Shawn M. Lyon
Vice President, Operations

Marathon Pipe Line LLC

539 South Main Street
Findlay, OH 45840
Direct No. 419/421-4002
Main No. 419/422-2121
Fax 419/421-3125

July 26, 2012

Via Overnight Mail: 876697524316

David Barrett
Director, Central Region
Pipeline and Hazardous Materials Safety Administration
901 Locust Street, Suite 462
Kansas City, MO 64106-2641

RE: Response to Notice of Amendment
CPF 3-2012-5009M

Dear Mr. Barrett:

This correspondence is in response to the Notice of Amendment (NOA) issued to Marathon Pipe Line LLC (MPL) on April 26, 2012. The NOA was issued in response to an inspection conducted from July 12, 2010 through December 3, 2010 by Mr. Darren Lemmerman. On May 24, 2012, MPL received an extension to file its response by July 30, 2012.

1. Item Number 1 of the NOA alleges that all piping and appurtenances connected to regulated breakouts tanks are regulated and that MPL's procedures do not adequately define that the piping and appurtenances connected to breakout tanks as part of the pipeline system.

   While MPL agrees that piping and associated valves entering the tank from a regulated line are regulated, MPL respectfully disagrees that all piping and appurtenances connected to regulated breakouts tanks are regulated as part of the pipeline or pipeline system.

   Pursuant to 49 CFR §195.2, a pipeline or pipeline system means:

   > all parts of a pipeline facility through which a hazardous liquid or carbon dioxide moves in transportation, including, but not limited to, line pipe, valves, and other appurtenances connected to line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks

   This definition only references appurtenances for line pipe and pumping units, as part of the pipeline system. Furthermore, in accordance with 49 CFR §195.1(b)(8) and 49 CFR

§195.1(b)(9)(ii), MPL believes the valves and piping in question are part of in-plant piping serving refining and terminal facilities and as such are not regulated.

Additionally, API 650 – Welded Steel Tanks for Oil Storage, which has been incorporated into 49 CFR §195 by reference, does not include valves and appurtenances in its scope. This can be interpreted that they are not part of the breakout tank and therefore not regulated under 49 CFR §195. API 650 provides a list of limitations in section 1.2 which include:

> The rules of this Standard are not applicable beyond the following limits of piping connected internally or externally to the roof, shell, or bottom of tanks constructed according to this Standard:
>
> a. The face of the first flange in bolted flanged connections, unless covers or blinds are provided as permitted in this Standard.
>
> b. The first sealing surface for proprietary connections or fittings.
>
> c. The first threaded joint on the pipe in a threaded connection to the tank shell.
>
> d. The first circumferential joint in welding-end pipe connections if not welded to a flange. *(Emphasis added)*

Finally, in determining jurisdictional boundaries, MPL referenced the jurisdictional drawings attached to the Memorandum of Understanding from the Office of Pipeline Safety (OPS), Department of Transportation and the Office of Emergency and Remedial Response, Environmental Protection Agency (EPA) to various governmental departments dated February 4, 2000 (MOU). The purpose of the MOU was to "clarify jurisdictional issues and establish mutual goals" in regards to "breakout tanks/bulk oil storage tanks (containers) at transportation-related and non-transportation related facilities." The jurisdictional drawings for complex facilities depict all pipe and valves on non-jurisdictional lines as regulated by the EPA not OPS. For example, "Attachment A", which is Attachment 5 in the MOU, depicts the pipe and valve leaving the breakout tank to the loading area as solely under EPA jurisdiction. "Attachment B", which is Attachment 9 in the MOU, depicts the pipe and valve leaving the breakout tank to the refinery as solely EPA jurisdictional. It is important to note that the MOU is available via PHMSA's website.

2. Item Number 2 of the NOA alleges that MPL's procedures do not adequately specify how close interval survey readings are used to determine target "on" voltage to the cathodic protection levels for annual cathodic protection surveys.

   Standard MPLMNT073 - Cathodic Protection Criteria has been modified to provide specific details to identify and resolve deficiencies in close interval surveys. The enhancements to Standard MPLMNT073 appear under section 8.7. A copy of MPLMNT073 is attached as "Attachment C" for your review.

3. Item Number 3 of the NOA alleges that MPL's procedure for correcting shorted casings did not address the type of short or the time interval to correct an identified deficiency.

Standard MPLMNT 155 - Corrosion Management of Cased Pipelines has been modified to describe what testing is used to determine whether a short is metallic or electrolytic. The enhancements to Standard MPLMNT 155 appear under sections sections 7.28, 8.2.2.1 and 8.3. A copy of Standard MPLMNT 155 is attached as "Attachment D" for your review.

Should you have any questions or require additional information, please feel free to contact me.

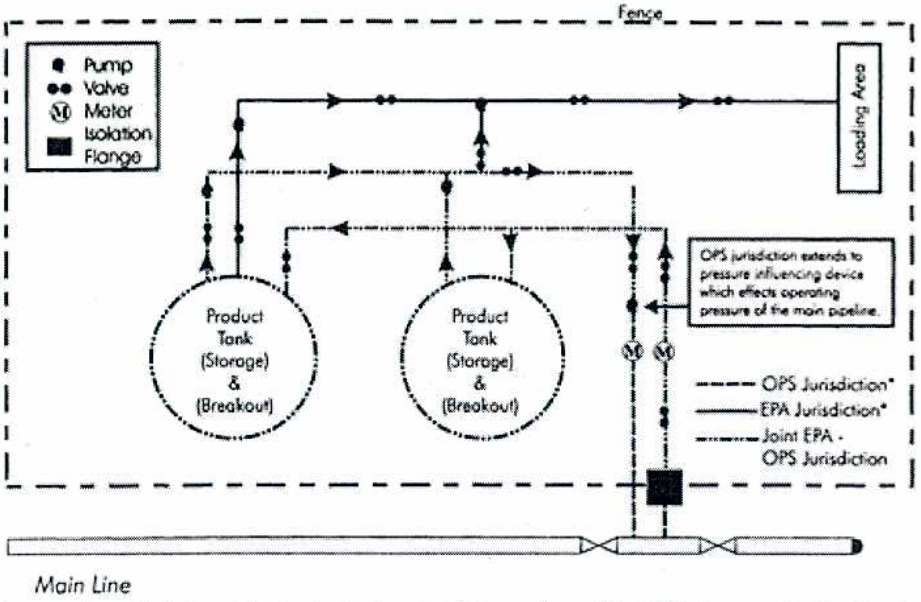
Sincerely,

Shawn M. Lyon

Enclosures

Attachment A

STORAGE AND BREAKOUT TANKAGE - JOINT EPA - OPS JURISDICTION

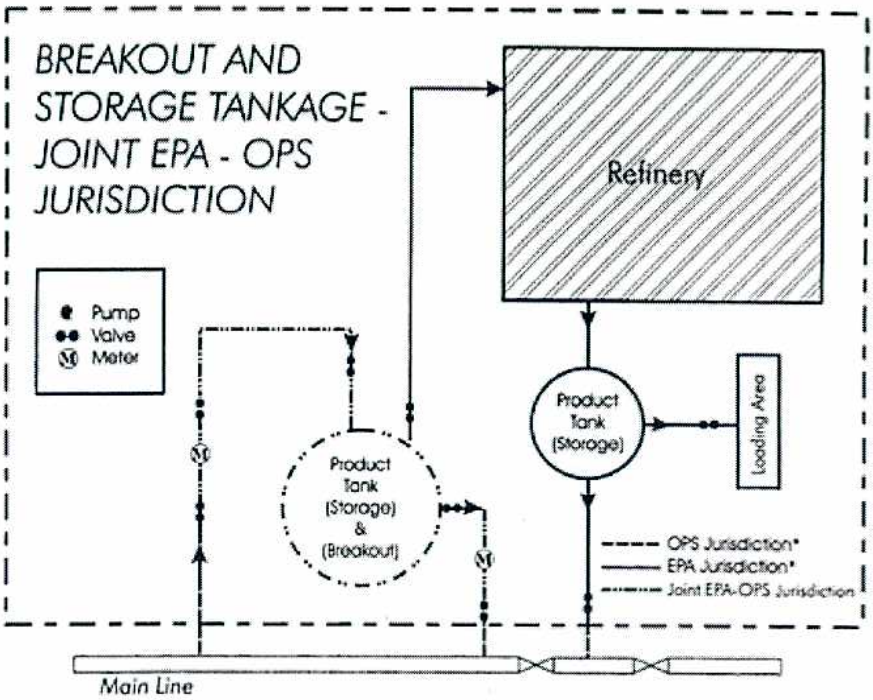


* This diagram does not identify the precise location where the change in jurisdiction occurs between EPA and OPS for the purpose of the Clean Water Act, Section 311(j) (33 USC 1321(j)). When the pipeline operator and the storage or breakout tank operator remain the same, the change in jurisdiction occurs at the first and last pressure influencing device, meter, valve, or isolation flange, at or inside the facility property. When the pipeline operator and the storage or breakout tank operator are not the same, the change in jurisdiction occurs at the change in operational responsibility or at the first and last pressure influencing device, valve, or isolation flange, at or inside the facility property. In either of the above situations, the location of the property line should not solely be used to determine jurisdiction when operational activities (loading/offloading) extend beyond the property line.

SOURCE: US EPA REV 11/03/99

ATTACHMENT 5

Attachment B



* This diagram does not identify the precise location where the change in jurisdiction occurs between EPA and OPS for the purpose of the Clean Water Act, Section 311(j) (33 USC 1321(j)). When the pipeline operator and the storage or breakout tank operator remain the same, the change in jurisdiction occurs at the first and last pressure influencing device, meter, valve, or isolation flange, at or inside the facility property. When the pipeline operator and the storage or breakout tank operator are not the same, the change in jurisdiction occurs at the change in operational responsibility or at the first and last pressure influencing device, valve, or isolation flange, at or inside the facility property. In either of the above situations, the location of the property line should not solely be used to determine jurisdiction when operational activities (loading/offloading) extend beyond the property line.

SOURCE: USEPA, REV 11/03/99

ATTACHMENT 9

Attachment C

MARATHON PETROLEUM COMPANY LLC
MARATHON PIPE LINE LLC
STANDARDS

Standard Number	Title	Standard Category	Standard Type	Resp. Org.	Revision Number	Effective Date
MPLMNT073	Cathodic Protection Criteria	MNT	Practice	IDP&R	4	07/25/2012

Organization	Approver	Title	Signature	Subject Matter Expert
MPL	P. H. DePriest	Integrity, Damage Prevention & Risk Manager	On File	G. L. Guinn
TT&M	N/A			
M&TE	N/A			
T&L	N/A			

Records Retention: Policy, Standard, Procedure or Guideline – General (ACT+10)	**Original Date of Issue: 7/17/00**
Review & Update Requirements Max: 1 Year	
Attention: Printed copies should be used with caution. The user of this document must ensure the current approved version of the document is being used. This copy was printed on 7/26/2012 at 08:29.	

INDEX:

1.0 STANDARD STATEMENT
2.0 PURPOSE
3.0 SCOPE
4.0 MAINTENANCE OF STANDARD
5.0 REGULATIONS
6.0 REFERENCES
7.0 DEFINITIONS
8.0 STANDARD CONTENT
- 8.1 Approved Reference Electrodes
- 8.2 Reference Electrode Placement
- 8.3 Recording of Potential Readings
- 8.4 Cathodic Protection Criterion
- 8.5 Explanation of IR Drop
- 8.6 How to Consider IR Drop
- 8.7 Minimum "On" Target Potentials
- 8.8 Resolution for Non-Attainment of Criterion

9.0 RESPONSIBILITIES
10.0 RECORDS MANAGEMENT
11.0 TRAINING
12.0 ATTACHMENTS

1.0 STANDARD STATEMENT

1.1 This standard addresses management level issues involving processes or procedures, and documents a way of performing tasks. Deviations to this standard can be granted by the MPL Corrosion Management Services (CMS) Supervisor or Integrity, Damage Prevention & Risk (IDP&R) Manager or their designee.

2.0 PURPOSE

2.1 MPL will use this Standard to establish criteria for the application of cathodic protection (CP). The criteria will indicate, when used either separately or in combination, that adequate CP of a buried or on-grade metallic structure has been achieved.

3.0 SCOPE

3.1 This Standard shall prescribe CP criteria to be applied to regulated and non-regulated assets whose CP is managed by MPL IDP&R Corrosion Management Services (CMS).

4.0 MAINTENANCE OF STANDARD

4.1 The Corrosion Management Services Supervisor will be responsible for the maintenance of this Standard.

5.0 REGULATIONS

5.1 *49 CFR Liquid Pipelines, Part 195 Subpart H (195.571)*

5.2 *49 CFR Gas Pipelines, Part 192 Subpart I [192.463 (a)]*

5.3 *40 CFR Underground Storage Tanks, Part 280*

5.4 *Other Federal Regulations concerning pipelines [e.g., U.S. Department of the Interior Minerals Management Services (MMS) – federal offshore waters] and AST's and UST's [e.g., U. S. Environmental Protection Agency (EPA)].*

5.5 *Applicable State & Local Regulations concerning pipelines [e.g., Railroad Commission of Texas (RRC)] and AST's and UST's (*see Attachment – State Regulation Reference for CP Monitoring of Aboveground and Belowground Storage Tanks) in MPLMNT064, MPLMNT080 and MPLMNT081.

6.0 REFERENCES

6.1 ANSI/API Recommended Practice 651 "Cathodic Protection of Aboveground Petroleum Storage Tanks" (3rd edition, January 2007).

6.2 NACE SP0169-2007, Standard Practice, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems" (reaffirmed March 15, 2007).

6.3 NACE Recommended Practice RP 0193 (current version) – "External Cathodic Protection of On-Grade Carbon Steel Storage Tank Bottoms"

6.4 NACE RP0285 (current version) – Corrosion Control of Underground Storage Tank Systems by Cathodic Protection

6.5 NACE TM0101 (current version) – Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems

6.6 NACE TM0497 (current version) – Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Piping Systems

6.7 MPLCON009 Cathodic Protection (CP) Design & Construction (Attachment 12.5 "Cathodic Protection Test Stations")

6.8 MPLMNT020 Corrosion Management – Regulatory Compliance

6.9 MPL-MNT-00146-PRS Corrosion Information Management QMS Process

6.10 MPLMNT064 Refinery Cathodic Protection Program

6.11 MPLMNT080 Underground Storage Tank Cathodic Protection Program

6.12 MPLMNT081 TT&R Cathodic Protection Program

6.13 TNL-MNT-00013-PRS – Cathodic Protection Testing

6.14 TNL-OPR-10033-PRD Potential Measurement Procedure – Allegro Data Collector

6.15 TNL-OPR-10036-PRD Potential Measurement – Digital Volt Meter

7.0 DEFINITIONS

7.1 **Corrosion Potential** (NACE definition) – The potential of a corroding surface in an electrolyte relative to a reference electrode under open-circuit conditions.

7.2 **CP Coupon** – A small piece of metal of similar metallurgy as the structure under CP and sized to be representative of an anticipated average coating defect or holiday. It is buried in close proximity and electrically connected to the structure and is used to obtain a representative Instant-Off (polarized potential) or Static Potential of the structure under CP, the coupon can be manually disconnected or mechanically disconnected by a switch and allows the representative Instant-Off or Static measurement to be obtained without conducting interruption of the structure CP sources.

7.3 **Electrolyte** – A conductor containing ions that migrate in an electric field, which may be a solid (i.e., soil) or liquid (i.e., water). It is one of the four necessary components required for a corrosion cell to occur (i.e., anode, cathode, metallic path and electrolyte).

7.4 **Instant-Off (I-Off) or Polarized Potential** – A potential obtained by interruption of all CP sources affecting a structure in order to obtain an "IR free" measurement. Interruption cycles may be a few seconds or milli-seconds with a longer "On" than "Off" cycle (e.g., "On" cycle is three (3) times longer than the "Off" cycle).

7.5 **IR Drop** – The voltage generated across a resistance by an electrical current as determined by Ohm's Law ($E = I \times R$).

7.6 **NACE** – National Association of Corrosion Engineers International.

7.7 **Native Potential** – The natural or freely corroding potential of a structure obtained before the initial application of CP.

7.8 **On Potential** – A potential obtained with CP applied.

7.9 **Open-Circuit (NACE Definition)** – The potential of an electrode measured with respect to a reference electrode or another electrode in the absence of current (also known as the corrosion or freely corroding potential).

7.10 **Polarization** – The change from the open-circuit potential as a result of current across the electrode/electrolyte interface. Also the shift in electrode potential resulting from the flow of current measured with respect to the potential with zero, or no current flow.

7.11 **Potential** (also referred to as a structure-to-electrolyte (s/e) or pipe-to-soil (p/s) potential) – Synonymous with voltage. Specific to CP and this Standard, it is the DC voltage measured between a metallic structure and a reference electrode.

7.12 **Reference Electrode** (also referred to as a Reference Cell or Half Cell) – An electrode whose open-circuit potential is stable under similar conditions of measurement and is used for measuring potentials.

7.13 **Static Potential** (also referred to as the depolarized potential) – The potential of a cathodically protected structure obtained after CP has been shut off for a sufficient period of time to allow for depolarization. The time required for depolarization is significantly greater for well coated structures than for poorly coated or bare structures.

8.0 STANDARD CONTENT

8.1 Approved Reference Electrodes

8.1.1 Soil and Fresh Water Application

8.1.1.1 A portable or permanently buried saturated copper/copper sulfate reference electrode.

8.1.1.2 A permanently buried zinc reference electrode.

a) A potential of +.250 V referenced to zinc shall be considered equivalent to –.850 V referenced to saturated copper/copper sulfate. Therefore a –1.100 V must be added to the potential measured using a zinc reference electrode in order to convert it to an equivalent copper/copper sulfate reference electrode reading [*e.g., –.200 V referenced to zinc + (–1.100 V) = –1.300 V equivalent reference to copper/copper sulfate*].

8.1.2 Brackish or Sea Water Application

8.1.2.1 A solid (i.e., non-saturated) silver/silver chloride reference electrode.

a) A potential of –.800 V referenced to silver/silver chloride shall be considered equivalent to –.850 V referenced to saturated copper/copper sulfate. Therefore a –.050 V must be added to the potential measured using a silver/silver chloride reference electrode in order to convert it to an equivalent copper/copper sulfate reference electrode reading [*e.g., –1.100 V referenced to silver/silver chloride + (–.050 V) = –1.150 V equivalent reference to copper/copper sulfate*].

8.1.3 Other portable or permanently buried reference electrodes may be used for specific applications with approval of a CMS Specialist.

8.2 Reference Electrode Placement

8.2.1 Portable reference electrodes shall be placed in the electrolyte directly above the structure or when practical as close to the structure to be evaluated without making actual contact with it. Care shall be taken to ensure that intimate contact is made between the reference electrode and the electrolyte. This may require removing rock, gravel, or other debris in the area of the electrode placement and also thoroughly wetting the area where the electrode is to be placed with fresh water when dry soils are encountered. In addition, measurement of potentials shall be avoided in situations that are detrimental to accurate measurement (e.g., oil, chemical or other electrolyte contamination; frozen electrolyte; or placement on concrete and asphalt pavement)

unless the CMS Specialist approves an acceptable test method or acceptable methodology to obtain potentials in these situations.

8.2.2 Permanent reference electrodes for buried pipelines shall be installed in accordance with MPLCON009 Cathodic Protection (CP) Design & Construction (Attachment 12.5 "Cathodic Protection Test Stations").

8.2.3 Perforated PVC reference electrode tubes may be installed in accordance with design specifications to monitor CP on structures such as Aboveground Storage Tanks (AST's) and Underground Storage Tanks (UST's).

8.3 Recording of Potential Readings

8.3.1 Potential readings shall be recorded as set forth in MPL-MNT-00146-PRS, TNL-OPR-10033-PRD and TNL-OPR-10036-PRD.

8.4 Cathodic Protection Criteria

8.4.1 It is accepted that the proper application of any criterion set forth in this section will indicate achievement of adequate levels of CP. When a specific criterion is not met another may be applied with approval of a Corrosion Specialist.

8.4.2 Criterion for carbon steel pipelines or structures [including Aboveground Storage Tanks (AST's) and Underground Storage Tanks (UST's)] shall be as defined in the current version of the applicable NACE Standard SP0169, RP0193 or RP0285.

8.4.3 Special conditions/considerations shall be observed as presented in the current version of the applicable NACE Standard SP0169, RP0193 or RP0285.

8.4.4 Measurement techniques to meet an individual criterion shall be in accordance with the applicable current version of NACE Test Method TM0101 or TM0497.

8.4.5 Selection of a criterion for test points shall be made by the CMS Specialist.

8.5 Explanation of IR Drop

8.5.1 When using the CP applied or "On" criterion, voltage drop (IR drop), other than those across the structure-to-electrolyte boundary must be considered for valid interpretation of the potential measurement.

8.5.1.1 IR Drop Components

There are three voltage drop (IR drop) components that must be considered:

a) Measurement Circuit IR Drop Component

1) This component results from the resistance in the measuring circuit. This resistance is composed of the following combined resistances; voltmeter circuitry (including test leads), reference electrode, reference electrode contact to the electrolyte, test station wire and connection to the structure. This component may be considered insignificant when using a data collector or digital voltmeter with an input impedance of 10 megohms or greater and when using a voltmeter equipped with a potentiometer to compensate for this IR drop in the pipe-to-soil measurement.

b) Metallic Circuit IR Drop Component

1) This component results from CP current flowing along the surface of the metallic pipeline or structure. This component may generally be considered insignificant when recording potentials at test stations when the reference electrode placement is near the location of the test station. This component is also of very little significance on well coated structures, due to the small current density required to achieve a CP criterion, but of much greater significance on poorly coated or bare structures. Although this component may be of little significance when recording test station potentials on a pipeline it may be very significant when conducting a Close Interval Survey (CIS) on a pipeline, particularly on bare or poorly coated pipelines of long lengths. Therefore, when conducting a CP "On" only CIS this component must be considered.

c) Electrolyte Circuit IR Drop Component

1) This component results from the resistance through the electrolyte between the reference electrode contact point and the structure/electrolyte interface. This component may not be significant on structures in very low electrolyte resistivities (e.g., those equal to or less than < 1,000 Ohm cm) or on "well coated" structures. On well coated structures the majority of the IR drop occurs across the coating due to its high dielectric characteristics. However, this component may be of significance on poorly coated and bare structures or pipelines in electrolytes of average to high resistivities, and on all structures (regardless of coating condition) located in the immediate vicinity of impressed current installations (i.e., rectifier and ground bed CP system). THIS IS THE PRIMARY IR DROP COMPONENT THAT MUST BE CONSIDERED WHEN TAKING ON POTENTIAL READINGS.

d) See Section 12.0 for a representative drawing of the three IR Drop components in pipe-to-soil potential measurements.

e) Consideration of IR Drop components can be addressed by interrupting all influencing CP current flow and obtaining an "Instant-Off" or polarized potential. The electrolyte circuit IR component may also be considered by one, or a combination, of the methods listed in Section 8.6.

8.6 How to Consider IR Drop

8.6.1 Consideration of IR Drop is to be conducted by the application of sound engineering practice and may include methods referenced in NACE SP0169 (current version). Specifically, the following methods may be used by MPL Corrosion Specialists:

8.6.1.1 Measuring or calculating the voltage drop(s), such as measuring the difference between the "Instant-Off" and "On" structure or CP coupon potential readings and calculating the IR Drop.

8.6.1.2 Reviewing the historical performance of the CP system. This can be done by comparing the CP history and leak history with evidence from the pipeline or structure to determine if active corrosion may be occurring (e.g., CIS, Direct Assessment, ILI and visual inspection data or information). "Old" inactive corrosion (which occurred prior to the application of CP) or other corrosion deemed as not preventable by the application of CP (e.g., atmospheric corrosion, internal corrosion or corrosion under disbonded and CP shielding coating) shall not be considered when determining the historical effectiveness of a CP system.

8.6.1.3 Other methods as may be approved by the Corrosion Specialist (e.g., development of Minimum "On" Target Potentials). These methods may also include the use of new technological advances as they become available.

8.7 Minimum "On" Target Potentials

8.7.1 Minimum "On" Target Potentials are a reasonable and sound engineering practice for IR Drop Consideration.

8.7.2 MPL will establish Target Potentials for individual test points which will be documented and maintained in the Pipeline Compliance System (PCS) Cathodic Protection Data Manager (CPDM) database.

8.7.3 Target Potentials shall be developed using the following calculations:

8.7.3.1 The Minimum –.850 V "On" Target Potential shall be calculated as follows:

–.850 V + ("On" potential – "Instant-Off" potential) = Minimum –.850 V "On" Target Potential

Example:

–.850 V + [–1.100 V – (–.950 V)] = –1.000 V "On" Target Potential

8.7.3.2 The Minimum 100 mV Cathodic Polarization "On" Target Potential shall be calculated as follows:

(Native/Static potential + 100 mV) + ("On" potential – "Instant-Off" potential) = Minimum 100 mV Cathodic Polarization "On" Target Potential

Example:

(–.450 V + 100 mV) + [–.700 V – (–.650 V)] = –.600 V "On" Target Potential

8.7.4 Data for the calculation of Target Potentials may be obtained from the following sources:

8.7.4.1 CIS, ECDA, Annual Test Point Surveys, CP coupons or other site specific testing.

8.7.4.2 Evaluation of measured IR Drop on similar coated assets in the same geographical area to develop an average IR Drop to be applied to an asset that has not had measured IR Drops recorded. Note: This method is to be used only until actual IR Drop measurements can be obtained or until other IR Drop considerations can be assessed and applied.

8.7.5 MPL will re-evaluate and re-establish Target Potentials when conditions affecting a test point are deemed by a CMS Specialist to have changed significantly or when new IR drop data is collected and analyzed. Re-evaluation for re-establishment of Target Potentials should be considered whenever there are significant changes in CP system current (increase or decrease) which may be caused by the installation of a new rectifier and ground bed, replacement of an existing impressed ground bed, adjustment of rectifier current output, changes or adjustment in interference or operational bond currents, etc.

8.7.6 When a measured "On" potential does not meet the Target Potential then the guidelines set forth in Section 8.8 shall be followed to ensure that an adequate level of CP is restored.

8.8 Resolution for Non-Attainment of Criterion

8.8.1 All potential readings not meeting a criterion as set forth in Section 8.4 shall be investigated and resolved in a timely manner as established in attachments in TNL-MNT-00013-PRS. Solutions for resolution of below criterion potentials for any individual test point may include one or more of the following (Note: This listing is not intended to be inclusive or necessarily followed sequentially):

8.8.1.1 Establishing good soil contact with the reference electrode and recording a new potential which may indicate that the criterion has been achieved.

8.8.1.2 Conducting appropriate testing to re-evaluate the IR Drop and establish a new Target Potential.

8.8.1.3 Conducting appropriate testing to establish another criterion.

8.8.1.4 Resolution of an interference problem if applicable.

8.8.1.5 Increasing the output of existing CP current in the affected area.

8.8.1.6 Installation and monitoring of a CP coupon to determine IR drop.

8.8.1.7 Installing additional galvanic or impressed CP in the affected area.

8.8.1.8 Conducting coating reconditioning in the affected area.

8.8.1.9 "Other" resolution as may be recommended by a Corrosion Specialist.

9.0 RESPONSIBILITIES

9.1 Corrosion Management Services shall be responsible for establishing CP criteria in accordance with this Standard.

10.0 RECORDS MANAGEMENT

10.1 Records Management pertaining to CP criteria is referenced in MPL Standard MPLMNT020.

11.0 TRAINING

11.1 Purpose:

11.1.1 To educate personnel about CP criteria and there proper application and thereby achieve adequate protection of Company assets from the threat of external corrosion and comply with regulations.

11.2 Required Training:

11.2.1 Awareness:

11.2.1.1 ES&R Compliance Professionals

11.2.1.2 Analysis Process Leaders (APL)

11.2.1.3 Mechanical Integrity Process Leaders (MIPL)

11.2.1.4 System Integrity Leaders (SIL)

11.2.1.5 HRT&D Training Specialists

11.2.2 Oversight:

11.2.2.1 Not Applicable.

11.2.3 Execution:

11.2.3.1 Corrosion Management Services Supervisor

11.2.3.2 Corrosion Management Services Specialists

11.3 Learning Objectives:

11.3.1 Awareness:

11.3.1.1 At the conclusion of the awareness level of training, the affected employees will have a general understanding of this Standard.

11.3.2 Oversight:

11.3.2.1 Not Applicable.

11.3.3 Execution:

11.3.3.1 At the conclusion of the execution level of training, the affected employees will have a thorough understanding of this Standard and will be able to accurately apply CP criteria.

11.4 Related Training:

11.4.1 MPLMNT020

11.4.2 TNL-MNT-00013-PRS

11.5 Delivery Methods:

11.5.1 Awareness:

11.5.1.1 Review of the Standard on MaraLearn.

11.5.2 Oversight:

11.5.2.1 Not Applicable.

11.5.3 Execution:

11.5.3.1 Review of the Standard on MaraLearn.

11.6 Delivery Time:

11.6.1 Awareness: Approximately ½ hour (30 mins.).

11.6.2 **Oversight:** Not Applicable.

11.6.3 **Execution:** Approximately 1/2 hour (30 mins.).

11.7 Refresher Training:

11.7.1 Refresher training will occur whenever the standard is revised or at the discretion of the Corrosion Management Services Supervisor or IDP&R Manager or their designee.

11.7.2 Refresher training will be by review of the Standard on MaraLearn View.

12.0 ATTACHMENTS:

12.1 IR Drop in Pipe-to-Soil Potential Measurements

Attachment D

MARATHON PETROLEUM COMPANY LLC
MARATHON PIPE LINE LLC
STANDARDS

Standard Number	Title	Standard Category	Standard Type	Resp. Org.	Revision Number	Effective Date
MPLMNT155	Corrosion Management of Cased Pipelines	MNT	Specification	IDP&R	1	07/23/12

Organization	Approver	Title	Signature	Subject Matter Expert
MPL	P. H. DePriest	Integrity, Damage Prevention & Risk Manager	On File	B. T. Bell G. L. Guinn D. P. Wagner
TT&M	N/A			
M&TE	N/A			
T&L	N/A			

Records Retention: Policy, Standard, Procedure or Guideline – General (ACT+10)	**Original Date of Issue: 11/09/09**
Review & Update Requirements Max: 1 Year	
Attention: Printed copies should be used with caution. The user of this document must ensure the current approved version of the document is being used. This copy was printed on 7/26/2012 at 15:29.	

INDEX:

1.0 STANDARD STATEMENT
2.0 PURPOSE
3.0 SCOPE
4.0 MAINTENANCE OF STANDARD
5.0 REGULATIONS
6.0 REFERENCES
7.0 DEFINITIONS
8.0 STANDARD CONTENT
- 8.1 Casing Installation
- 8.2 Casing Monitoring
- 8.3 Casing Prioritization
- 8.4 Casing Mitigation (Maintenance and Repair)

9.0 RESPONSIBILITIES
10.0 RECORDS MANAGEMENT
11.0 TRAINING
12.0 ATTACHMENTS

1.0 STANDARD STATEMENT

1.1 **Specification:** This standard sets forth details relevant to materials and/or equipment and establishes criteria for performance. Deviations to this standard can be granted by the Integrity, Damage Prevention & Risk Manager or the Corrosion Management Supervisor or their designee.

2.0 PURPOSE

2.1 This standard provides information, guidelines and procedures associated with the management of external corrosion on cased pipelines.

3.0 SCOPE

3.1 This standard shall apply to all MPL, MPC (Terminal and Refining), MOC and their partial interest owned pipeline assets whose cathodic protection is managed by MPL IDP&R Corrosion Management Services.

4.0 MAINTENANCE OF STANDARD

4.1 The Corrosion Management Supervisor will be responsible for the maintenance of this Standard Specification.

5.0 REGULATIONS

5.1 *DOT PHMSA Regulation §49 CFR Part 195 Subpart H (195.551 – 195.589)*

5.2 *DOT PHMSA Regulation §49 CFR Part 192 Subpart I (192.451 – 192.491)*

6.0 REFERENCES

6.1 NACE Standard Practice SP0169 Control of External Corrosion on Underground or Submerged Metallic Piping Systems.

6.2 NACE Standard Practice SP0286 "Electrical Isolation of Cathodically Protected Pipelines"

6.3 NACE Standard Practice SP0200 "Steel-Cased Pipeline Practices".

6.4 DNV-RP-F101 "Corroded Pipelines"

6.5 Peabody's Control of Pipeline Corrosion, Second Edition, A.W. Peabody

6.6 Cathodic Protection, Second Edition, J. H. Morgan

6.7 Handbook of Cathodic Corrosion Protection: Theory and Practice of Electrochemical Protection Processes. Third Edition, W. von Baeckmann, W. Schwenk, and W. Prinz, Editors.

6.8 ISO 15589-1 "Petroleum and natural gas industries – Cathodic protection of pipeline transportation systems – Part 1: On-land pipelines"

7.0 DEFINITIONS

7.1 **Anode:** The electrode of an electrochemical cell at which oxidation occurs. Electrons flow away from the anode in the external circuit. Corrosion usually occurs and metal ions enter solution at the anode.

7.2 **Anomaly:** Any deviation from nominal conditions in the external wall of the pipe, its coating, or electromagnetic conditions around the pipe.

7.3 **Boot Seal:** A "boot seal" is a type of casing end seal that fits over the outside of the carrier pipe and the end of the casing to seal off the casing's annular space from moisture.

7.4 **Carrier Pipe:** The pipe or piping that is within the casing (i.e., cased pipe).

7.5 **Casing:** A metallic pipe (normally steel) installed to contain a pipe or piping.

7.6 **Casing-to-Electrolyte Potential:** The potential difference between the casing metallic surface and electrolyte that is measured with reference to an electrode in contact with the electrolyte.

7.7 **Casing Insulator:** A "casing insulator", "spacer" or "casing insulating spacer" is a device made of a dielectric (non-metallic/non-conductive) material which is installed at regular intervals along the carrier pipe to keep the carrier pipe from coming into contact with the casing pipe.

7.8 **Cathodic Protection (CP):** A technique to reduce the corrosion of a metal surface by making that surface the cathode of an electrochemical cell.

7.9 **Coating:** A liquid, liquefiable, or mastic composition that, after application to a surface, is converted into a solid protective, decorative, or functional adherent film.

7.10 **Coating Disbondment:** The loss of adhesion between a coating and the pipe surface.

7.11 **"COMPANY"** refers to Marathon Pipe Line LLC

7.12 **"CONTRACTOR",** refers to the company performing the operation. If the COMPANY employees are performing the work, then the requirements set forth for CONTRACTOR shall be followed by the COMPANY personnel.

7.13 **Corrosion:** The deterioration of a material, usually a metal, that results from a reaction with its environment.

7.14 **Corrosion Rate:** The rate at which corrosion proceeds.

7.15 **Criterion:** Standard for assessment of the effectiveness of a cathodic protection system.

7.16 **Dog Leg:** The term "dog leg" refers to that portion of the casing vent that runs in a direction other than vertical from the casing.

7.17 **Electrical Isolation:** The condition of being electrically separated from other metallic structures or the environment.

7.18 **Electrolyte:** A chemical substance containing ions that migrate in an electric field. For the purpose of this standard, electrolyte refers to the soil or liquid adjacent to and in contact with a buried or submerged metallic system, including the moisture and other chemicals contained therein.

7.19 **Foreign Structure:** Any metallic structure that is not intended as a part of a system under cathodic protection.

7.20 **Holiday:** A discontinuity in a protective coating that exposes unprotected surface to the environment.

7.21 **Impressed Current:** An electric current supplied by a device employing a power source that is external to the electrode system. (An example is direct current for cathodic protection.)

7.22 **Interference:** Any electrical disturbance on a metallic structure as a result of stray current.

7.23 **Link Seal:** Is a type of casing end seal composed of expandable rubber links, which is installed in the annular space between the casing and the carrier pipe to seal out the moisture.

7.24 **Owner:** The term "Owner" shall mean Marathon Pipe Line LLC (MPL), its Subsidiaries, and Affiliates. In the event that the "Owner" is performing the scope, the terms "Contractor" shall also apply to the "Owner"

7.25 **Pipe-to-Electrolyte Potential:** The potential difference between the pipe metallic surface and electrolyte that is measured with reference to an electrode in contact with the electrolyte.

7.26 **Reference Electrode:** An electrode whose open-circuit potential is constant under similar conditions of measurement, which is used for measuring the relative potentials of other electrodes.

7.27 **Shielding:** Preventing or diverting the cathodic protection current from its intended path.

7.28 **Shorted Casing:**

7.28.1 **Direct (Metallic) Short:** A Metal to metal contact between the carrier pipe and the casing caused by construction procedures, misalignment, settling or movement of the carrier pipe or casing. A casing in which the pipe-to-soil and casing-to-soil potential potential difference is less than 100 mV with cp systems on. See MPL Standards TNL-OPR-10033-PRD "Potential Measurement Procedure-Allegro Data Collector" and TNL-OPR-10036-PRD "Potential Measurement-Digital Volt Meter" for the procedures for measuring Structure and Casing pipe-to-soil potentials.

7.28.2 **Electrolytic (Resistive) Short:** Contact between carrier pipe at a holiday and the casing, via an electrolyte (e.g., water or soil). A casing in which the casing-to-soil is – more negative than 800 mV with cp systems on. See MPL Standards TNL-OPR-10033-PRD "Potential Measurement Procedure-Allegro Data Collector" and TNL-OPR-10036-PRD "Potential Measurement-Digital Volt Meter" for the procedures on how to measure Casing pipe-to-soil potentials.

7.29 **Voltage:** An electromotive force or a difference in electrode potentials expressed in volts.

8.0 STANDARD CONTENT

8.1 Casing Installation

8.1.1 The installation of casings shall be performed in accordance with MPL Standard MPLCON017 "Crossing Installation: Un-Cased, Cased, Mechanically Reinforced".

8.1.2 The installation of new cased crossing shall include filling material according to Section 8.4 and Attachment 12.1 "Cased Pipe Preparation and Filling Procedures" of this Standard".

8.2 Casing Monitoring

8.2.1 All cased pipe is monitored to assess the integrity of the carrier pipe.

8.2.2 MPL considers the following inspections methodologies to monitor casings:

8.2.2.1 **Evaluation of the Electrical Isolation Condition**: The electrical isolation condition between the carrier pipe and the casing shall be determined following the structure and casing pipe-to-soil procedures in MPL Standards TNL-OPR-10033-PRD "Potential Measurement Procedure-Allegro Data Collector" and TNL-OPR-10036-PRD "Potential Measurement-Digital Volt Meter".

a) Casing status (i.e., not shorted or the type of short) is identified and documented in the PCS corrosion database. An evaluation of the electrical isolation condition between the carrier pipe and the casing shall be conducted at least once a year. Monthly reports are generated from the PCS corrosion database to identify changes in the electrical isolation condition of the casing, allowing for faster prioritization and mitigation of metallically/electrolytically shorted casings.

b) Casings identified as metallically/electrolytically shorted may have validation testing performed to confirm electrical isolation status. Testing shall be performed utilizing one of the test methods identified below and/or other industry approved methods (e.g., Panhandle Eastern, IR Drop Method, Casing Depolarization, etc.).

i) Interrupt a rectifier located some distance away from the casing, at least a half-mile would be preferable. Pipe-to-soil potentials should change in the negative direction while the casing-to-soil potentials should remain unchanged or shift in the positive direction.

ii) Apply a small increment of current (0.1 amp for example) to the casing for one to two minutes. Measure and record the pipe-to-soil and casing-to-soil potentials and the potential difference between the pipe and casing. In equal increments change the current output of the power supply at least three times making the same measurements as above. The amount of current required for an accurate evaluation is a function of the size of the casing and condition of the pipeline coating. The following should be used as a criteria for this test:

If the casing is properly isolated from the pipeline then a significant potential difference will occur between the carrier pipe and the casing. The casing-to-soil potential will shift in the positive direction and the pipe-to-soil potential will remain near to its normal potential.

If the casing is shorted to the pipeline then the pipe-to-soil and casing-to-soil potentials will both shift in the positive direction. A minimum potential difference between the two structures may occur.

iii) Other tests as recommended by an MPL Corrosion Specialist.

8.2.2.2 **In-Line Inspection Data Regarding Casings**: The Integrity, Damage Prevention & Risk Management (IDP&R) Analysis Process Leader (APL) provides a Casing Study Report to the CMS Corrosion Specialist responsible for the Casing Program.

8.2.2.3 **Responding to External Corrosion Direct Assessment (ECDA) Data Regarding Casings:** The condition of the carrier pipe and the casing shall be documented when a cased pipe segment is assessed with ECDA.

8.2.2.4 **Other Technology:** The condition of the carrier pipe and the casing shall be documented when a cased pipe segment is assessed with Other Technology approved by the IDP&R Manager or his designee.

8.2.2.5

8.2.3 The results of the casing monitoring are prioritized following the guidelines presented in Attachment 12.2 "Casing Mitigation Prioritization" of this standard.

8.3 Casing Prioritization

8.3.1 Casings shall be prioritized following the guidelines presented in Attachment 12.2 "Casing Prioritization" of this standard. Shorted casings shall be prioritized within 60 days of discovery and documented in PCS with the assigned priority.

8.3.2 The cased pipe mitigation prioritization shall be updated by the CMS Corrosion Specialist responsible for the Casing Program after ILI data analysis, upon completion of an ECDA, annually upon completion of the CP annual surveys and after completion of casing mitigation activities.

8.3.3 The Casing Prioritization is documented in Attachment 12.3 – Casing Prioritization Results.

8.3.4 Casings prioritized as "2" or "3" may be re-prioritized by the MPL IDP&R Integrity Manager to a higher prioritization based upon specific company risk tolerances.

8.3.5 Pipeline Casing Priority "1": A corrective action plan shall be developed and initiated within 90 days after discovery of the short.

8.3.6 Pipeline Casing Priority "2": A corrective action plan shall be developed and initiated within 180 days after discovery of the short.

8.3.7 Pipeline Casing Priority "3": Shall be monitored with remediation only if the condition or priority changes. Re-prioritization of these casings shall be conducted annually.

8.4 Casing Mitigation (Maintenance and Repair)

8.4.1 Casing Mitigation Alternatives shall be conducted over the cased pipe as determined by section 8.3 "Casing Prioritization" of this standard.

8.4.2 Casing Mitigation Alternatives are:

8.4.2.1 Clearing Shorted Casing

a) Clearing the Casing and Carrier Electrolytic Short - Casing Filling shall be conducted following the procedures established in Attachment 12.1 "Cased Pipe Preparation and Filling Procedures" of this standard".

1) Prior to commencing the preparation and filling of the casing, the Project Leader shall fill the "Casing Filling Project Questionnaire" presented in Attachment 12.4 of this standard.

2) Prior to commencing the filling of the casing, the condition of the end seals shall be tested following the procedure "Pipeline Integrity Static Air Testing Procedure. Pressure Testing Casing End Seals"" presented in Attachment 12.5 of this standard.

3) Upon completion of the casing filling, the Project Leader shall fill the form CFCF001 "Casing Filling Completion Form" presented in Attachment 12.6 of this standard.

4) Casings filled under this program will be monitored on an annual basis. Casings vents will be probed to check for continued adequate fill level and electrical isolation status will be monitored with the annual survey.

b) Clearing the Casing and Carrier Pipe Direct Short - The clearing of the casing and carrier pipe direct short shall be conducted following the procedures established in Attachment 12.7 "Clearing Casing and Carrier Pipe Metallic Short" of this standard.

8.4.2.2 Casing Removal - Casing removal shall be conducted following the guidelines established in MPL Standard MPLMNT012 "Casing Removal & Response".

8.4.2.3 Casing Installation / Replacement - Casing replacement shall be conducted following the guidelines presented in MPL Standard MPLCON017 "Crossing Installation: Un-Cased, Cased, Mechanically Reinforced".

8.4.2.4 Abandonment of Cased Crossing and Replacement with un-cased pipe – The abandonment of a cased pipe with an un-cased pipe at a crossing shall be conducted following the guidelines presented in MPL Standard MPLCON017 "Crossing Installation: Un-Cased, Cased, Mechanically Reinforced".

9.0 RESPONSIBILITIES

9.1 Area Corrosion Technician

9.1.1 Responsible for maintaining the following information related to casings in the Pipeline Compliance System (PCS) computer database:

9.1.1.1 Casing location;

9.1.1.2 CP data;

9.1.1.3 Casing status (e.g., electrical isolation condition and filling).

9.1.2 Responsible for assisting the Corrosion Management Services (CMS) Corrosion Management Specialist with System Responsibilities (CSSR) and the CMS Corrosion Specialist responsible for the Casing Program by providing information for budgeting and project support as may be requested.

9.2 IDP&R Analysis Process Leader (APL)

9.2.1 Responsible for providing casing corrosion anomaly information to the CMS Corrosion Specialist responsible for the Casing Program.

9.2.2 Responsible for working with the CMS Corrosion Specialist responsible for the Casing Program to reconcile ILI casing location information with the PCS and GIS databases.

9.3 IDP&R CMS Corrosion Specialist responsible for the Casing Program

9.3.1 Responsible for annually conducting the prioritization of all casings and determining the ranking for mitigation.

9.3.2 Responsible for following the MPL Budget Process to ensure the prioritized and ranked casings are budgeted for mitigation.

9.3.3 Responsible for working with the APL and GIS Specialist to ensure casing locations are reconciled.

9.3.4 Responsible for supporting the Project Leader for casing mitigation projects as may be requested.

9.3.5 Responsible for making continuous improvements in the Casing Program.

9.3.6 Responsible for developing and communicating metrics for the Casing Program.

9.4 IDP&R CMS Corrosion Specialist responsible for the External Corrosion Direct Assessment (ECDA) Program

9.4.1 Responsible for conducting casing corrosion mitigation as applicable in conjunction with ECDA projects and in accordance with this standard.

9.4.2 Responsible for communicating casing status and corrosion mitigation project information to the appropriate CMS Corrosion Specialist responsible for the Casing Program, Corrosion Specialist with System Responsibilities (CSSR) and PCS coordinator.

9.5 IDP&R CMS PCS Coordinator

9.5.1 Responsible for providing assistance, as requested, to the Area Corrosion Technician, CMS CSSR and CMS Corrosion Specialist responsible for the Casing Program in maintaining casing location information, cp data and short and fill status in the PCS computer database.

9.5.2 Responsible for providing assistance to the CMS Corrosion Specialist responsible for the Casing Program, as requested, in querying the PCS computer database for metric and report data and information.

9.6 IDP&R CMS CSSR

9.6.1 Responsible for providing casing information and technical assistance, as requested, to the CMS Corrosion Specialist responsible for the Casing Program, M&TE Project Leader, Area Corrosion Technician and CMS PCS Coordinator.

9.7 IDP&R Corrosion Management Supervisor

9.7.1 Responsible for oversight of the Casing Program and to provide guidance and direction to the CMS Corrosion Specialist responsible for the Casing Program.

9.8 M&TE GIS Specialist

9.8.1 Responsible for working with the CMS Corrosion Specialist responsible for the Casing Program to reconcile ILI casing location information with the PCS and GIS databases.

9.9 M&TE Project Leaders

9.9.1 Responsible for management documentation and Closing of casing mitigation projects.

9.9.2 Responsible for completing Attachment 12.6 – Casing Filling Completion Form and providing a copy to the CMS Corrosion Specialist responsible for the Casing Program.

10.0 RECORDS MANAGEMENT

10.1 Casing records shall be maintained as follows:

10.1.1 Casing CP data and short and fill status shall be maintained in the PCS computer database. The Marathon record retention code for these records is Record, Maintenance and Repair – Pipeline and Terminal (ACT+10).

10.1.2 Casing mitigation project records shall be maintained in the individual Project Files located in Title & Contract Central File Room. The Marathon record retention code for these records is Record, Maintenance and Repair – Pipeline and Terminal (ACT+10).

11.0 TRAINING

11.1 Purpose:

11.1.1 The purpose of training for this Standard shall be for applicable MPL employees to successfully fulfill their assigned responsibilities by understanding procedures that have been developed to address and manage the threat of corrosion associated with pipeline casings.

11.2 Required Training:

11.2.1 Awareness:

11.2.1.1 ES&R Compliance Professionals

11.2.1.2 IDP&R Risk Management Professionals

11.2.1.3 IDP&R Analysis Process Leaders

11.2.1.3 IDP&R System Integrity Leaders

11.2.1.4 IDP&R Corrosion Management Pipeline Compliance System (PCS) Coordinator

11.2.1.5 M&TE GIS Specialist

11.2.1.6 Area Managers

11.2.1.7 Area Corrosion Technicians

11.2.2 Oversight:

11.2.2.1 IDP&R Corrosion Management Supervisor

11.2.2.2 M&TE Project Leaders

11.2.3 Execution:

11.2.3.1 IDP&R Corrosion Management Specialists

11.3 Learning Objectives:

11.3.1 Awareness:

11.3.1.1 At the conclusion of the awareness level of training, the affected employees will have an overall understanding of the procedures that have been developed to address and manage the threat of corrosion associated with pipeline casings.

11.3.2 Oversight:

11.3.2.1 At the conclusion of the oversight level of training, the affected employees will have a thorough knowledge of the procedures that have been developed to address and manage the threat of corrosion associated with pipeline casings.

11.3.3 Execution:

11.3.3.1 At the conclusion of the execution level of training, the affected employees will be able to accurately facilitate their role in accordance with the procedures that have been developed to address and manage the threat of corrosion associated with pipeline casings.

11.4 Related Training:

11.4.1 All referenced MPL Standards.

11.5 Delivery Methods:

11.5.1 Awareness:

11.5.1.1 Annual "View & Credit" on MaraLearn.

11.5.2 Oversight:

11.5.2.1 Annual "View & Credit" on MaraLearn.

11.5.3 Execution:

11.5.3.1 Annual review of the standard and completion of test.

11.6 Delivery Time:

11.6.1 Awareness:

11.6.1.1 Approximately ¾ hour

11.6.2 Oversight:

11.6.2.1 Approximately ¾ hour

11.6.3 Execution:

11.6.3.1 Approximately 1 ½ hours

11.7 Refresher Training:

11.7.1 Refresher training will occur whenever the standard is revised or at the discretion of the Integrity, Damage Prevention & Risk Manager, or his designee.

11.7.2 Refresher training will be by View and Credit on MaraLearn.

12.0 ATTACHMENTS

12.1 Cased Pipe Preparation and Filling Procedure

12.2 Casing Prioritization

12.3 Casing Prioritization Results Spreadsheet (Example)

12.4 Casing Filling Project Questionnaire

12.5 Static Air Testing Procedure for Casings

12.6 Casing Filling Completion Form

12.7 Procedure for Clearing Metallic Shorted Casing