - Utilize leak survey techniques	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
18.2 - Monitor for pressure loss	NCCER Written Assessments: PMT (18)	9/27/2005	9/27/200
	- AND -		
18.2 - Monitor for pressure loss	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
18.2 - Monitor for pressure loss	NCCER Performance Verifications: PV182 (PV182)	3/23/2007	6/23/209
20.2 - External integrity inspection	NCCER Written Assessments: PMT (20)	9/27/2005	9/27/200
	- AND -		
20.2 - External integrity inspection	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
20.2 - External integrity inspection	NCCER Performance Verifications: PV202 (PV202)	3/23/2007	6/23/209
20.3 - Function test valve	NCCER Written Assessments: PMT (20)	9/27/2005	9/27/200
	- AND -		
20.3 - Function test valve	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
20.3 - Function test valve	NCCER Performance Verifications: PV203 (PV203)	3/23/2007	6/23/209
20.4 - Leak test valve	NCCER Written Assessments: PMT (20)	9/27/2005	9/27/200
	- AND -		
20.4 - Leak test valve	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
20.4 - Leak test valve	NCCER Performance Verifications: PV204 (PV204)	3/23/2007	3/23/201

33.1 - Determine allowable line pressure in section to be moved	NCCER Written Assessments: PMT (33)	9/27/2005	9/27/200
	- AND -		
33.1 - Determine allowable line pressure in section to be moved	NCCER Performance Verifications: PV331 (PV331)	3/23/2007	6/23/209
	- AND -		
33.1 - Determine allowable line pressure in section to be moved	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
33.2 - Preparation for movement activities	NCCER Written Assessments: PMT (33)	9/27/2005	9/27/200
	- AND -		
33.2 - Preparation for movement activities	NCCER Performance Verifications: PV332 (PV332)	3/23/2007	6/23/209
	- AND -		
33.2 - Preparation for movement activities	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
33.3 - Moving in-service pipeline	NCCER Written Assessments: PMT (33)	9/27/2005	9/27/200
	- AND -		
33.3 - Moving in-service pipeline	NCCER Performance Verifications: PV333 (PV333)	3/23/2007	6/23/209
	- AND -		
33.3 - Moving in-service pipeline	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
34 - Inspect existing pipe following movement	NCCER Written Assessments: PMT (34)	9/27/2005	9/27/200
	- AND -		
34 - Inspect existing pipe following movement	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
34 - Inspect existing pipe following movement	NCCER Performance Verifications: PV340 (PV340)	3/23/2007	6/23/209
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	NCCER Written Assessments: PMT (35)	9/27/2005	9/27/200
	- AND -		
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
35 - Measure clearance from existing pipe to underground structures installed by excavation, boring and directional drilling	NCCER Performance Verifications: PV350 (PV350)	3/23/2007	6/23/209
36.1 - Safe disconnect of pipeline facilities	NCCER Written Assessments: PMT (36)	9/27/2005	9/27/200
	- AND -		
36.1 - Safe disconnect of pipeline facilities	NCCER Performance Verifications: PV361 (PV361)	3/23/2007	6/23/209
	- AND -		
36.1 - Safe disconnect of pipeline facilities	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
36.2 - Purging of pipeline facilities	NCCER Written Assessments: PMT (36)	9/27/2005	9/27/200
	- AND -		
36.2 - Purging of pipeline facilities	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
36.2 - Purging of pipeline facilities	NCCER Performance Verifications: PV362 (PV362)	3/23/2007	6/23/209
36.3 - Sealing a disconnected portion of pipeline	NCCER Written Assessments: PMT (36)	9/27/2005	9/27/200
	- AND -		
36.3 - Sealing a disconnected portion of pipeline	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
36.3 - Sealing a disconnected portion of pipeline	NCCER Performance Verifications: PV363 (PV363)	3/23/2007	6/23/209
37 - Installation or repair of support structures	NCCER Written Assessments: PMT (37)	9/27/2005	9/27/200

on existing above ground components			
	- AND -		
37 - Installation or repair of support structures on existing above ground components	NCCER Performance Verifications: PV370 (PV370)	3/23/2007	6/23/209
	- AND -		
37 - Installation or repair of support structures on existing above ground components	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
38.1 - Visually inspect pipe and pipe components	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
38.1 - Visually inspect pipe and pipe components	NCCER Performance Verifications: PV381 (PV381)	3/23/2007	6/23/209
	- AND -		
38.1 - Visually inspect pipe and pipe components	NCCER Written Assessments: PMT (38)	9/27/2005	9/27/200
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Written Assessments: PMT (38)	9/27/2005	9/27/200
	- AND -		
38.3 - Visually inspect that welds meet DOT requirements (API 1104)	NCCER Performance Verifications: PV383 (PV383)	3/23/2007	3/23/201
39 - Backfilling a trench following maintenance	NCCER Written Assessments: PMT (39)	9/27/2005	9/27/200
	- AND -		
39 - Backfilling a trench following maintenance	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
39 - Backfilling a trench following maintenance	NCCER Performance Verifications: PV390 (PV390)	3/23/2007	6/23/209
40.1 - Tight fitting sleeve	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
40.1 - Tight fitting sleeve	NCCER Written Assessments: PMT (40)	9/27/2005	9/27/200
	- AND -		
40.1 - Tight fitting sleeve	NCCER Performance Verifications: PV401 (PV401)	3/23/2007	6/23/209
40.2 - Oversleeve	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
40.2 - Oversleeve	NCCER Written Assessments: PMT (40)	9/27/2005	9/27/200
	- AND -		
40.2 - Oversleeve	NCCER Performance Verifications: PV402 (PV402)	3/23/2007	6/23/209
41 - Conduct pressure test	NCCER Written Assessments: PMT (41)	9/27/2005	9/27/200
	- AND -		
41 - Conduct pressure test	NCCER Written Assessments: AOCF ()	9/27/2005	9/27/200
	- AND -		
41 - Conduct pressure test	NCCER Performance Verifications: PV410 (PV410)	3/23/2007	6/23/209

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Section 3

5.1 PIPELINE REPAIRS AND PIPE MOVEMENT

> ***§195.422 Pipeline repairs.***
>
> *(a) Each operator shall, in repairing its pipeline systems, insure that the repairs are made in a safe manner and are made so as to prevent damage to persons or property. (b) No operator may use any pipe, valve, or fitting, for replacement in repairing pipeline facilities, unless it is designed and constructed as required by this part.*

5.1.1 Procedures

All repairs to the pipeline system will be made in a manner that is safe and will prevent injury to persons or damage to property.

Preparation of equipment for maintenance, permits, lockout/tagout and isolation list will be performed as prescribed in the Company Safety Manual. All components must meet the standard for new construction as set forth in the DOT regulations and applicable Engineering Standards.

Response planning for repair shall include the necessary equipment, trained personnel aware of and familiar with the hazards to public and personnel safety, and appropriate repair materials.

All pipe that is to be used for repair must be marked showing the pipe grade, wall thickness, seam type, test pressure and the manufacturer or it must be identifiable with inventory records that show that information. All installed pipe must be coated and cathodically protected in accordance with the Corrosion Prevention Program.

No valve, pipe or fitting shall be used for repair or replacement in the pipeline facilities, unless it is designed, constructed and tested as required in the Company Engineering Design Standards.

The pipe used as replacement pipe in repairs made to a pipeline system must have been hydrostatically tested with water in accordance with the Company Hydrostatic Test Requirements. Valves and fittings used in repairing pipeline facilities shall comply with requirements set forth in the Company Engineering Design Standards.

All repairs to the pipeline system that involve replacement of any line pipe, valves, flanges, fittings, or other pipeline components will be constructed to allow passage of internal inspection devices (pigs) for each "Line Section". A "Line Section" is defined as a continuous run of pipe between:

A. Adjacent pressure pump stations;

B. A pressure pump station and terminal or breakout tanks;

C. A pressure pump station and a block valve; or

D. Adjacent block valves.

§195.120 Passage of internal inspection devices.

(a) Except as provided in paragraphs (b) and (c) of this section, each new pipeline and each line section of a pipeline where the line pipe, valve, fitting or other line component is replaced; must be designed and constructed to accommodate the passage of instrumented internal inspection devices. (b) This section does not apply to: (1) Manifolds; (2) Station piping such as at pump stations, meter stations, or pressure reducing stations; (3) Piping associated with tank farms and other storage facilities; (4) Cross-overs ;(5) Sizes of pipe for which an instrumented internal inspection device is not commercially available; (6) Offshore pipelines, other than main lines 10 inches (254 millimeters) or greater in nominal diameter, that transport liquids to onshore facilities; and, (7) Other piping that the Administrator under §190.9 of this chapter, finds in a particular case would be impracticable to design and construct to accommodate the passage of instrumented internal inspection devices. (c) An operator encountering emergencies, construction time constraints and other unforeseen construction problems need not construct a new or replacement segment of a pipeline to meet paragraph (a) of this section, if the operator determines and documents why an impracticability prohibits compliance with paragraph (a) of this section. Within 30 days after discovering the emergency or construction problem the operator must petition, under §190.9 of this chapter, for approval that design and construction to accommodate passage of instrumented internal inspection devices would be impracticable. If the petition is denied, within 1 year after the date of the notice of the denial, the operator must modify that segment to allow passage of instrumented internal inspection devices.

Temporary repairs made necessary to protect the public and for operating purposes, shall be made in a safe manner. Such temporary repairs shall be made permanent or replaced in a permanent manner as soon as practical. If it is determined that an emergency situation exist or deadlines for construction are approaching, then the repaired line section need not be constructed to allow for passage of an internal inspection device. If this occurs, a Company Representative will petition the Federal DOT for a finding of approval that construction to allow passage of an internal inspection device was impracticable. If the approval is denied, then modifications will be made to the repaired line section during the first year after the denial of all passage of an internal inspection device.

All welders performing repair work shall be qualified in accordance with the current incorporated reference under Part 195, API Standard 1104, Welding Pipelines and Related Facilities (current accepted edition). Any repairs of a defect in a previously repaired area will be done in accordance with a previously qualified written welding procedure under an earlier edition of API 1104. A record of each welder's qualifying test shall be maintained for the life of the facility. In addition, they shall be familiar with safety precautions and other problems associated with welding on pipe that contains liquid petroleum products. Operations will make every effort to gas free the pipeline prior to any welding. The Engineering Department shall approve any exception to this policy.

Welding on pipelines or vessels containing petroleum products will be performed at reduced pressure and a "Hot Tap" procedure approved by the Engineering Department will be followed. Reference ANSI B31.4, Paragraph 451.6.2 (c).

These functions will be coordinated through the Company Pipeline Integrity Risk Assessment Group.

Arc burns, notches, laminations, gouges, grooves and dents on new construction and replacement of existing systems shall be repaired in accordance with ANSI B31.4, Paragraph 434.8.7 and ANSI B31.4, Paragraph 434.5. In all cases, such repairs must confirm to Title 49 CFR, Part 195.226.

In the welding of repair sleeves and fittings, the following will be considered:

1. The use of low hydrogen welding rods.
2. The cooling rate of the weld.
3. The metallurgy of the materials being welded.
4. The proper support of the pipe in the ditch.

Repairs to existing lines shall be made in accordance with ANSI B31.4, Paragraph 434.5 (new construction) or Paragraph 451.6.

- Installation of pre-tested pipe requires nondestructive testing of 100% of the welds.
- Pipeline sections that have been relocated will be hydrostatically tested in accordance with the Company Hydrostatic Test Requirement, except for pipeline sections as addressed under "Pipeline Movement".
- For each repair or relocation of the pipeline system, a record will be made and it will be retained for the life of the system. This record shall include the following:
    - Date, location, and description of each repair or relocation of the pipeline
    - The nominal size, wall thickness, grade, and manufacturer of any pipe used for repairs
    - A description of any hydrostatic test, weld inspection and any other tests made

If disposal of the product in the pipeline is unavoidable, conditions should be analyzed to determine if the product should be:

Released to the atmosphere (where product loss is minimal and hazard is not considered to be significant and flaring is not possible).

Flared to minimize atmospheric contamination.

In any event, one or more combustible gas detectors should be available at the job site to monitor the handling of product.

If product is to be flared or vented, the need for an Air Quality Control permit and/or report should be investigated. Care should be taken to insure that the flare is located so as to minimize the danger of fire at the flare site. Permits should be made in advance of the actual flaring of product.

All equipment needed of the flaring of product, such as a pump or air compressor, hoses, inert gas for displacement of the product, etc. should be available at the job site before the procedure is started. The flare stack should be located at a safe distance (minimum of 50 feet from the pipeline) and in an area where the potential for fire is minimal. Grass and other vegetation at the flare site should be cut and removed if it is high enough to present a fire hazard. Once the transfer of product from the pipeline to the flare has been started, and the flare ignited, checks of the area with a combustible gas detector should be made to

insure that there are no leaks that may cause accumulation of hydrocarbons that could be unexpectedly ignited. If a positive reading (indicating the presence of combustible gases) is made, product to the flare should be halted until the cause can be determined and corrected. An expendable flare valve off the pipeline should control flow to the flare.

Welding procedures shall be qualified and all welding and inspection shall be performed in accordance with API Standard 1104.

> ***§195.424 Pipe movement.***
>
> *(a) No operator may move any line pipe, unless the pressure in the line section involved is reduced to not more than 50 percent of the maximum operating pressure. (b) No operator may move any pipeline containing highly volatile liquids where materials in the line section involved are joined by welding unless– (1) Movement when the pipeline does not contain highly volatile liquids is impractical; (2) The procedures of the operator under §195.402 contain precautions to protect the public against the hazard in moving pipelines containing highly volatile liquids, including the use of warnings, where necessary, to evacuate the area close to the pipeline; and (3) The pressure in that line section is reduced to the lower of the following: (i) Fifty percent or less of the maximum operating pressure; or (ii) The lowest practical level that will maintain the highly volatile liquid in a liquid state with continuous flow, but not less than 50 p.s.i. (345 kPa) gage above the vapor pressure of the commodity.*

Movement of non-HVL pipelines is allowed only if the line pressure for the section to be moved is reduced to not more than 50 percent of the MOP.

Movement of pipelines containing HVL is allowed if emptying and purging the pipeline is impractical. Movement is allowed only if the pressure in the line is reduced to the lower of the following: 50 percent of the MOP; or the lowest level that will maintain the HVL in a liquid state with continuous flow, but not less than 50 psig above the vapor pressure of the commodity at flowing conditions. For pipelines in highly volatile liquids service the provisions of Title 49 CFR, Part 195.424 (b) shall be followed. The line section to be moved shall be isolated at the nearest valve sites to minimize the flow of product in case of an accident. In all cases, the public shall be protected as appropriate by warning signs and, if need be, by evacuation of the immediate area.

The Engineering Department will conduct an analysis before moving the pipeline to determine the extent to which the pipe may be safely moved; specific procedures required for safe movement; and actions to be taken for protection to the public. Engineering will determine the toughness of the pipeline if possible, or if not known, assume the material in the pipeline is brittle. The Engineering Department will determine the distance moved per length of exposed pipe. This will depend on how the pipe was originally installed in the ditch (i.e., with some extra footage in the ditch to keep the line in compression), and the use of adjacent side-bends or over-bends to gain the extra length required to move the pipeline as desired.

5.1.2 Responsibilities

Area Supervision shall consider each situation requiring repairs to the pipeline and prescribe the general extent and methods of repairs to be made. This

decision will be based on the information and circumstances as reported by the field personnel in conjunction with existing operating conditions.

5.1.3 Records

Report form to be utilized where applicable is:

Maintenance Report - Records shall be retained in the Pipeline Integrity Department for the life of the pipeline.

- Other appropriate forms or supplemental records initiated in the field where applicable.

5.2 PIPELINE-TAPS AND BRANCH CONNECTIONS

5.2.1 Procedures

Hot tapping is the method for welding a branch connection onto a pipeline that is under pressure and in service for the purpose of cutting an opening in the line. While hot tapping is recognized as an important tool in industry, there are certain inherent risks involved. For this reason, hot tapping is not a routine procedure and should be limited to those situations where there is a necessity for the hot tap.

Each hot tap will be treated as a special case and a Hot Tap Procedure and a Hot Tap "assessment letter" for the job will be issued. Engineering is responsible for the assessment of all hot taps to determine the technical feasibility of performing a hot tap in accordance with the Company Engineering specifications. This includes mechanical inspections, review of process conditions, calculations and an overview of all requirements and considerations.

A crew qualified to make hot taps shall perform each tap made on a pipeline under pressure. Each tap or welded branch connection shall be designed and reinforced so that the strength of the pipeline system is not reduced, taking into account the stress in the remaining pipe wall due to the opening in the pipe or header, the shear stress produced by the pressure acting on the area of the branch opening, and any external loading due to thermal movement, weight, and vibration. Each mechanical fitting used to make a hot tap shall be designed for at least the design pressure of the pipeline. Reinforcement of branch connections shall be in accordance with ANSI B31.4 and API 2201.

5.2.2 Responsibilities

Area Supervision shall be responsible for seeing that the prescribed procedures are complied with and the required records are prepared and filed.

5.2.3 Records

A record shall be made of each hot tap or branch connection installed on a pipeline. Records shall be retained in the Pipeline Integrity Department and/or Engineering Department for the life of the pipeline.

Section 4

The American Society of Mechanical Engineers

AN AMERICAN NATIONAL STANDARD

PIPELINE TRANSPORTATION SYSTEMS FOR LIQUID HYDROCARBONS AND OTHER LIQUIDS

ASME CODE FOR PRESSURE PIPING, B31

ASME B31.4-2002
(Revision of ASME B31.4-1998)

CHAPTER V
CONSTRUCTION, WELDING, AND ASSEMBLY

434 CONSTRUCTION

434.1 General

New construction and replacements of existing systems shall be in accordance with the requirements of this Chapter. Where written specifications are required, they shall be in sufficient detail to insure that the requirements of this Code shall be met. Such specifications shall include specific details on handling of pipe, equipment, materials, welding, and all construction factors which contribute to safety and sound engineering practice. It is not intended herein that all construction items be covered in full detail, since the specification should be all-inclusive. Whether covered specifically or not, all construction and materials shall be in accordance with good engineering, safety, and proven pipeline practice.

434.2 Inspection

The operating company shall make provision for suitable inspection of pipeline and related facilities by qualified inspectors to assure compliance with the construction specifications. Qualification of inspection personnel and the type and extent of inspection shall be in accordance with the requirements of para. 436. Repairs required during new construction shall be in accordance with paras. 434.5, 434.8, and 461.1.2.

434.3 Right of Way

434.3.1 Location. Right of way should be selected so as to minimize the possibility of hazard from future industrial or urban development or encroachment on the right of way.

434.3.2 Construction Requirements. Inconvenience to the landowner should be a minimum and safety of the public shall be given prime consideration.

(a) All blasting shall be in accordance with governing regulations and shall be performed by competent and qualified personnel, and performed so as to provide adequate protection to the general public, livestock, wildlife, buildings, telephone, telegraph, and power lines, underground structures, and any other property in the proximity of the blasting.

(b) In grading the right of way, every effort shall be made to minimize damage to the land and prevent abnormal drainage and erosive conditions. The land is to be restored to as nearly original condition as is practical.

(c) In constructing pipeline crossings of railroads, highways, streams, lakes, rivers, etc., safety precautions such as signs, lights, guard rails, etc., shall be maintained in the interest of public safety. The crossings shall comply with the applicable rules, regulations, and restrictions of regulatory bodies having jurisdiction.

434.3.3 Survey and Staking or Marking. The route shall be surveyed and staked, and such staking or marking should be maintained during construction, except route of pipeline offshore shall be surveyed and the pipeline shall be properly located within the right of way by maintaining survey route markers or by surveying during construction.

434.4 Handling, Hauling, Stringing, and Storing

Care shall be exercised in the handling or storing of pipe, casing, coating materials, valves, fittings, and other materials to prevent damage. When applicable, railroad transportation of pipe shall meet the requirements of API RP 5L1. In the event pipe is yard coated or mill coated, adequate precautions shall be taken to prevent damage to the coating when hauling, lifting, and placing on the right of way. Pipe shall not be allowed to drop and strike objects which will distort, dent, flatten, gouge, or notch the pipe or damage the coating, but shall be lifted or lowered by suitable and safe equipment.

434.5 Damage to Fabricated Items and Pipe

(a) Fabricated items such as scraper traps, manifolds, volume chambers, etc., shall be inspected before assembly into the mainline or manifolding and defects shall be repaired in accordance with provisions of the standard or specification applicable to their manufacture.

(b) Pipe shall be inspected before coating and before

assembly into the mainline or manifolding. Distortion, buckling, denting, flattening, gouging, grooves, or notches, and all defects of this nature, shall be prevented, repaired, or eliminated as specified herein.

(1) Injurious gouges, grooves, or notches shall be removed. These defects may be repaired by the use of welding procedures prescribed in API 5L or removed by grinding, provided the resulting wall thickness is not less than that permitted by the material specification.

(2) When conditions outlined in para. 434.5(b)(1) cannot be met, the damaged portion shall be removed as a cylinder. Insert patching is not permitted. Weld-on patching, other than complete encirclement, is not permitted in pipelines intended to operate at a hoop stress of more than 20% of the specified minimum yield strength of the pipe.

(3) Notches or laminations on pipe ends shall not be repaired. The damaged end shall be removed as a cylinder and the pipe end properly rebeveled.

(4) Distorted or flattened lengths shall be discarded.

(5) A dent (as opposed to a scratch, gouge, or groove) may be defined as a gross disturbance in the curvature of the pipe wall. A dent containing a stress concentrator, such as a scratch, gouge, groove, or arc burn, shall be removed by cutting out the damaged portion of the pipe as a cylinder.

(6) All dents which affect the curvature of the pipe at the seam or at any girth weld shall be removed as in para. 434.5(b)(5). All dents which exceed a maximum depth of $\frac{1}{4}$ in. (6 mm) in pipe NPS 4 and smaller, or 6% of the nominal pipe diameter in sizes greater than NPS 4, shall not be permitted in pipelines intended to operate at a hoop stress of more than 20% of the specified minimum yield strength of the pipe. Insert patching, overlay, or pounding out of dents shall not be permitted in pipelines intended to operate at a hoop stress of more than 20% of the specified minimum yield strength of the pipe.

(7) Buckled pipe shall be replaced as a cylinder.

434.6 Ditching

(a) Depth of ditch shall be appropriate for the route location, surface use of the land, terrain features, and loads imposed by roadways and railroads. All buried pipelines shall be installed below the normal level of cultivation and with a minimum cover not less than that shown in Table 434.6(a). Where the cover provisions of Table 434.6(a) cannot be met, pipe may be installed with less cover if additional protection is provided to withstand anticipated external loads and to minimize damage to the pipe by external forces.

(b) Width and grade of ditch shall provide for lowering of the pipe into the ditch to minimize damage to the coating and to facilitate fitting the pipe to the ditch.

(c) Location of underground structures intersecting the ditch route shall be determined in advance of construction activities to prevent damage to such structures. A minimum clearance of 12 in. (0.3 m) shall be provided between the outside of any buried pipe or component and the extremity of any other underground structures, except for drainage tile which shall have a minimum clearance of 2 in. (50 mm), and as permitted under para. 461.1.1(c).

(d) Ditching operations shall follow good pipeline practice and consideration of public safety. API RP 1102 will provide additional guidance.

434.7 Bends, Miters, and Elbows

Changes in direction, including sags or overbends required to conform to the contour of the ditch, may be made by bending the pipe or using miters, factory made bends, or elbows. [See limitations in para. 406.2.]

434.7.1 Bends Made From Pipe

(a) Bends shall be made from pipe having wall thicknesses determined in accordance with para. 404.2.1. When hot bends are made in pipe which has been cold worked in order to meet the specified minimum yield strength, wall thicknesses shall be determined by using the lower stress values in accordance with para. 402.3.1(d).

(b) Bends shall be made in such a manner as to preserve the cross-sectional shape of the pipe, and shall be free from buckling, cracks, or other evidence of mechanical damage. The pipe diameter shall not be reduced at any point by more than $2\frac{1}{2}$% of the nominal diameter, and the completed bend shall pass the specified sizing pig.

(c) The minimum radius of field cold bends shall be as specified in para. 406.2.1(b).

(d) Tangents approximately 6 ft (2 m) in length are preferred on both ends of cold bends.

434.7.2 Mitered Bends

(a) Mitered bends are permitted subject to limitations in para. 406.2.2.

(b) Care shall be taken in making mitered joints to provide proper spacing and alignment and full penetration welds.

434.7.3 Factory Made Bends and Elbows

(a) Factory made wrought steel welding bends and

lar attention to those portions of the system presenting the greatest hazard to the public in the event of emergencies or because of construction or extraordinary maintenance requirements;

(j) operate and maintain its piping system in conformance with these plans and procedures;

(k) modify the plans and procedures from time to time as experience dictates and as exposure of the system to the public and changes in operating conditions require.

451 PIPELINE OPERATION AND MAINTENANCE

451.1 Operating Pressure

(a) Care shall be exercised to assure that at any point in the piping system the maximum steady state operating pressure and static head pressure with the line in a static condition do not exceed at that point the internal design pressure and pressure ratings for the components used as specified in para. 402.2.3, and that the level of pressure rise due to surges and other variations from normal operation does not exceed the internal design pressure at any point in the piping system and equipment by more than 10% as specified in para. 402.2.4.

(b) A piping system shall be qualified for a higher operating pressure when the higher operating pressure will produce a hoop stress of more than 20% of the specified minimum yield strength of the pipe in accordance with para. 456.

(c) If a piping system is derated to a lower operating pressure in lieu of repair or replacement, the new maximum steady state operating pressure shall be determined in accordance with para. 451.7.

(d) For existing systems utilizing materials produced under discontinued or superseded standards or specifications, the internal design pressure shall be determined using the allowable stress and design criteria listed in the issue of the applicable code or specification in effect at the time of the original construction.

451.2 Communications

A communications facility shall be maintained to assure safe pipeline operations under both normal and emergency conditions.

451.3 Line Markers and Signs

(a) Line markers shall be installed and maintained over each line at each public road crossing, at each railroad crossing, at each navigable stream crossing, and in sufficient number along the remainder of the pipeline route to properly locate and identify the buried pipeline. See para. 434.18.

(b) Pipeline markers at crossings, aerial markers when used, and other signs shall be maintained so as to indicate the location of the line and to provide the required information on the pipeline. Additional pipeline markers shall be installed and maintained along the pipeline in areas of development and growth to protect the pipeline from encroachment.

451.4 Right of Way Maintenance

(a) The right of way should be maintained so as to have clear visibility and to give reasonable access to maintenance crews.

(b) Access shall be maintained to valve locations.

(c) Diversion ditches or dikes shall be maintained where needed to protect against washouts of the line and erosion of the landowner's property.

451.5 Patrolling

(a) Each operating company shall maintain a periodic pipeline patrol program to observe surface conditions on and adjacent to the pipeline right of way, indication of leaks, construction activity other than that performed by the company, and any other factors affecting the safety and operation of the pipeline. Special attention shall be given to such activities as road building, ditch cleanouts, excavations, and like encroachments to the pipeline system. Patrols shall be made at intervals not exceeding 2 weeks, except that piping systems transporting LPG or liquid anhydrous ammonia shall be patrolled at intervals not exceeding 1 week in industrial, commercial, or residential areas.

(b) Underwater crossings shall be inspected periodically for sufficiency of cover, accumulation of debris, or for any other condition affecting the safety and security of the crossings, and at any time it is felt that the crossings are in danger as a result of floods, storms, or suspected mechanical damage.

451.6 Pipeline Repairs

451.6.1 General

(a) Repairs shall be covered by a maintenance plan [see para. 450.2(a)] and shall be performed under qualified supervision by trained personnel aware of and familiar with the hazards to public safety, utilizing strategically located equipment and repair materials. The maintenance plan shall consider the appropriate

information contained in API Publ. 2200, API Pub. 2201, API Standard 1104, and API RP 1111. It is essential that all personnel working on pipeline repairs understand the need for careful planning of the job, be briefed as to the procedure to be followed in accomplishing the repairs, and follow precautionary measures and procedures outlined in API Publ. 2200. Personnel working on repairs to pipelines handling LPG, carbon dioxide, liquid alcohol, or liquid anhydrous ammonia shall also be informed on the specific properties, characteristics, and potential hazards associated with those liquids, precautions to be taken following detection of a leak, and safety repair procedures set forth for LPG pipelines in API Publ. 2200. Approvals, procedures, and special considerations described in API Publ. 2201 shall be observed for welding, as well as making hot taps on pipelines, vessels, or tanks which are under pressure. Piping in the vicinity of any repair shall be adequately supported during and after the repair.

(b) If an inert fluid is used to temporarily displace the liquid in a pipeline system for the purpose of a repair, a detailed written procedure shall be required. Because the potential energy of a gas presents special concerns, this procedure shall address, as a minimum, the factors related to the use of an inert gas:

(1) maximum flow rate;

(2) pressure;

(3) injection temperature;

(4) inert gas disposal;

(5) safety procedures.

The procedure shall be followed under the supervision required in para. 451.6.1(a).

02 **451.6.2 Disposition of Defects**

(a) Limits and Dispositions of Imperfections

(1) Gouges and grooves shall be removed or repaired in accordance with para. 451.6.2(b).

(2) Dents meeting any of the following conditions shall be removed or repaired:

(a) dents which affect the pipe curvature at the pipe seam or at any girth weld;

(b) dents containing a scratch, gouge, or groove;

(c) dents exceeding a depth of $\frac{1}{4}$ in. (6 mm) in pipe NPS 4 and smaller, or 6% of the nominal pipe diameter in sizes greater than NPS 4;

(d) dents containing external corrosion where the remaining wall thickness is less than 87.5% of that required for design.

(3) All arc burns shall be removed or repaired.

(4) All cracks shall be removed or repaired.

(5) All welds found to have defects as set forth in para. 434.8.5(b) or in the appropriate pipe specification shall be removed or repaired.

(6) General Corrosion. Pipe shall be replaced, or repaired if the area is small, or operated at a reduced pressure (see para. 451.7) if general corrosion has reduced the wall thickness to less than the design thickness calculated in accordance with para. 404.1.2 decreased by an amount equal to the manufacturing tolerance applicable to the pipe or component.

(7) Localized Corrosion Pitting. Pipe shall be repaired, replaced, or operated at a reduced pressure (see para. 451.7) if localized corrosion pitting has reduced the wall thickness to less than the design thickness calculated in accordance with para. 404.1.2 decreased by an amount equal to the manufacturing tolerance applicable to the pipe or component. This applies if the length of the pitted area is greater than permitted by the equation shown below. The following method applies only when the depth of the corrosion pit is less than 80% of the nominal wall thickness of the pipe. This method shall not be used to evaluate corrosion concentrated in electric resistance welded seams (ERW), electric induction welded seams or electric flash-welded seams, nor shall it be used to evaluate corrosion-caused metal loss which is circumferentially oriented along or in a girth weld or its heat-affected zone. The method may be used, however, to evaluate the longitudinal profile of corrosion-caused metal loss which crosses a girth weld or impinges on a submerged arc welded seam. The corroded area must be clean to bare metal. Care shall be taken in cleaning corroded areas of a pressurized pipeline when the degree of corrosion is significant.

$$L = 1.12B\sqrt{Dt_n}$$

where

$$B = \sqrt{\left(\frac{c/t_n}{1.1c/t_n - 0.15}\right)^2 - 1}$$

L = maximum allowable longitudinal extent of the corroded area as shown in Fig. 451.6.2(a)(7), in. (mm)

B = a value not to exceed 4.0 which may be determined from the above equation or Fig. 451.6.2(a)(7)

D = nominal outside diameter of the pipe, in. (mm)

t_n = nominal wall thickness of the pipe, in. (mm)

c = maximum depth of the corroded area, in. (mm)

(8) Areas where grinding has reduced the remaining wall thickness to less than the design thickness calculated in accordance with para. 404.1.2 decreased

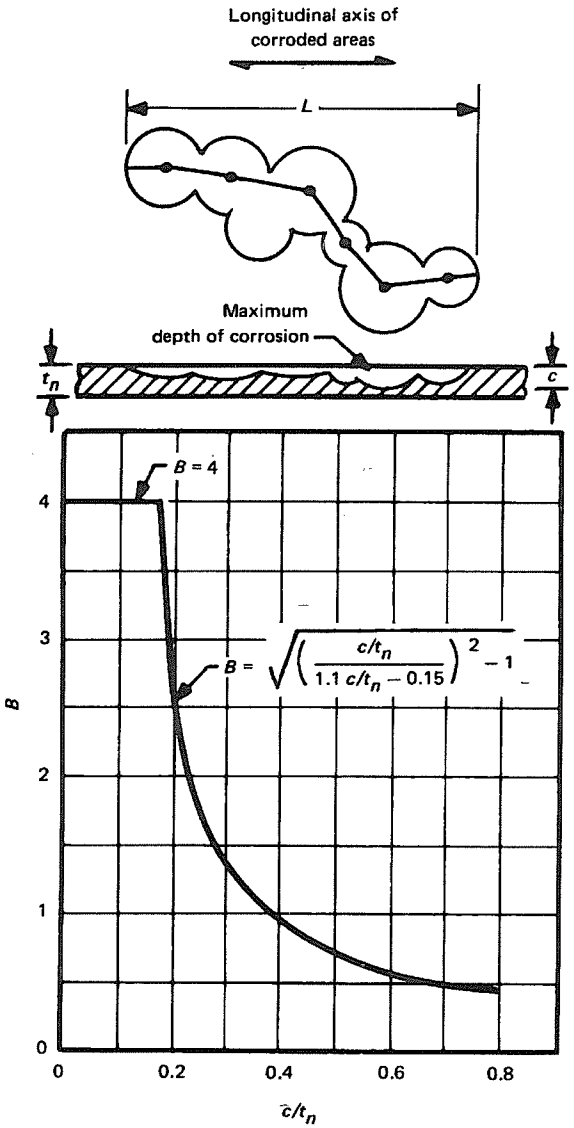

FIG. 451.6.2(a)(7) PARAMETERS USED IN ANALYSIS OF THE STRENGTH OF CORRODED AREAS

by an amount equal to the manufacturing tolerance applicable to the pipe or component, may be analyzed the same as localized corrosion pitting [see para. 451.6.2(a)(7)] to determine if ground areas need to be replaced, repaired, or the operating pressure reduced (see para. 451.7). ASME B31G may be used for guidance.

(9) All pipe containing leaks shall be removed or repaired.

(b) Allowable Pipeline Repairs

(1) If practical, the pipeline should be taken out of service and repaired by cutting out a cylindrical piece of pipe containing the defect and replacing the same with pipe meeting the requirements of para. 401.2.2 and having a length of not less than one-half diameter.

(2) If not practical to take the pipeline out of service, repairs may be made by the installation of a full encirclement welded or mechanically applied split sleeve in accordance with para. 451.6.2(c).

(a) For repairs of dents, or dents containing external corrosion where the remaining wall thickness is less than 87.5% of that required for design, either a hardenable filler material such as epoxy shall be used to fill the void between the sleeve and the pipe to restore the original contour of the pipe, or the carrier pipe shall be tapped through the sleeve or other means provided to equalize the internal pressures of the carrier pipe and the sleeve.

(b) For repairs to nonleaking cracks in materials that might be expected to behave in a brittle manner (e.g., a seam defect in a low-frequency welded ERW seam), an appropriately-designed fitting shall be installed on the sleeve through which the sleeve and carrier pipe will be tapped to equalize the internal pressures of the carrier pipe and the sleeve.

(3) If not practical to take the pipeline out of service, defects may be removed by grinding or hot tapping. Sharp imperfections may be rendered blunt by grinding, but the absence of a sharp imperfection must be verified by visual and nondestructive examination. When grinding, the ground areas shall be smoothly contoured and be in accordance with para. 451.6.2(a)(8). When hot tapping, the portion of piping containing the defect shall be completely removed.

(4) If not practical to take the pipeline out of service, minor leaks and small corroded areas, except for cracks, may be repaired by the installation of a patch or welded fitting in accordance with paras. 451.6.2(c)(5) and (8). Pipe containing arc burns, grooves, and gouges may be repaired with patches or welded fitting if the arc burn or notch is removed by grinding.

(5) If not practical to take the pipeline out of service, defects in welds produced with a filler metal, small corroded areas, gouges, grooves, and arc burns may be repaired by depositing weld metal in accordance with para. 451.6.2(c)(9). Weld imperfections, arc burns,

gouges, and grooves shall be removed by grinding prior to depositing the weld filler metal.

(6) If not practical to take the pipeline out of service, nonleaking corroded areas may be repaired by installation of a fully welded, partial encirclement half sole in accordance with para. 451.6.2(c)(13).

(7) If not practical to take the pipeline out of service, nonleaking corroded areas may be repaired by installation of a mechanically applied composite material wrap used to reinforce the pipeline in accordance with para. 451.6.2(c)(14).

(c) Repair Methods

(1) All repair weld procedures and all welders performing repair work shall be qualified in accordance with para. 434.8.3 or API RP 1107. The welders shall also be familiar with safety precautions and other problems associated with cutting and welding on pipe that contains or has contained liquids within the scope of this Code. Cutting and welding shall commence only after compliance with para. 434.8.1(c).

(2) The qualification test for welding procedures to be used on pipe containing a liquid shall consider the cooling effects of the pipe contents on the soundness and physical properties of the weld. Welding procedures on pipe not containing liquid shall be qualified in accordance with para. 434.8.3.

(3) Materials used for pipeline repair shall be in accordance with at least one of the specifications or standards listed in Table 423.1, or as otherwise required by this Code.

(4) Temporary repairs may be necessitated for operating purposes and shall be made in a safe manner. Such temporary repairs shall be made permanent or replaced in a permanent manner as described herein as soon as practical.

(5) Welded patches shall have rounded corners and a maximum dimension of 6 in. (150 mm) along the pipe axis. The patch material shall be of a similar or higher grade with a wall thickness similar to the pipe being repaired. Patches shall be limited to pipe sizes NPS 12 and less and conforming to API 5L, Grade X42 and lower. Patches shall be attached by fillet welds. Insert patching is prohibited. Special consideration shall be given to minimize stress concentrations resulting from the repair.

(6) Full encirclement welded split sleeves installed to repair leaks or otherwise to contain internal pressure shall have a design pressure of not less than the pipe being repaired and shall be fully welded, both circumferentially and longitudinally. Length of full encirclement split sleeves shall not be less than 4 in. (100 mm). If the sleeve is thicker than the pipe being repaired, the circumferential ends shall be chamfered (at approximately 45 deg.) down to the thickness of the pipe. For full encirclement split sleeves installed for repair by reinforcement only and not internal pressure containment, circumferential welding is optional. Special consideration shall be given to minimize stress concentrations resulting from the repair.

(7) Mechanically applied full encirclement repair fittings shall meet the design requirements of paras. 401.2 and 418.

(8) Welded fittings used to cover pipeline defects shall not exceed NPS 3 and shall have a design pressure of not less than the pipe being repaired.

(9) For repairs involving only deposition of a weld filler metal, welding processes shall be in accordance with the requirements of the appropriate pipe specification for the grade and type being repaired. Welding procedure qualifications shall be in accordance with para. 451.6.2(c)(2).

(10) Where repairs are made to a coated pipe, all damaged coating shall be removed and new coating applied in accordance with para. 461.1.2. Replacement pieces of pipe, welded patches, and full encirclement welded split sleeves used in making repairs shall also be coated when installed in a coated line.

(11) Pipe containing liquid shall be examined to determine that the material is sound and of adequate thickness in the areas to be affected by grinding, welding, cutting, or hot tapping operations.

(12) If the pipeline is not taken out of service, the operating pressure shall be reduced to a level which will provide safety during the repair operations.

(13) Fully welded partial encirclement half soles may be used to repair corroded areas only on pipe and shall not be used to repair leaks, gouges, dents, or other defects. The use of half soles shall be limited to pipe sizes NPS 12 or less and may only be used on pipe made prior to 1942 with a specified minimum yield strength not exceeding 40,000 psi (276 MPa). The half sole material shall be of a similar or higher grade with a wall thickness not less than 87.5% or more than 125% of that of the pipe being repaired. Half soles shall have rounded corners and a maximum length of 10 ft (3 m) along the pipe axis. Half soles shall not be used across girth welds and the minimum clearance between the end of half soles or the ends of half soles and girth welds shall be 2 in. Combinations of a half sole and patches shall not be used in parallel around a given circumference. To ensure optimum performance of half soles, the annular space between

the corroded pipe and the half sole may be filled with a hardenable filler material such as epoxy. Special consideration shall be given to ensuring a close fit between the edges of the half sole and the pipe being repaired and to minimizing stress concentrations resulting from the repair.

(14) Mechanically applied composite material wrap may be used to reinforce the pipeline provided that design and installation methods are proven for the intended service prior to application. The user is cautioned that a qualified written procedure performed by trained personnel is a requirement and records shall be retained in accordance with para. 455.

02 **451.6.3 Testing Repairs to Pipelines Operating at a Hoop Stress of More Than 20% of the Specified Minimum Yield Strength of the Pipe**

(a) Testing of Replacement Pipe Sections. When a scheduled repair to a pipeline is made by cutting out a section of the pipe as a cylinder and replacing it with another section of pipe, the replacement section of pipe shall be subjected to a pressure test. The replacement section of pipe shall be tested as required for a new pipeline in accordance with para. 437.4.1. The tests may be made on the pipe prior to installation provided radiographic or other acceptable nondestructive tests (visual inspection excepted) are made on all tie-in butt welds after installation.

(b) Examination of Repair Welds. Welds made during pipeline repairs shall be visually examined by a qualified inspector. Welds should also be examined by at least one other nondestructive examination method.

451.7 Derating a Pipeline to a Lower Operating Pressure

(a) Corroded pipe or pipe containing areas repaired by grinding may be derated to a lower operating pressure in lieu of replacement or repair or further repair. Except as provided in para. 451.7(b), the lower operating pressure shall be based on para. 404.1.2 and the actual remaining wall thickness of the pipe at the point of deepest corrosion or grinding.

(b) For pipe containing localized corrosion pitting or areas repaired by grinding where the remaining material in the pipe does not meet the depth and length limits in para. 451.6.2(a)(7), the lower operating pressure may be determined by the following equation, provided the corrosion or grinding is not in the girth or longitudinal weld or related heat affected zones.

$$P_d = 1.1P_i \left[\frac{1 - 0.67\left(\frac{c}{t_n}\right)}{1 - \frac{0.67c}{t_n\sqrt{G^2 + 1}}} \right]$$

where

G = $0.893\, L/\sqrt{Dt_n}$
= a value not to exceed 4.0 in the above analysis and which may be determined from the above equation
P_d = derated internal design gage pressure, psi (bar)
P_i = original internal design gage pressure, based on specified nominal wall thickness of the pipe (see para. 404.1), psi (bar)
L = longitudinal extent of the corroded area as shown in Fig. 451.6.2(a)(7), in. (mm)

For t_n, c, and D, see para. 451.6.2(a)(7).

For values of G greater than 4.0,

$$P_d = 1.1P_i\,(1 - c/t_n)$$

except p_d shall not exceed p_i.

451.8 Valve Maintenance

Pipeline block valves shall be inspected, serviced where necessary, and partially operated at least once each year to assure proper operating conditions.

451.9 Railroads and Highways Crossing Existing Pipelines 02

(a) When an existing pipeline is to be crossed by a new road or railroad, the operating company shall analyze the pipeline in the area to be crossed in terms of the new anticipated external loads. If the sum of the circumferential stresses caused by internal pressure and newly imposed external loads (including both live and dead loads) exceeds 0.90 SMYS (specified minimum yield strength), the operating company shall install mechanical reinforcement, structural protection, or suitable pipe to reduce the stress to 0.90 SMYS or less, or redistribute the external loads acting on the pipeline. API RP 1102 provides methods that may be used to determine the total stress caused by internal pressure and external loads. API RP 1102 also provides methods to check cyclic stress components for fatigue.

(b) Installation of uncased carrier pipe is preferred. Adjustments of existing pipelines in service at a proposed railroad or highway crossing shall conform to details contained in API RP 1102. As specified in para. 461.1.2(f), if casing is used, coated carrier pipe shall