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Chris Hoidal
Director, Western Region
DOT - PHMSA
12300 W. Dakota Ave, Suite 110
Lakewood, CO 80228

January 12th of 2012

Re: Amendment to CPF 5-2011-6008M Response Letter:

Dear Mr. Hoidal,

This letter is being resubmitted as an amendment to the response, dated December 20th of 2011, to the Notice of Amendment CPF 5-2011-6008M regarding an inspection of Tesoro Hawaii Corporation's DOT Liquid Pipeline Operations & Maintenance Manual. The Tesoro Liquid Pipeline Operations & Maintenance Manual has been revised to address the inadequacy identified in this Notice of Amendment. The revised Procedure OM012 Maximum Operating Pressure is attached for your review (See *Attachment 1*). Listed below is the Tesoro Hawaii Corporation's inspection inadequacy and resolution of procedure revision.

49 CFR 195.406 Maximum Operating Pressure:

a. **Issue**: Tesoro Hawaii's Maximum Operating Pressure is inadequate. At the time of the inspection, Tesoro Hawaii's procedure, OM012 Maximum Operating Pressure (MOP), with respect to page 3 of 5, refers the reader to Subpart E of 49 CFR Part 195 and not its own procedures for describing design and test pressure parameters that will be used for determining a pipeline's MOP. An operator may not simply reference 49 CFR Part 195 Pipeline Safety Regulations as a plan or procedure. An operator must utilize pipeline-specific procedures that are applicable to the unique characteristics of their facilities and comply with the Federal regulations.
b. ***Resolution: The Tesoro Liquid Pipeline Operations & Maintenance Manual Procedure OM012 Maximum Operating Pressure (MOP) Section will be revised to incorporate the 49 CFR 195.406 regulatory required text into the procedure where the applicable regulatory references are located.***

Please contact Lori Menke at Lori.A.Menke@tsocorp.com if you have any questions.

Sincerely,

Lori Menke
DOT Compliance Specialist
Tesoro Refining & Marketing Company

Attachment 1: Procedure OM012 Maximum Operating Pressure

Attachment 1:

Tesoro's DOT Liquid Pipeline Operations & Maintenance Manual

Procedure OM012 Maximum Operating Pressure

SCOPE	This procedure ensures that Tesoro's pipelines do not exceed safe operating pressure limits during normal operations, in accordance with *49 CFR §195.406.*
RESPONSIBILITY	◆ ECM ◆ Regional Manager ◆ Pipeline Operator ◆ Engineering Manager ◆ Area Engineer
FREQUENCY	As necessary
INTRODUCTION	A pipeline cannot be operated unless the Maximum Operating Pressure (MOP) has been determined and documented. The Regional Manager shall maintain documentation of the Maximum Operating Pressure (MOP) determination for all regional pipelines.
Design Formula for Pipe	Reference: *49 CFR §195.106* The Internal Design Pressure for the pipe in a pipeline is determined in accordance with Barlow's formula, given below: For steel: P = (2St/D) x E x F, where: ◆ P = Internal design pressure in psig ◆ S = Yield strength in psi ◆ Determined in accordance with the guidelines in the paragraph below. ◆ t = Nominal wall thickness of the pipe in inches. ◆ If this is unknown, refer to the section below, in accordance with *49 CFR §195.106 (c)&(d)* ◆ D = Nominal outside diameter of the pipe in inches. ◆ E = Seam joint factor ◆ Determined by the table in the section below. ◆ F = Design factor of 0.72, with the following exemptions: ◆ F = 0.60 for pipe, including risers, on a platform located offshore or on a platform in inland navigable waters. ◆ F = 0.54 for pipe that has been subjected to cold expansion to meet the specified minimum yield strength (SMYS) and is subsequently heated, other than by welding or stress relieving as a part of welding, to a temperature higher than 900°F for any period of time or over 600°F for more than 1 hour. S, Yield Strength: The yield strength to be used in determining the internal design pressure is the specified minimum yield strength (SMYS). If the SMYS is not known, the "S" (yield strength) to be used in the design formula is one of the following: (in accordance with *49 CFR §195.106 (b)(1)*) ◆ The yield strength determined by performing all of the tensile tests of *API Specification 5L/ISO 3183-2009* on randomly selected specimens with the following number of tests:

D, Pipe Nominal Outside Diameter (inches)	Number of Tests
D < 6 5/8	One test for each 200 lengths
6 5/8 < D < 12 ¾	One test for each 100 lengths
D > 12 ¾	One test for each 50 lengths

- If the average yield-tensile ratio is greater than 0.85, use S = 24,000 psi
- If the average yield-tensile ratio is 0.85 or less, "S" is the lower of the following:
  - 80% of average yield strength determined by the tensile tests
  - The lowest yield strength determined by the tensile tests

t, Nominal Wall Thickness if Unknown:

- If the nominal wall thickness is unknown, it is determined by measuring the thickness of each piece of pipe at quarter points on one end.
- If the pipe is of uniform grade, size, and thickness, measure 10 individual lengths, or 5% of all lengths, whichever is greater. The thickness of the lengths that are not measured must be verified by applying a gage set to the minimum thickness found by the measurement. The "t" to be used is the next wall thickness found in commercial specifications that is below the average of all the measurements taken.
- If nominal outside diameter is less than "20", "t" may not be more than 1.14 times the smallest measurement taken
- If nominal outside diameter is greater than or equal to "20", "t" may not be more than 1.11 times the smallest measurement taken
- The minimum wall thickness of the pipe may not be less than 87.5% of the value used for nominal wall thickness in determining the internal design pressure under this procedure. In addition, the anticipated external loads and external pressures that are concurrent with internal pressure must be considered, in accordance with *49 CFR §195.108 and 195.110*. The nominal wall thickness must be increased as necessary after determining the internal design pressure, to compensate for these concurrent loads and pressures.

E, Seam Joint Factor Determination Table:

- If the seam joint factor is not covered by this table, notify the Environmental Compliance Manager (ECM). The ECM must obtain DOT approval for use of any factor that is not in this table.

Specification	Pipe Class	E, Seam Joint Factor
ASTM A53	Seamless	1.00
	Electric resistance welded	1.00
	Furnace lap welded	0.80
	Furnace butt welded	0.60
ASTM106	Seamless	1.00

		ASTM A333/A333M	Seamless	1.00
			Welded	1.00
		ASTM A381	Double submerged arc welded	1.00
		ASTM A671	Electric-fusion welded	1.00
		ASTM A672	Electric-fusion welded	1.00
		ASTM A691	Electric-fusion welded	1.00
		API 5L	Seamless	1.00
			Electric resistance welded	1.00
			Electric flash welded	1.00
			Submerged arc welded	1.00
			Furnace lap welded	0.80
			Furnace butt welded	0.60

Maximum Operating Pressure (MOP)	Reference: *49 CFR §195.406 & Subpart E* Except for surge pressures and other variations from normal operations, a pipeline may <u>not</u> be operated at a pressure that exceeds any of the following: ◆ The internal design pressure of the pipe, as calculated above in *Design Formula for Pipe* row. ◆ The design pressure of any other component of the pipeline ◆ 80% of the test pressure for any part of the pipeline which has been pressure tested per procedure *OM005 Pressure Testing.* ◆ 80% of the factory test pressure or of the prototype test pressure for any individually installed component which is not required to be tested per procedure *OM005 Pressure Testing.* ◆ 80% of the test pressure or highest operating pressure to which the pipeline was subjected for 4 or more continuous hours (to be demonstrated by recording charts or logs made at the time of the test or at the time of operations). This only applies to pipelines subject to procedure *OM005 Pressure Testing* that have not been pressure tested. During surges or other variations from normal operation, the pipeline may not be operated at a pressure that exceeds 110% of the Maximum Operating Pressure (MOP). Adequate controls or protective equipment must be used to prevent this from occurring.
Uprating / Derating MOPs	If for any reason a pipeline's Maximum Operating Pressure (MOP) is to be uprated or derated, Pipeline Operations will notify the Environmental Compliance Manager (ECM) for review of the total scope of work necessary to bring the pipeline into compliance with *49 CFR §195*. Factors that could cause a pipeline's MOP to change include the following: ◆ Discovery of internal/external corrosion reducing the pipe's wall thickness ◆ Safety-Related Condition (see *OM002 Reporting*)

Protective Shut-Down Devices	Reference: *49 CFR §195.406(b)* Set-point Requirements: All Company facilities will be operated at pressures at or below the Maximum Operating Pressure (MOP), as required by this procedure. Each facility shall include adequate overpressure protection in its original design, including: ◆ MOP documentation ◆ Overpressure protection equipment and associated documentation ◆ Set-points for each device The station protective shutdown switches are usually clustered together and installed on an instrument panel near the pumping units. These protective devices are vital for the protection and safe operation of the pipeline system and will not permit the pressure in the pipeline system to exceed 110% MOP. The switches may include: ◆ Station low-suction pressure ◆ Unit case pressures for each centrifugal pump ◆ Station high-discharge pressure ◆ Sump relief devices
MOP Pressure Reduction	Reference: *49 CFR §195.452* Pressure in the pipeline can be reduced to ensure pipeline integrity, in accordance with the *Tesoro Integrity Management Program*. This is considered a temporary measure, not to exceed 365 days, which may be implemented before further remedial action is taken to ensure the safety of the pipeline. This option is used in select cases where Tesoro is further evaluating a defect or until the defect can be repaired. Criteria and conditions for implementing a pressure reduction are included in *Tesoro Integrity Management Procedure IM010 Pipe Repairs.*
PROCEDURE	The Area Engineer is responsible for identifying pipeline Maximum Operating Pressure (MOP). Regional Managers and their Pipeline Operators are responsible for maintaining safe pipeline operating pressure limits during normal operations, and for making pressure reductions to ensure pipeline integrity.
DOCUMENTATION	The Regional Manager will maintain documentation for the Maximum Operating Pressure (MOP) determinations for all regional pipelines.
REFERENCES	◆ *49 CFR §195.402(a) Procedural manual for operations, maintenance, and emergencies* ◆ *49 CFR §195.406 Maximum Operating Pressure* ◆ *49 CFR §195.106 Internal design pressure* ◆ *49 CFR §195.452 Pipeline Integrity Management in High Consequence Areas* ◆ *Tesoro Integrity Management Procedure IM010 Pipe Repairs* ◆ *OM002 Reporting*

	• *OM005 Pressure Testing* • *49 CFR §195 Subpart E Pressure Testing* • *49 CFR §195.304 Test Pressure* • *API Specification 5L/ISO 3183-2009 Specification for Line Pipe (44th Edition)*

REVISION CONTROL

DATE	DESCRIPTION OF CHANGES
7/1/09	Rev. 0: Procedure creation
5/1/10	Rev. 1: Added "Engineering Manager" to the *Responsibilities* Row. Updated font colors for references.
10/1/10	Rev. 2: Updated the *API 5L* version to *API Specification 5L/ISO 3183-2009 Specification for Line Pipe (44th Edition)*, in accordance with the 8/11/10 federal register notice of *49 CFR §195.3 Incorporation by Reference* revisions.
1/12/12	Rev. 3: Updated the *Design Formula for Pipe row* with *49 CFR §195.106(d)* requirements (per CSFM D.L.). Revised the *Maximum Operating Pressure* row to reference Tesoro Procedure *OM005 Pressure Testing* in replace of the DOT Regulation reference.