Sunoco Logistics

Sunoco Pipeline L.P.
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Sugar Land, TX 77478

VIA: Overnight Mail

April 30, 2011

Mr. David Barrett
Director, Central Region
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
901 Locust Street, Suite 462
Kansas City, MO 64106-2641

Re: NOA CPF No. 3-2010-5013M /
Integrated Inspection – 2009 Mid-Valley Pipeline Co.

Dear Mr. Barrett:

This letter is our response to your Notice of Amendment dated November 23, 2010.

1. §195.54 Accident reports.
(b) Whenever an operator receives any changes in the information reported or additions to the original report on DOT Form 7000-1, it shall file a supplemental report within 30 days.

Note: Mid-Valley's procedures did not require a supplemental report to be filed whenever it receives any changes in information or has any additions to the original report.

RESPONSE:
We have amended our **Sunoco Pipeline L.P. & Affiliates DOT 195 Maintenance Manual,** Section 195.50 (attached as Item 1) to include the requirement "When an operator receives any changes in the information reported or additions to the original report on DOT Form 7000-1, it shall file a supplemental report within 30 days."

2. §195.402 Procedural manual for operations, maintenance, and emergencies.
(a) General. Each operator shall prepare and follow for each pipeline system a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. This manual shall be reviewed at intervals not exceeding 15 months, but at least once each calendar year, and appropriate changes made as necessary to insure that the manual is effective. This manual shall be prepared before initial operations of a pipeline commence, and appropriate parts shall be kept at locations where operations and maintenance activities are conducted.
(c) Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following to provide safety during maintenance and normal operations:
(5) Analyzing pipeline accidents to determine their causes.

Note: Mid-Valley procedures did not provide sufficient guidance for analyzing pipeline accidents to determine their causes.

RESPONSE:
We have drafted a Guidance Document entitled **Root Cause Analysis and Required Incident Documentation.** This document is currently going through our procedures review and approval process. Once approval is completed it will be posted to the company intranet. The **Sunoco Pipeline L.P. & Affiliates DOT 195 Maintenance Manual,** Section 195.402 (a) (attached as Item 2) has been amended to include reference to this document as well as including the appropriate links to access the document. We will forward a copy of the document as part of our response once the approval process has been completed. This should be within 90 days.

3. §195.402 Procedural manual for operations, maintenance, and emergencies.
(a) General. Each operator shall prepare and follow for each pipeline system a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. This manual shall be reviewed at intervals not exceeding 15 months, but at least once each calendar year, and appropriate changes made as necessary to insure that the manual is effective. This manual shall be prepared before initial operations of a pipeline commence, and appropriate parts shall be kept at locations where operations and maintenance activities are conducted.
(c) Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following to provide safety during maintenance and normal operations:
(12) Establishing and maintaining liaison with fire, police, and other appropriate public officials to learn the responsibility and resources of each government organization that may respond to a hazardous liquid or pipeline emergency and acquaint the officials with the operator's ability in responding to a hazardous liquid or carbon dioxide pipeline emergency and means of communication.

Note: Mid-Valley's procedures did not require it to include appropriate electric utilities in its emergency pre-planning as outlined in Advisory Bulletin ADB-05-03.

RESPONSE:
We have revised our **PREP Training & Record Guide, Document Number EPP-101.** The **SMT-TTX/TST-TTX Drill Objectives** section of the **Drill Planning Worksheet** has been revised to include a requirement to "Consider or identify site specific ignition hazards to include electric utility lines. Contact information as well as relative response roles will be confirmed in the course of the drill". These revised procedures are completing the review and revision process and will be available for submission to PHMSA within 60 days.

4. §195.402 Procedural manual for operations, maintenance, and emergencies.
(a) General. Each operator shall prepare and follow for each pipeline system a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. This manual shall be reviewed at intervals not exceeding 15 months, but at least once each calendar year, and appropriate changes made as necessary to insure that the manual is effective. This manual shall be

prepared before initial operations of a pipeline commence, and appropriate parts shall be kept at locations where operations and maintenance activities are conducted.
(e) Emergencies. The manual required by paragraph (a) of this section must include procedures for the following to provide safety when an emergency condition occurs;
(9) Providing for a post accident review of employee activities to determine whether the procedures were effective in each emergency and taking corrective action where deficiencies are found.

Note: Mid-Valley has developed a Standard Incident Debriefing Form; however, its procedures did not describe when the post accident review is required or ensure that corrective action will be taken if deficiencies are found. Mid-Valley should consider conducting a review after each release.

RESPONSE:
We have revised our **Emergency Response Plan** to require the use of the **Standard Incident Debriefing Form** in the case of the following spills: (1) Any spill resulting in an explosion or fire, (2) Any spill resulting in the death of any person, (3) Any spill resulting in an injury requiring inpatient hospitalization, (4) Any spill impacting a lake, reservoir, stream, river or similar body of water, (5) Any spill resulting in more than $50,000.00 in damage including the cost of damage to facilities, spill clean up, emergency response, value of lost product and damage to property. These procedures are currently under the review and revision process. The revised referenced procedures will be completed and available for submission to PHMSA within 60 days.

5. §195.403 Emergency Response Training.
(b) At the intervals not exceeding 15 months, but at least once each calendar year, each operator shall:
(1) Review with personnel their performance in meeting the objectives of the emergency response training program set forth in paragraph (a) of this section; and
(2) Make appropriate changes to the emergency response training program as necessary to ensure that it is effective.

Note: Mid-Valley's procedures did not include sufficient provisions for conducting annual reviews of its emergency response training and making appropriate changes as necessary to ensure that it is effective.

RESPONSE:
We have revised our **PREP Training & Record Guide, Document Number EPP-101. Section 2.0 General Requirements** now states "Emergency Plans and Procedures will be reviewed annually not to exceed 15 months." These procedures are currently under the review and revision process. The revised referenced procedures will be completed and available for submission to PHMSA within 60 days.

6. §195.452 Pipeline integrity management in high consequence areas.
(f) What are the elements of an integrity management program? An integrity management program begins with the initial framework. An operator must continually change the program to reflect operating experience, conclusions drawn from results of the integrity assessments, and other maintenance and surveillance data, and evaluation

of consequences of a failure on the high consequence area. An operator must include, at minimum, each of the following elements in its written integrity management program: (3) An analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure (see paragraph (g) of this section);

Note: Mid-Valley's integrity management procedures did not provide criteria for what constitutes "high," "medium," "moderate" or "low" when characterizing pressure aggressiveness and the density remaining for ERF factors and defects. The process for collecting data from the various sources and subject matter experts for evaluation of the risk factors was not clearly delineated. The procedures also need to ensure that there are no inconsistencies between the final risk data and the baseline assessment plan for longitudinal seam weld susceptibility on some of the electric-flash-welded pipe in Mid-Valley's system.

RESPONSE:
Concerning the pressure cycle aggressiveness, immediately following the 2009 PHMSA inspection on the Mid-Valley Pipeline system, the **Sunoco Logistics Risk Model Workbook** appendix of the IMP was updated and issued as **Revision 6.** As part of this revision, the process and documentation used for ranking pressure cycle aggressiveness was added to our **Risk Model Catalog** and **Risk Model Workbook**. In order to clarify this item, Sunoco Logistics is currently also proposing to add additional statements on this methodology to **Sunoco Logistics IMP Section 3.1.1** as shown in the attached document. (Proposed draft changes are highlighted in red). Additional changes made to the **Risk Model Workbook** and **Risk Model Catalog** also further define the criteria used for items such remaining ERF anomalies or metal loss percentage density in the pipeline risk model. As a result, most of the rankings assigned in the Risk Model are now based on a numerical or other quantifiable result. (see attachment labeled Item 6)

The process for collecting data from various sources and subject matter experts is described in **Section 4.2** of the current IMP. The general methodology used to collect this data have not changed, however, at the time of the Mid-Valley inspection, the process had been developed and utilized in our Eastern Area but was relatively new to our Western Area. Through the combining of the Sunoco Logistics Integrity Group, the implementation of this process has been improved in the Western Area and is providing a result consistent with the Eastern Area.

Based upon PHMSA's comments during the closure of the 2009 Mid-Valley inspection, in mid-2009 Sunoco Logistics reviewed and corrected discrepancies between the pipeline Risk Model data the Baseline Assessment Plan as it pertains to the EFW seamed pipe. These changes were incorporated prior to the subsequent run of the **Pipeline Risk Model** and were taken into account in subsequent pipeline risk rankings.

7. §195.505 Qualification program.
Each operator shall have and follow a written qualification program. The program shall include provisions to:
(c) Allow individuals that are not qualified pursuant to this subpart to perform a covered task if directed and observed by an individual that is qualified;

Note: Mid-Valley's operator qualification plan did not include guidance for supervising unqualified individual(s) who do not speak English. Mid-Valley personnel indicated that they did not hire employees who do not speak English; however, that requirement was not documented.

RESPONSE:
We have amended our **Sunoco Pipeline L.P. & Affiliates Operator Qualification Plan, Section 8.2** (attached as Item 7) to include the requirement "The directed and observed individual must be able to communicate with one another in English. Non-English speaking OQ qualified individuals may be permitted to perform covered tasks as long as a bilingual individual is at the location and immediately available to interpret for the non-English speaking OQ qualified individual performing the covered task."

8. §195.505 Qualification program.
Each operator shall have and follow a written qualification program. The program shall include provisions to:
(g) Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.

Note: Mid-Valley's procedures included a 36-month requalification interval for the installation of Clocksprings that is inconsistent with the manufacturer's recommendation for an annual certification.

RESPONSE:
Sunoco Logistics reviewed the use of Clock Springs as an evaluation method for Operator Qualification. The term Clock Spring® training and certification is training specific to this manufacturer for their specific application recommendations. SPLP could not verify that enough controls were in place to accept the Clock Spring® training as an OQ evaluation. During our review of Clock Spring® recertification it was determined that this re-certification can be delivered via the internet without the requirement of an independent proctor. Sunoco Logistics only accepts NCCER with an AOC evaluation and or an internal performance evaluation as a recognized evaluation method for **Installing Pipe Repair Sleeves-Composite Task 403.** Clock Spring® training is completed as a manufacturer requirement.

9. §195.505 Qualification program.
Each operator shall have and follow a written qualification program. The program shall include provisions to: (i) After December 16, 2004, notify the Administrator or a state agency participating under 49 U.S.C. Chapter 601 if the operator significantly modifies the program after the Administrator or state agency has verified that it complies with this section.

Note: Mid-Valley's procedures did not define what constitutes a significant change that requires the Administrator to be notified. PHMSA issued Advisory Bulletin ADB-09-03 on December 7, 2009, which defines the term "Significant" that Mid-Valley may wish to reference in amending its procedures.

RESPONSE:
We have amended our **Sunoco Pipeline L.P. & Affiliates Operator Qualification Plan, Section 7 Management of Change**-page 10 (attached as Item 9) to include the requirement "As applicable to OQ program modifications, significant includes but is not limited to: increasing evaluation intervals, increasing span of control ratios, eliminating covered tasks, mergers and/or acquisition changes, evaluation method changes such as written vs. observation, and wholesale changes made to OQ plan."

10. §195.579 What must I do to mitigate internal corrosion?
(a) General. If you transport any hazardous liquid or carbon dioxide that would corrode the pipeline, you must investigate the corrosive effect of the hazardous liquid or carbon dioxide on the pipeline and take adequate steps to mitigate internal corrosion.

Note: Mid-Valley's procedures did not include adequate provisions for investigating the corrosive effect of its crude oil. Mid-Valley personnel stated that a study on the corrosiveness of its crude oil was underway. Mid-Valley has experienced several small internal corrosion leaks on piping in its station facilities and has implemented a dead-leg piping program to address the issue. Mid-Valley's procedures should formalize this program, as part of the preventive and mitigative measures in its integrity management plan to address the threat of internal corrosion on its pipelines that could affect high-consequence areas and experience limited flow conditions.

RESPONSE:
Sunoco Logistics' internal corrosion program has multiple components to investigate the corrosive effects or the liquid and for the on-going evaluation of the program. These components include results from bacteria cultures of water sampling points and internal corrosion coupons. The pipelines are also cleaned using maintenance cleaning tools (pigs) on a set frequency and recorded in an electronic database.

The data provided from these components is used in conjunction with the ILI results to determine the effectiveness of the internal corrosion program. Also, anytime the pipeline is opened up, a visual inspection of the internal surface of the pipeline is conducted to further confirm the effectiveness of the program. Based on these inspections, the internal corrosion program could be modified by increasing the frequency and/or type of cleaning tool being utilized or the addition or modification of a chemical treatment program.

The results of the corrosiveness study that was underway during the inspection were inconclusive. Multiple samples of crude oil were taken with little to no water able to be extracted for analysis. This led to the planning and installation of a water trap and coupon at Longview Station. The will allow product to be sampled over a longer duration which should result in a better chance to collect water for analysis.

Currently, Sunoco Logistics has coupons and water sampling locations at the following locations; Longview, Mayersville, and Hebron Stations on the 20"/22" pipeline. There is another water trap and coupon at Haynesville for the Big Heart 8" pipeline. There are plans for future installations of a water trap and coupon at Magnolia Station and Lima Station.

Sunoco Logistics has implemented a "dead leg" program to identify, risk rank, and remediate the potential risks associated with dead leg piping. The elimination of dead-legs is listed in the current version of the **Pipeline Integrity Management Plan (IMP), Rev 10 under section 5.1 "Established Company P&M Activities"** (attached as Item 10). In 2010, Operations evaluated known dead-leg segments and initiated a multi-year program to eliminate the risk of releases. The approach was to assess facilities and line segments including location, length, diameter, and service status.

Should you have any questions or require further information please contact K. David Born of our Sugar Land Texas office at 281-637-6497.

Sincerely,

David A. Justin
Vice President, Operations
Sunoco Pipeline L.P.

cc: Michael Slough- Montello
Kathleen Shea-Bally – 1818 Market
Chris Ruggiero – 1818 Market
Larry Shelton – Sugar Land
Kenneth D. Born – Sugar Land
Claudia Pankowski – Icedale

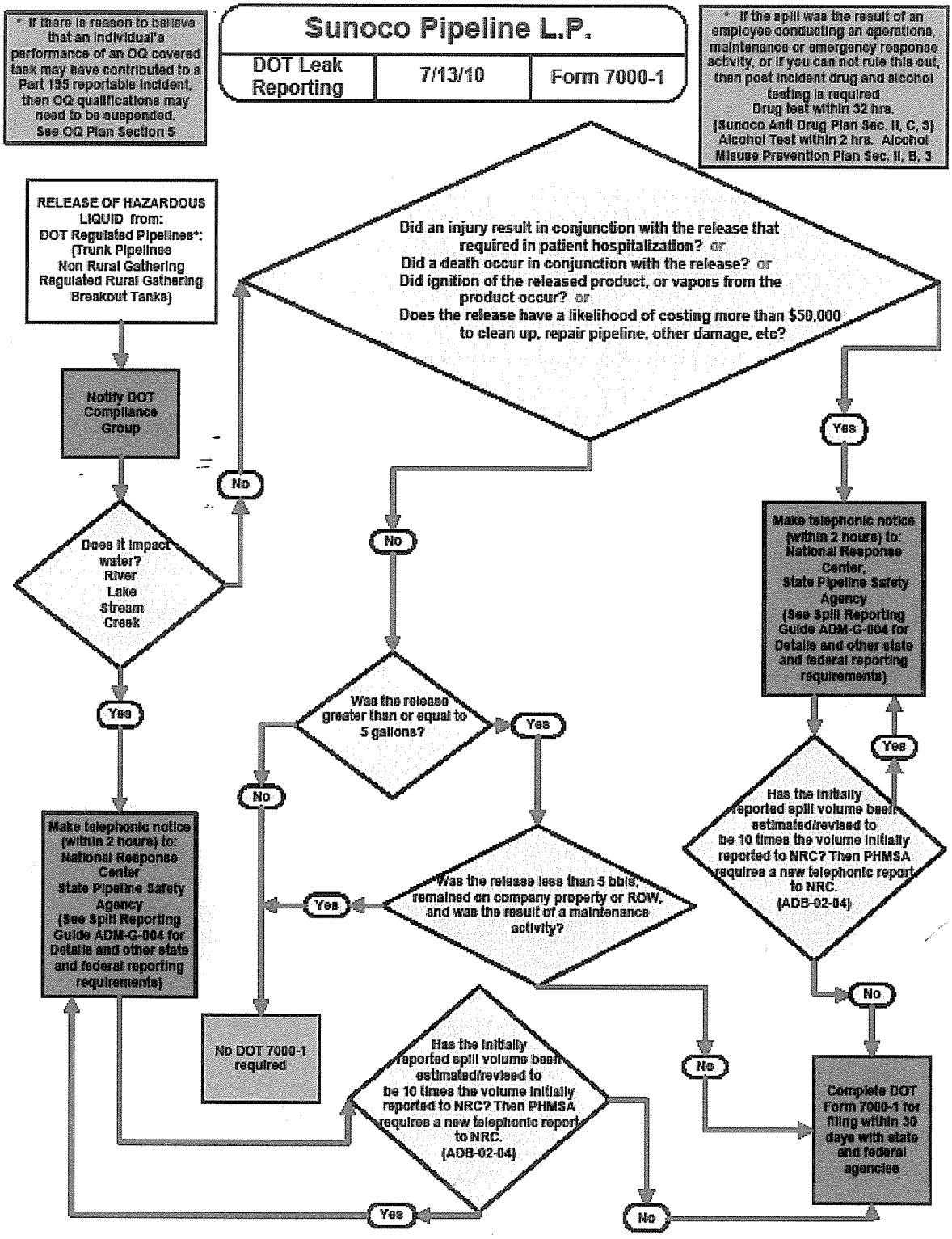
PURPOSE / OBJECTIVE
To provide guidance for reporting of a release of hazardous liquid from a Part 195 jurisdictional pipeline system.

SUBJECT COMPONENTS
All DOT 195 Regulated Pipelines

DOCUMENTATION
1. National Response Center (NRC) Report Number and date reported
2. DOT form RSPA F 7000-1 'Accident Report' – this report can be found and downloaded from the PHMSA website.

SPLP REQUIREMENTS / PROCESS DESCRIPTION
1. An accident report is required for each failure in a pipeline system subject to this part in which there is a release of the hazardous liquid or carbon dioxide transported resulting in any of the following:
   a. Explosion or fire not intentionally set by the operator.
   b. Release of 5 gallons (19 liters) or more of hazardous liquid or carbon dioxide, except that no report is required for a release of less than 5 barrels (0.8 cubic meters) resulting from a pipeline maintenance activity if the release is:
      i. Not otherwise reportable under this section;
      ii. Not one described in §195.52(a)(4);
      iii. Confined to company property or pipeline right-of-way; and
      iv. Cleaned up promptly;
   c. Death of any person;
   d. Personal injury necessitating hospitalization;
   e. Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding $50,000.

2. Immediate Notice of Certain Accidents by Telephonic or Electronic methods to National Response Center
   a. Accidents resulting in an event described above must be reported telephonically or electronically at the earliest practical moment following discovery of a release of hazardous material if it results in one of the following:
      i. Caused a death or a personal injury requiring hospitalization;
      ii. Resulted in either a fire or explosion not intentionally set by the operator;
      iii. Caused estimated property damage, including cost of cleanup and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding $50,000;
      iv. Resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shorelines; or
      v. In the judgment of the operator was significant even though it did not meet the criteria of any other paragraph of this section.


* If there is reason to believe that an individual's performance of an OQ covered task may have contributed to a Part 195 reportable incident, then OQ qualifications may need to be suspended. See OQ Plan Section 5
Sunoco Pipeline L.P.
DOT Leak Reporting
7/13/10
Form 7000-1
* If the spill was the result of an employee conducting an operations, maintenance or emergency response activity, or if you can not rule this out, then post incident drug and alcohol testing is required
Drug test within 32 hrs. (Sunoco Anti Drug Plan Sec. II, C, 3)
Alcohol Test within 2 hrs. Alcohol Misuse Prevention Plan Sec. II, B, 3
RELEASE OF HAZARDOUS LIQUID from:
DOT Regulated Pipelines*:
(Trunk Pipelines
Non Rural Gathering
Regulated Rural Gathering
Breakout Tanks)
Did an injury result in conjunction with the release that required in patient hospitalization? or
Did a death occur in conjunction with the release? or
Did ignition of the released product, or vapors from the product occur? or
Does the release have a likelihood of costing more than $50,000 to clean up, repair pipeline, other damage, etc?
Yes
No
Notify DOT Compliance Group
Does it impact water?
River
Lake
Stream
Creek
No
Yes
Make telephonic notice (within 2 hours) to:
National Response Center,
State Pipeline Safety Agency
(See Spill Reporting Guide ADM-G-004 for Details and other state and federal reporting requirements)
Was the release greater than or equal to 5 gallons?
Yes
No
Make telephonic notice (within 2 hours) to:
National Response Center
State Pipeline Safety Agency
(See Spill Reporting Guide ADM-G-004 for Details and other state and federal reporting requirements)
Was the release less than 5 bbls, remained on company property or ROW, and was the result of a maintenance activity?
Yes
No
Has the initially reported spill volume been estimated/revised to be 10 times the volume initially reported to NRC? Then PHMSA requires a new telephonic report to NRC. (ADB-02-04)
Yes
No
No DOT 7000-1 required
Has the initially reported spill volume been estimated/revised to be 10 times the volume initially reported to NRC? Then PHMSA requires a new telephonic report to NRC. (ADB-02-04)
Yes
No
Complete DOT Form 7000-1 for filing within 30 days with state and federal agencies

b. Reports made under paragraph (a) of this section are made by telephone to 800-424-8802 (in Washington, DC: 202-267-2675) or electronically at http://nrc.uscg.mil and must include the following information:
   i. Name and address of the operator.
   ii. Name and telephone number of the reporter.
   iii. The location of the failure.
   iv. The time of the failure.
   v. The fatalities and personal injuries, if any.
   vi. An initial estimate of amount of commodity released in accordance with written procedure to provide for calculation of a reasonable estimate of the amount of released commodity.
   vii. All other significant facts known by the operator that are relevant to the cause of the failure or extent of the damages.
c. Calculation of Initial Estimate of Amount of Commodity Released must be made in accordance with the Sunoco Logistics written procedure for estimating the amount of commodity released for pipeline accidents required to be immediately reported to the National Response Center as indicated in process 2.a above. This is effective January 1, 2011.
d. When 'significant' new information becomes available during the emergency response phase of a reported event, this new information must be reported telephonically or electronically to National Response Center at the earliest practicable moment after such information becomes known.

3. Written Reports
   a. Each operator that experiences an accident that is required to be reported under §195.50 shall as soon as practicable but not later than 30 days after discovery of the accident, prepare and file an accident report on DOT Form 7000-1 through the PHMSA on-line reporting system.
   b. Whenever an operator receives any changes in the information reported or additions to the original report on DOT Form 7000-1, it shall file a supplemental report within 30 days.
   c. All written reports shall be filed by the DOT Compliance Supervisors or their designee.

NOTES OR REMARKS

1. Per DOT RSPA Advisory Bulletin 'ADB-02-04' issued on August 30, 2002, pipeline operators are required to make an additional telephonic notification for a previously reported pipeline accident if any of the following significant changes to reported accident information is determined:
   a. There is an increase or decrease in the number of previously reported injuries or fatalities
   b. A revised estimate of the hazardous liquid release volume that is at least 10 times greater than the amount reported
   c. The estimate of property damage is increased to a least 10 times greater than the initially reported property damage estimate

2. Specific information on reporting pipeline accidents and other pipeline emergencies can be found in the Sunoco Logistics 'Oil Spill Response Plan' for the respective response zone under 'pipeline spill plans' or at:

   From Sunoco Logistics intranet home page:
   - Under **Topics** select **Health, Environment & Safety**
     - Under **Emergency Response/Security** select **Emergency Plans**
       - Under **Spill Plans** select **Pipeline**
         - Select appropriate **Oil Spill Response Plan for Response Zone**

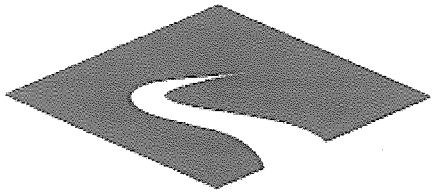
3. HES Procedure ADM-G-004 'Overview of Spill Reporting Guide' provides additional overview guidance for reporting requirements for PHMSA and State Pipeline Safety agencies as well as other agencies. This guide is broken down by federal agencies and by state. This document can be located at:

   From Sunoco Logistics intranet home page:
   - Under **Topics** select **Health, Environment & Safety**
     - Under **Emergency Response/Security** select **Procedures**
       - Select **Overview of Spill Reporting Guide – ADM-G-004**

4. The 'DOT Leak Reporting' flow chart for making telephonic reports to the National Response Center and filing 7000-1 accident reports should be referenced for determination of the appropriate actions by employees responsible for managing spills from jurisdictional pipelines. See previous page.

5. **It is recommended that operations and maintenance personnel referencing the above guides and flow chart print a copy of appropriate sections for reference in a binder to be kept in a readily accessible place should an incident occur.**

Item 6



Sunoco Logistics

PIPELINE INTEGRITY MANAGEMENT PLAN

SUNOCO PIPELINE L.P.

OPERATIONS

Revision 10

February 8, 2010

8.0 Time-Dependent Cracking Threat

8.1 Introduction

The risk category *Time-Dependent Cracking* (TDC) addresses the threat of near neutral stress corrosion cracking (SCC) and the threat of fatigue-induced cracking (which may or may not involve corrosion). SCC, which is a form of environmentally assisted cracking, is a time dependent threat which is still not fully understood by the industry. It typically involves a combination of disbonded coating, shielded or ineffective cathodic protection, low level corrosion, and operational stresses associated with pressure cycling amplitude and frequency (typically on lines that operate at pressures >50% of pipe SMYS). There has been some indication that SCC may also be associated with soil types and drainage conditions.

Pipeline failure due to fatigue-induced cracking does not necessarily have to involve corrosion. Cracking could be initiated at a stress riser due to mechanical damage, manufacturing defects, or from damage from one of the natural forces discussed in Section 9. Once a crack is initiated it requires either fatigue cycles and/or corrosion to grow to its critical failure length.

8.2 Assessment of the *TDC* Threat

The following risk factors are used to assess the *Time-Dependent Cracking* threat:

8.2.1 *Fatigue Cracking*

Fatigue is the weakening of a material due to repeated cycles of stress. The weakening originates with a flaw in the material. In theory, all materials have flaws. Right out of the mill, cracks, laminations, inclusions, impurities, and other imperfections can exist, if only at the microscopic level. Flaws, or stress concentrators, can also occur during the life of a pipeline if the pipeline is damaged or exposed to a corrosive environment. Left to themselves, tiny flaws are unlikely to cause a failure, even under extreme hydrostatic test pressures. But if repeated and aggressive load cycles are experienced flaws could grow large enough to fail at overpressure conditions, or even at normal operating conditions. Fatigue failures can result in a small leak, or in a rupture.

Assessment of the *Fatigue Susceptibility* risk factor focuses on identifying sections of the pipeline exposed to higher stresses and more aggressive pressure cycles. The following criteria are used:

8.2.1.1 Failures Attributable to Fatigue Cracking

Fatigue cracks failures can originate from manufacturing defects, corrosion and third party damage, such as a dent. Past occurrence of a fatigue crack failure could be an indicator that other defects which may exist in the pipeline could be grown to failure as well. This criterion is scored based on the number of failures a pipeline segment has experienced. For the breakdown of the measures and their scores, see the Risk Model Catalog.

8.2.1.2 Pressure Cycle Aggressiveness

Pressure cycle aggressiveness is an indication of how quickly a defect may grow to failure. The aggressiveness is a function of both amplitude and frequency. Amplitude is the measure of how *much* the pressure changes within a cycle; i.e., the magnitude of the change, while frequency is a measure of how often it changes. The greatest pressure cycle amplitude, or change in pressure would occur with full stoppage of product flow and full start-up. Smaller magnitude pressure cycles can occur when flow rates are decreased and increased, without bringing the flow to a stop. The greatest frequency will come with the greatest variation in operations.

Pressure cycle parameters include pipe diameter, wall thickness, grade of pipe, previous hydrostatic test information, and operating pressure history.

Criteria for pressure cycle aggressiveness are based on *OPS TTO5 – Low Frequency ERW and Lap Welded Longitudinal Seam Evaluation* by *Michael Baker Jr. Inc.*

Percent SMYS	Very Aggressive	Aggressive	Moderate	Light
72%	20	4	1	0
65%	40	8	2	0
55%	100	25	10	0
45%	500	125	50	25
35%	1000	250	100	50
25%	2000	500	200	100
Total	3660	912	363	175

Table 8.1: Michael Baker Jr. Inc., Pressure Cycle Aggressiveness Benchmark Cycle Counts

8.2.2 ***Stress Corrosion Cracking***

Sunoco Logistics has an extensively documented SCC Management Plan which was developed with the assistance of Kiefner & Associates, Inc. As part of this Plan, the pipeline system is assessed for segments which may be susceptible to SCC. The criteria used for the assessment include age of pipe, operating stress, type of pipe coating, type of joint coating, cathodic protection effectiveness, and the presence of SCC in the past. The results from the SCC Management Plan assessment are incorporated directly into the risk model using the several measures.

8.2.2.1 SCC Susceptibility

SCC Failure and *SCC Presence* depend on field observations and physical identification of the presence of SCC. This means that those two measures are given the highest possible weightings for this risk factor.

SCC Susceptible, *SCC Potentially Susceptible*, and *SCC Not Susceptible*, all depend on the classification of the pipelines based on operating conditions, type of coating and the environment surrounding the pipe. This information is gathered in the analysis of the pipelines for SCC susceptibility, which can be found on the Sunoco Logistics Document Repository (Document Library : Documents : Integrity Management : SCC Management Program).

12.0 Revision History

Revision 1: February, 2004

Original document produced from Risk Model Workshop

Revision 2: April, 2005

Summary of Edits

Extensive update performed to format and structure of the model. Added explanation of risk score calculation and updated weighting justification and individual factor descriptions. Regulatory references were also included as appropriate. Below are the specific factor changes that occurred:

1) Product Flow:
    a. Modified summary details
    b. Modified criteria name
        i. Not Required to Not Relevant
2) Coating Type:
    a. Modified criteria names
        i. Polyethylene to Polyethylene Tape
        ii. TGF – 3 to TGF Geotextile Reinforced Tape
    b. Addition of criteria
        i. Hot Wrap (Stewart, Hand Applied) VALUE = 9
3) Girth Weld Coating Type:
    a. Modified criteria name
        i. Heat Shrink Sleeve w/ Epoxy to Heat Shrink Sleeve w/Epoxy / Reinforced Heat Shrink Sleeves
4) Environmental Type:
    a. REMOVED as a category, see table below.
5) Seam Type:
    a. Modification criteria names
        i. Furnace Butt Weld to ERW/EFW Susceptible / Unknown
        ii. ERW Susceptible/Lap Weld to Lap Weld Susceptible
        iii. ERW Not Susceptible Flesh Weld (EFW) to ERW/EFW Not Susceptible
        iv. DSAW to Lap Weld Not Susceptible/DSAW/SAW
    b. Modification of criteria value
        i. Lap Weld Susceptible VALUE = 8
6) Spans
    a. Addition of criteria
        i. None VALUE = 0
7) Ground Patrol
    a. Addition of criteria
        i. Less than Annually VALUE = 7
8) Right of Way Condition
    a. Modified summary details
9) Man Made Geologic Hazards

a. Modification of summary details
10) Natural Geologic Hazards
a. Modification of summary details
11) Stress Corrosion Cracking
a. Modification criteria names
i. Failure to Failure / SCC detected
ii. Susceptible to Possibly Susceptible
b. Modification of criteria value
i. Possibly Susceptible VALUE = 5
12) Seam Type
a. Modification Criteria names
i. ERW/EFW Susceptible / Unknown to ERW/EFW/ (Unknown>30% SMYS) Susceptible
ii. Lap Weld Susceptible to Lap Weld-needs baseline, >30% SMYS
iii. Furnace Butt Weld to ERW/EFW/ (Unknown<30% SMYS) Not Susceptible
iv. ERW/EFW Not Susceptible to Lap Weld-needs hydrotest, <30% SMYS
v. Lap Weld Not Susceptible / DSAW / SAW to Lap Weld Not Susceptible /DSAW / SAW /FBW
b. Modification of criteria value
i. ERW/EFW/ (Unknown<30% SMYS) Not Susceptible = 3
ii. Lap Weld-needs hydrotest, <30% SMYS =2

Revision 3: March 2006

Modified Operation Monitoring factor – clarified terminology for data collection and communication

Revision 4: August 2006

Modified source for Seam Factor to add specific reference to the IMP and the susceptibility determination documented there.

Revision 5:

Risk Frame Model application was upgraded to version 4.x. With the application upgrade the algorithm for the risk model and its associated factors were completely revised and the risk work book completely rewritten.

Revision 6:

Several modifications were made to the risk model structure. Any changes to factors, criteria or measures also include updates to the discussion within this catalog. Scores were completely revised to reflect the addition and removal of several factors.

1) Third Party Damage
a) Modifications of Active Farming Criteria
i) Changed measures from 'Yes / No' to percentage of line which may be impacted by active farming.
b) Revised TPD Integrity Assessment measures so dates don't overlap.
2) Internal Corrosion

a) Modifications of Internally Corrosive Environment Factor
   i) Added Type of Product Criteria
   ii) Changed Chemical Treatment Criteria to Internal Corrosion Mitigation
b) Internal Corrosion Integrity Assessment Factor
   i) Added several measures to Type of Inspection to make the criteria more specific.
   ii) Removed Other Monitoring as a risk criteria
   iii) Added the following criteria to reflect the criteria in the External Corrosion Integrity Assessment Factor
      (1) Time Since Last Assessment
      (2) No of Metal Loss Anomalies Remaining Greater than 50%
      (3) Greatest Percent Depth of Metal Loss Remaining
      (4) No. of ERF >0.95 Remaining
c) Internal Corrosion Release History Factor
   i) Changed from Incident History to Release History

3) External Corrosion
   a) Revised External Corrosion Integrity Assessment measures so dates don't overlap.
4) Manufacturing Defects
   a) Modifications to Maximum Operating Conditions Factor
      i) Removed Pressure Cycle Aggressiveness as a Risk Criteria
   b) Added Threat Specific ILI as a measure under Mfg Defect Integrity Assessment Factor
5) Construction Related Defects
   a) Type of Girth Joint Measure Modifications
      i) Combined Acetylene and Unspecified Brittle Weld Measures into one measure.
   b) Construction Practices Factor
      i) Renamed factor from Miscellaneous Construction Practices
         (1) Consolidated five specific types of defects into one criteria called Outdated Construction Practices. The types of constructions practices this criteria includes are described in the catalog.
6) Changed Environmentally-Assisted Cracking Category to Time-Dependent Cracking
   a) Modifications under Fatigue Factor
      i) This change was made because the category contains factors for SCC which is considered both environmentally-assisted and time-dependent and fatigue cracking which is considered time-dependent.
      ii) Changed Fatigue Crack Failure Criteria to Above Failures Attributable to Fatigue.
      iii) Above failures is meant to include manufacturing, corrosion and other defects which ultimately failed due to fatigue.
      iv) Removed Percent SMYS
   b) Modifications of SCC Susceptibility Factor
      i) Made following changes to SCC Susceptibility measures:
         (1) SCC Failure changed to Failure
         (2) SCC Presence changed to Detected
         (3) SCC Susceptible changed to Susceptible
         (4) Added Unknown
         (5) Changed Not Expected to Potentially Susceptible
   c) Modifications of Type of Last Crack Assessment Factor
      i) Removed TFI from list of measures because TFI is not good for detecting time-dependent cracking.

7) Incorrect Operation Category
   a) Removed Overpressure Factor and Overpressure Protection Criteria
   b) Changed Incorrect Operations Leak History factor to Incorrect Operations Incident History
      i) Added Frequency of Overpressure criteria
      ii) Changed measures to Multiple, One, None
8) Natural Forces Category
   a) Washouts factor was given more weighting
9) Consequences Category
   a) Response Time measures were changed to the following:
      i) Abnormal changed to Greater than 2 Hours
      ii) Normal changed to 2 Hours or Less

Appendix A – Risk Model Diagram

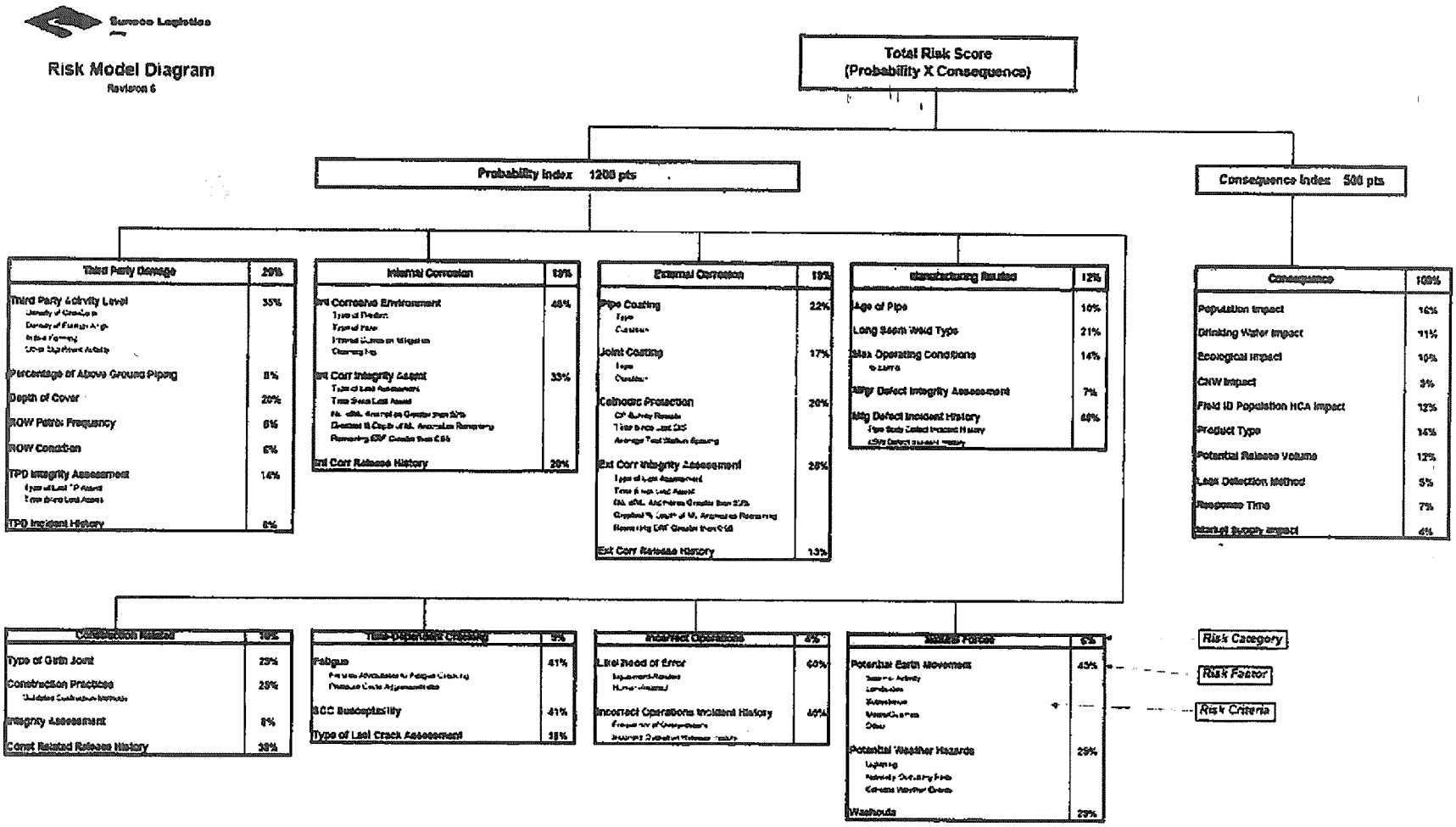


Figure A-1: Risk Model Diagram

Appendix B – Risk Model Catalog

RISK MODEL CATALOG

Total Probability Points: 1000

Risk Category	Category Score	Category %	Risk Factor	Factor Score	Factor %	Risk Criteria	Criteria Score	Measure	Measure Score
Third Party Damage	345	22%	Third Party Activity Level	85	39%	Density of Dig-Calls	35	163+	35
								100-162	25
								50-99	14
								25-49	10
								1-24	5
								0	0
						Density of Foreign Xings	30	Very High (150+)	30
								High (100-149)	25
								Med (25-49)	15
								Low (1-24)	10
								None	0
						Active Farming	10	75-100%	10
								50%-74%	6
								25%-49%	4
								1%-24%	2
								0%	0
						Other Significant Activity	10	Yes	10
								No	0
			Percentage of Above Ground	35	16%	Percentage of Above Ground Piping		100%	24
								75%-99%	15
								5%-15%	10
								1%-4%	5
								0%	0
			Depth of Cover	62	29%	Depth of Cover		None	50
								Unknown	35
								Less than 3 feet	35
								Less than 3 ft w mechanical protection	15
								Greater than 3 feet	1
			ROW Patrol Frequency	25	9%	ROW Patrol Frequency		Regulatory Minimum	15
								Bi-Weekly	10
								More than Bi-Weekly	5
								Routinely Observed	1
			ROW Condition	15	6%	ROW Condition		Dense	15
								Unknown	8
								Some Overgrowth	8
								Clear and marked	0
			TPD Integrity Assessment	52	24%	Type of Last TP Assmt	25	None	25
								Hydro	15
								CI	5
						Time Since Last Assmt	15	5+ years	15
								4 - <5 years	12
								3 - <4 years	9
								2 - <3 years	6
								1 - <2 years	3
								<1 year	1
			TPD Incident History	20	9%	TPD Incident History		Release	20
								Damage	15
								None	0
Internal Corrosion	430	19%	Int Corrosive Environment	110	26%	Type of Product	35	Crude	35
								Intermediate Product	15
								Refined Product	1
						Type of Flow	25	Laminar	25
								Turbulent	5
						Internal Corrosion Mitigation	35	No Chemical Treatment	35
								Chemically Treated	15
								Internal Coating or Lining	5
								Not Applicable	0
						Cleaning Pig	25	Sporadic	25
								Scheduled	10
								Aggressive Schedule	5
								Not Applicable	0
			Int Corr Integrity Assmt	75	33%	Type of Last Assessment	25	None	25
								Direct Assessment	13
								Hydro	7
								LR MFL	7
								HR MFL	3
								UT Metal Loss	2
								Multi-Tool Metal Loss	1
						Time Since Last Assmt	15	5+ years	15
								4 - <5 years	10
								3 - <4 years	7
								2 - <3 years	4
								1 - <2 years	2
								<1 year	1
						Max. Initial Anomalies Greater than 40%	15	500+	15
								250 - 499	10
								100-249	5
								50-99	3
								1-49	2
								0	0
								Hydro	3
								None	5
						Greatest % Depth of Init. Anomalies Remain	15	80% - 75%	15
								60% - 65%	8
								40% - 45%	6
								30% - 35%	4
								20% - 25%	2
								10% - 15%	1
								Unknown/Hydro	15
						Remaining ERF Greater than 0.95	10	Yes	10
								No	0
			Int Corr Release History	40	17%	Int Corr Release History		Multiple	40
								One	15
								None	0

Figure B-1: Risk Model Catalog, Pg. 1

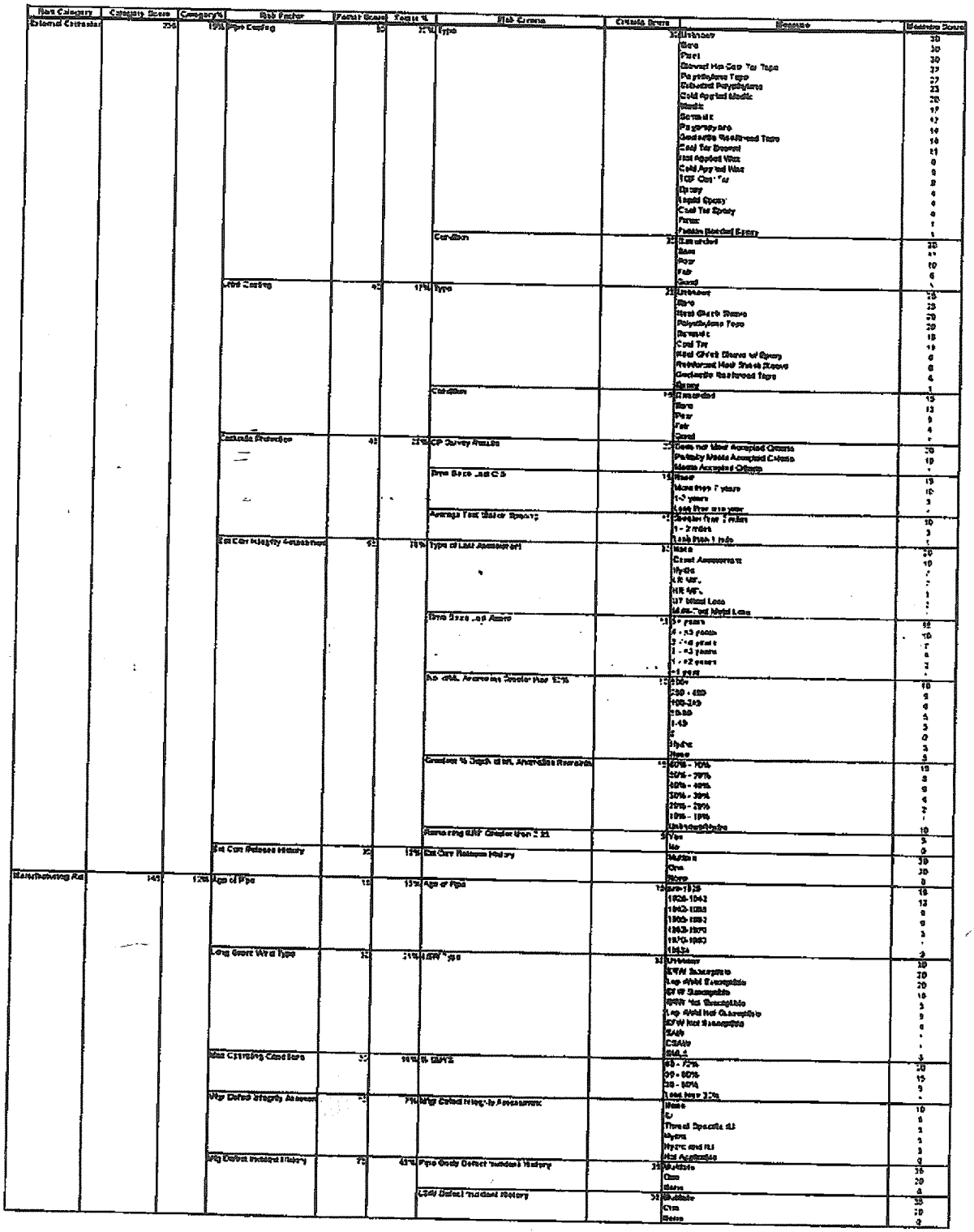
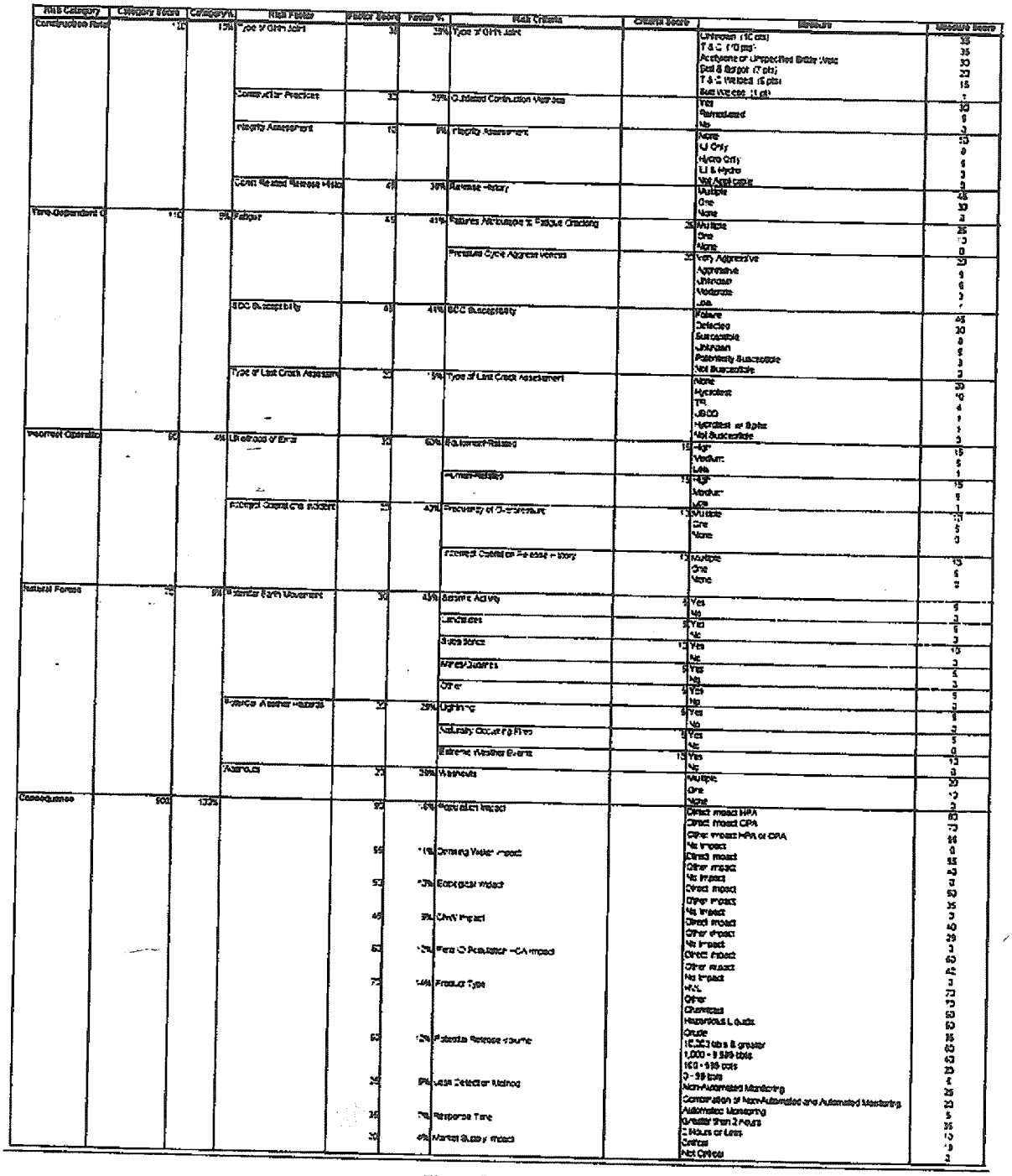


Figure B-1: Risk Model Catalog, Pg. 2



Risk Category	Category Score	Category %	Risk Factor	Factor Score	Factor %	Risk Criteria	Criteria Score	Measure	Measure Score
Construction Relat	110	15%	Type of GRP Joint	30	35%	Type of GRP Joint		Unknown (10 pts) T & C (10 pts) Acetyone or Unspecified Bitter Weld Butt & Strpot (7 pts) T & C Welded (5 pts) Butt Weld (1 pt)	10 35 30 23 15 1
			Construction Practices	35	20%	Q-Based Construction Methods		Yes Remediated No	10 5 0
			Integrity Assessment	10	5%	Integrity Assessment		None MFL Only Hydro Only MFL & Hydro Not Applicable	10 5 5 0
			Crack Related Release Histo	45	30%	Release History		Multiple One None	20 10 0
Time-Dependent C	110	9%	Fatigue	45	41%	Failures Attributed to Fatigue Cracking	20	Multiple One None	20 10 0
						Pressure Cycle Aggressiveness	20	Very Aggressive Aggressive Unknown Moderate Low	10 5 3 2 1
			SCC Susceptibility	45	41%	SCC Susceptibility		Failure Detected Susceptible Unknown Potentially Susceptible Not Susceptible	45 30 5 3 2 0
			Type of Last Crack Assessm	20	18%	Type of Last Crack Assessment		None Hydrotest MFL UltraSonic Hydrotest or Spike Not Susceptible	20 10 4 2 1 0
Incorrect Operatio	90	4%	Likelihood of Error	30	60%	SCADA/Alarm Related	15	High Medium Low	15 5 1
						Human Factors	15	High Medium Low	15 5 1
			Accident Experience Factor	15	40%	Frequency of Occurrence	10	Multiple One None	10 5 0
						Accident Potential Present - Many	10	Multiple One None	10 5 0
Natural Forces	70	6%	Weather Earth Movement	30	43%	Seismic Activity	5	Yes No	5 0
						Landslides	5	Yes No	5 0
						Subsidence	10	Yes No	10 0
						Mines/Quarries	5	Yes No	5 0
						Other	5	Yes No	5 0
			Weather Related Hazards	20	29%	Lightning	5	Yes No	5 0
						Naturally Occurring Fires	5	Yes No	5 0
						Extreme Weather Events	10	Yes No	10 0
			Hazards	20	29%	Windstorm		Multiple One None	20 10 0
Consequence	900	13%		90	10%	Population Impact		Direct Impact HPA Direct Impact CPA Other Impact HPA or CPA No Impact	90 70 50 0
				90	10%	Drinking Water Impact		Direct Impact Other Impact No Impact	90 70 0
				90	10%	Ecological Impact		Direct Impact Other Impact No Impact	90 70 0
				45	5%	Civil Impact		Direct Impact Other Impact No Impact	45 35 0
				60	7%	Fees Or Penalties - CA Impact		Direct Impact Other Impact No Impact	60 45 0
				75	14%	Product Type		HVL Other Chemical Hazardous Liquids Crude	75 50 25 0
				60	12%	Potential Release Volume		10,000 bbls & greater 1,000 - 9,999 bbls 100 - 999 bbls 0 - 99 bbls	60 45 30 15
				45	9%	Leak Detection Method		Non-Automated Monitoring Combination of Non-Automated and Automated Monitoring Automated Monitoring	45 25 5
				35	7%	Response Time		Greater than 2 Hours 2 Hours or Less	35 0
				30	6%	Market Supply Impact		Critical Not Critical	30 0

Figure B-1: Risk Model Catalog, Pg. 3

3.1.1 Segment Characteristics & Perceived Threats

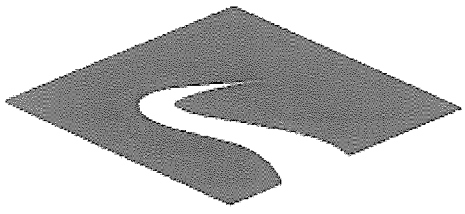
2010 IMP Pg. 19

The potential for manufacturing and construction related defects is primarily a function of the age and manufacturing process of the pipe, and the construction practices used during the pipeline's construction. The presence of such threats is most evident by assessing the history of the specific line segment and similar line segments within SPLP and throughout the industry. A specific manufacturing threat that shall be evaluated is the integrity of the longitudinal seam weld (LSW). The LSW evaluation shall be performed using the criteria presented in *Low Frequency ERW and Lap Welded Longitudinal Seam Evaluation*•. For lines determined through the evaluation above as needing a pressure cycle analysis, the relative aggressiveness should be determined in accordance with Table 4.1 in the above referenced document which is based upon Kiefner & Associates Report *Dealing with Low-Frequency Welded ERW Pipe and Flashwelded Pipe with Respect to HCA-Related Integrity Assessments*••. Pipelines identified as being susceptible to LSW concerns will be assessed using hydrostatic testing or an ILI tool capable of assessing the longitudinal seam weld.

Time-Dependent Cracking includes the threat of fatigue induced cracking (cyclic fatigue) and stress corrosion cracking (SCC). The maximum operating pressures should be monitored along with significant changes to the number and magnitude of the operational cycles to determine if cyclic fatigue should be a concern. In addition, all pipelines shall be evaluated to determine their susceptibility to SCC per the SCC Management Plan located on the SPLP Document Repository (Document Library : Documents : Integrity Management : SCC Management Program). The integrity of pipeline segments identified with SCC anomalies will be further assessed with hydrostatic testing or an ILI technology capable of detecting SCC-type cracking. Pipelines susceptible to SCC, but with no confirmed SCC anomalies, will be continually monitored during maintenance and excavation activities to inspect for SCC. Integrity concerns arising from incorrect operations includes equipment related errors and human related errors. These issues are typically addressed through day-to-day operational procedures, training, and safety

- Michael Baker Jr., Inc. Report, *Low Frequency ERW and Lap Welded Longitudinal Seam Evaluation*, TTO Number 5, Final Report, Integrity Management Program Delivery Order DTRS56-02-D-70036, April 2004.
- John F. Kiefner report *Dealing with Low-Frequency Welded ERW Pipe and Flashwelded Pipe with Respect to HCA-Related Integrity Assessments*, ASME Engineering Technology Conference on Energy Paper #ENERGYETCE2002/PIPE-29029, Feb. 2002

Item 7



Sunoco Logistics

Sunoco Pipeline L.P. & Affiliates Operator Qualification Plan

February 05, 2010

Revision 9

Sunoco Pipeline L.P. & Affiliates
Operator Qualification Plan

Section ID: OQ-001	**Revision No. 9**
Date of Issue: 04/24/2001	**Date Rev. Issued:** 02/05/2010

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8.0 NON-QUALIFIED INDIVIDUALS

The regulation requires that we include provisions in our written plan to *"Allow individuals that are not qualified pursuant to this subpart to perform a covered task if directed and observed by an individual that is qualified." (Part 195.505 (c))* The preamble (page 46862) further states that individuals who are not qualified may perform a covered task *"...as long as a qualified individual directly observes the non-qualified individual(s), and is able to take immediate corrective actions when necessary." "...The intent of this provision is to ensure that non-qualified individuals performing covered tasks are subject to close observation by a qualified individual." "...The ratio of non-qualified individuals to "qualified" individuals should be kept to a minimum."*

Any individual not able to demonstrate proof of Qualification after 10/28/02 will be considered as non-qualified by SPLP. SPLP will allow individuals, who are not qualified to perform a Covered Task (non-qualified), to perform that Covered Task under the following conditions only:

- The non-qualified individual is directed & observed by a qualified individual. The qualified individual must be in direct visual and verbal contact with the individual(s) and must be able to take immediate and effective corrective action if incorrect procedures or abnormal operating conditions are observed.
- That direct observation is allowed in OQ-Appendix C Qualification Frequency and Direct Observation Limits.
- The qualified individual is directing & observing the performance of one Covered Task at a time.

8.1 Direct Observation Limits

Due to the critical nature of some Covered Tasks the number of individuals that one qualified individual will be allowed to direct & observe may be limited; in some cases, not allowed at all. For limitations set on direct observation refer to OQ-Appendix C of this program.

Although the DOT Operator Qualification Rule does not stipulate the ratio of non-qualified individuals to qualified individuals, the provision makes it clear that the ratio should be kept to a minimum. In all such circumstances, it is ultimately the qualified observer who is responsible for the actions of the non-qualified individual(s).

8.2 Direct Observation Conditions

When utilizing a qualified individual to direct & observe non-qualified individuals in the performance of a covered task, certain conditions must be taken into account to determine the number of individuals to be observed at once (ratio). The following bullets represent some of the conditions to consider and will assist the qualified individual to understand the appropriate observation limitation when a non-qualified individual is performing an OQ Covered Task under their direct observation.

Communication:

- ***The directed and observed individual must be able to communicate with one another in English. Non-English speaking OQ qualified individuals may be permitted to perform covered tasks as long as a bilingual individual is at the location and immediately available to interpret for the non-English speaking OQ qualified individual performing the covered task.***
- Establish a clear means of communication between qualified and non-qualified individual(s); can be visual or verbal.
- Consider surrounding noises which inhibit clear verbal communication.

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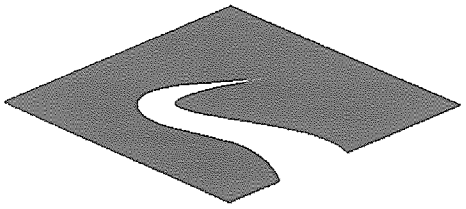


Sunoco Logistics

Sunoco Pipeline L.P. & Affiliates Operator Qualification Plan

February 05, 2010

Revision 9

Program Administrator will determine if the changes are substantive enough to require re-qualification of qualified individuals performing the task being modified.

Modification to the Operator Qualification Plan developed by SPLP may arise due to experience in the application of the Plan, as covered tasks are added or deleted, as employees change, as specific employee's responsibilities change, and / or as regulations change. When such a change is made, any modifications affecting individuals performing Covered Tasks will be communicated and the written Plan modified in the Document Repository. In the event that such a significant modification is made to the Plan post 5/13/04, the DOT Compliance Coordinator will notify PHMSA of said significant modifications.

As applicable to OQ program modifications, significant includes but is not limited to: increasing evaluation intervals, increasing span of control ratios, eliminating covered tasks, mergers and/or acquisition changes, evaluation method changes such as written vs. observation, and wholesale changes made to OQ plan.

The contents of the Operator Qualification Plan are always subject to revision. All employees are encouraged to submit recommendations for revision to the Operator Qualification Plan and program. All individuals wishing to submit a change request should cut and paste the following into an email directed to the OQ Specialist:

This Recommendation Is A(n): ___ **Addition** ___ **Change** ___ **Deletion**

Section: **Titled:**

Subsection: **Titled:**

Subject: **Page:** **Paragraph:**

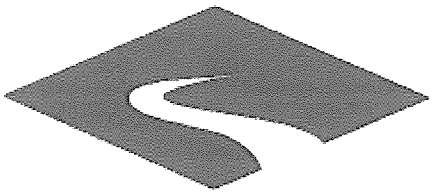
Plan Should Read:

Change Needed Because:

8. Contractors

If contractors are used to perform Covered Tasks, the Qualification of the individuals performing the Covered Tasks will be assessed using an approved method of qualification located in OQ-Appendix D of this plan found in the Document Repository of the Sunoco Logistics Intranet, DOT Cabinet, Operator Qualification Drawer. If the individual is not "qualified" pursuant to the Plan, a qualified individual will be present during the performance of the Covered Task to direct and observe. Direct observation limitations specific to each Covered Task can be found in OQ-Appendix C of this plan housed in

Item 10



Sunoco Logistics

PIPELINE INTEGRITY MANAGEMENT PLAN

SUNOCO PIPELINE L.P.

OPERATIONS

Revision 10

February 8, 2010

5 PREVENTIVE AND MITIGATIVE MEASURES

The objective of the Pipeline Integrity Department is to help maintain the integrity of SPLP's assets by supporting the preventative and mitigative (P&M) activities already established throughout the company and identifying new P&M activities through the Integrity Management Program.

5.1 Established Company P&M Activities

SPLP performs many preventative and mitigative (P&M) activities as part of its day-to-day operations to ensure that its pipelines and facilities operate safely and the people and environment around the pipeline are protected. Examples of such activities include, but are not limited to, the following programs:

- ROW clearing, marking, and patrols;
- Replacements & Relocations;
- Tank inspection, cleaning, and repair (API 653);
- Evaluation and improvement of SCADA and CPM leak detection
- Damage prevention programs;
  (One-Call, Public Awareness, Common Ground Alliance);
- Incident investigation, root cause analysis, and corrective action tracking (IMPACT);
- OQ & continuous training program;
- Emergency Response Program;
- Elimination of Dead-Legs at Breakout Tank Farms and Other Facilities;
- Raise Underground Appurtenances Above Ground;
- MOC Process; and
- Exposure Monitoring

These activities are managed and continuously improved through the Regions/Districts and specialized Departments in coordination with the Pipeline Integrity Department. The tasks associated with these activities are then implemented through defined processes and documented procedures. The frequency and results of many of these activities are incorporated into the Pipeline and Facility Risk Models (Section 4.2) and evaluated relative to the identified threats during the Line Specific Risk Analysis Meetings (Section 4.3) and the semi-annual Continual Assessment Meetings (Section 7).

The Pipeline Integrity Department provides support for the existing P&M activities as necessary to ensure they are performed in a manner that maintains the integrity of SPLP's assets and the safety of HCAs. The support provided ranges from