



**PIPELINE SMS MANAGEMENT SYSTEM TOOLS –
SAFETY ASSURANCE EXAMPLE**



ETP LIQUID PIPELINE OVERVIEW

- **Energy Transfer Partners Family of Liquid Pipelines**
 - Location: Liquid pipeline operations in 20 states.
 - Product(s): Crude Oil, HVL, Refined Petroleum Products (non-HVL)
 - Miles of Liquid Pipe ~15,690 miles



PSMS JOURNEY

- Environmental, Health & Safety (EHS)
 - Safety Department
 - **Pipeline Safety Management System**
 - Occupational Safety
 - Process Safety Management
 - Physical Security
- 2016/2017 Planning
- 2017/2018 Development
- 2018/2019 Implementation



PLANNING TOOL

- **High Level Review**
 - API RP 1173 Requirement
 - Example Evidence
 - Actual Evidence (list the relevant documents / procedures)
 - Gap (Y/N)
 - Description of Gap or Gaps
 - Description of Potential Action(s) to Close Gaps.
 - Required, Optional, or Not Chosen
 - Priority
 - Difficulty
 - Owner
 - Due Date
 - Status

API RP 1173 Sub-element	API RP 1173 Requirement	Example Evidence	Actual Evidence (list the relevant documents / procedures)	Gap (Y/N)	Description of Gap or Gaps Use additional rows for each Potential Action.	Description of Potential Action(s) to Close Gaps. Use additional rows for each Potential Action.	Required (R), Optional (O) or Not Chosen (NC)	Priority (H,M,L)	Difficulty (1 to 10)	Owner	Due Date	Status	Comments
10.3	Is there a documented process for reporting and providing feedback to	Communication plan or procedure. Documentation of the methods that new risks can be reported.	PSMS Manual Section 20.3 H-0-024, Near Miss/Incident Catch/Red Flag Challenge Reporting & Resolution Procedure	Y	H-0-024, Near Miss/Incident Catch/Red Flag Challenge Reporting & Resolution Procedure does not include contractors.	Update H-0-024, Near Miss/Incident Catch/Red Flag Challenge Reporting & Resolution Procedure to include contractors.	#		3				SLX Gap ID No. 21.
10.4	Is there a procedure to identify key performance indicators?	Key Performance Indicator procedure. Procedure should be how to identify the KPIs and how they are to be measured and linkage to the PSMS.	PSMS Manual Section 20.3 H-0-027	Y	Company had not prepared a procedure for the identification of key performance indicators.	Develop a procedure for the identification of leading and lagging key performance indicators.	#		8.5				SLX Gap ID No. 25.
10.4	Are key performance indicators identified to measure the effectiveness of	Key Performance Indicator list.	PSMS Manual Section 20.4	Y	Key performance indicators for the effectiveness of the risk management program are not identified for analysis.	Update PSMS Manual Section 20.4 to include KPIs for risk management program effectiveness.	#						
10.4	Is there a procedure for the identification, collection and analysis of data for the key performance indicators?	Key Performance Indicator procedure. Process used for personnel safety indicators/statistics.	PSMS Manual Section 20.3	Y	Company has not identified a procedure for the collection of data for key performance indicators. SLX Gap ID 22 does not include the collection of the data for key performance indicators.	Include in the procedure for the identification of leading and lagging key performance indicators (SLX Gap ID No. 25) requirements for the collection of the data to support the KPIs.	#						



PLANNING TOOL

- **Pros**
 - It got us started
 - Helped identify the type of things we were missing
 - Identified where there are some larger gaps
- **Cons**
 - Very broad overview of each element
 - Identified some, but not all gaps
 - Difficult to prioritize efforts
 - No clear relationship to the maturity model concept
 - Can only bring you to early stages of program development, but could be mistaken for something more comprehensive than it is.
 - May leave you at a “now what” stage.



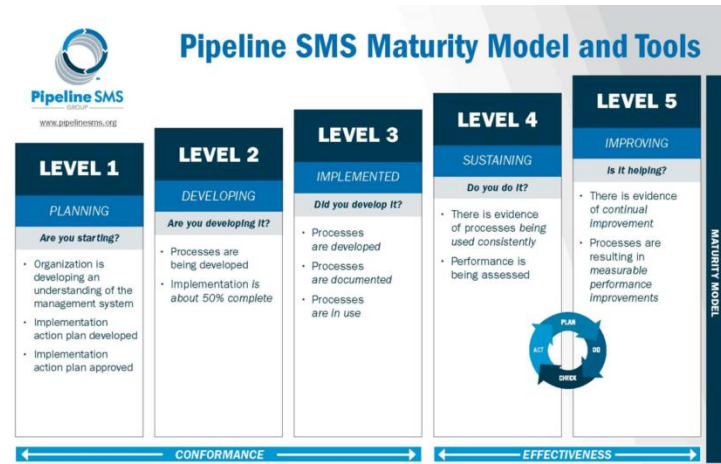
IMPLEMENTATION TOOL

- API RP 1173 Sub-Element
- API RP 1173 Requirement
- Level 0 (Learning)
- Level 1 (Planning)
- Level 2 (Developing)
- Level 3 (Implemented) Criteria
- Level 4 (Sustaining) Criteria

API RP 1173 Sub-element	API RP 1173 Requirement	Level 0 (Learning)	Level 1 (Planning)	Level 2 (Developing)	Level 3 (Implemented)	Level 4 (Sustaining)	Level Assignment (0 - 4)
10.2.1	Are audits used to examine conformity of the PSMS to the requirements of API RP 1173?				<ul style="list-style-type: none"> • The organization has documented a procedure to audit conformity to the RP 1173. 	<ul style="list-style-type: none"> • There are audit reports of audits being performed to determine conformity of the PSMS to RP 1173. • Audit results are used in the scheduling of future audits. 	1
10.2.1	Are there procedures for planning, conducting, and documenting audits and evaluations?				<ul style="list-style-type: none"> • Audit and evaluation procedures include elements of planning (selection of topics and topic frequency, audit teams and expertise, logistics, and communication), conducting (auditor responsibilities, audit meetings, scheduling interviews, and document reviews), and documenting (final reports and communication of results). 	<ul style="list-style-type: none"> • Review of audit and evaluation records/reports confirms audits and evaluations are planned, conducted, and documented according to the PSMS procedures. 	3
10.2.1	Are evaluations used to assess the effectiveness of the risk management performance?				<ul style="list-style-type: none"> • The organization has documented a process for using audits and other forms of evaluation to assess the effectiveness of the risk management program and pipeline safety performance progress. 	<ul style="list-style-type: none"> • There are records of audit and evaluation results being used to assess the operator's risk management program and pipeline safety performance. 	3

IMPLEMENTATION TOOL

- **Pros**
 - Sub-element breakdown provides a good level of detail
 - Incorporates the maturity model concept
 - Provides guidance on what type of evidence supports a Level 3 and Level 4 maturity level.
 - Provides the structure that you can adopt and make your own.
- **Cons**
 - The information for Level 3 and Level 4 can be too much at one time if you are still creating a program.
- **Comment**
 - You need a plan on how to use it for your needs.





CUSTOMIZED IMPLEMENTATION TOOL

- **Focused on Level 3 to create a working program**
- **Modified the spreadsheet for our needs.**

Original Implementation Tool

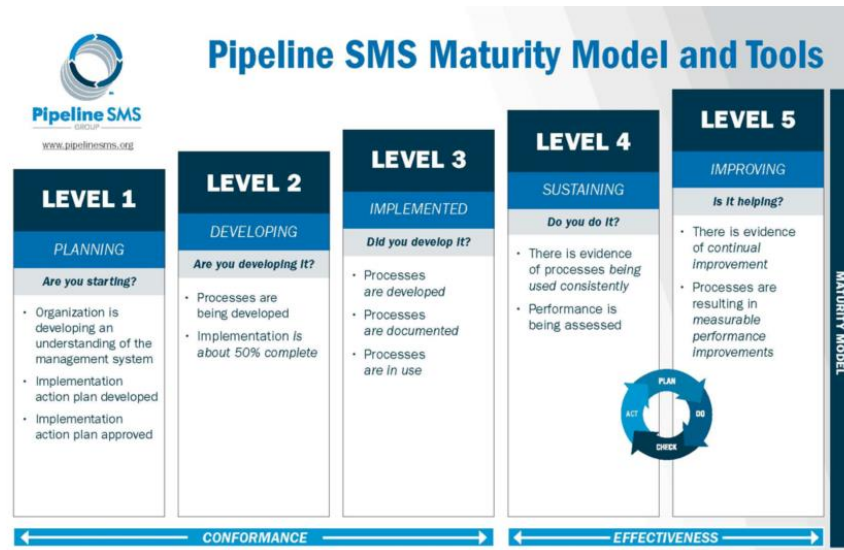
- API RP 1173 Sub-Element
- API RP 1173 Requirement
- Level 0 (Learning)
- Level 1 (Planning)
- Level 2 (Developing)
- Level 3 (Implemented)
Criteria
- Level 4 (Sustaining)
Criteria

Customized for our Needs

- API RP 1173 Sub-Element
- API RP 1173 Requirement
- Level 3 (Implemented)
Criteria
- Status in meeting Level 3
Criteria
- Action Item
- Responsible Person
- Target Date
- Open or Closed Action
Item
- Action Item Progress
- Target Date Progress

MATURITY OF PSMS – THE JOURNEY

- Implement the program at Level 3 Maturity
- Grow towards Level 4 Maturity
- Strive for Level 5 Maturity





CUSTOMIZED IMPLEMENTATION TOOL RESULTS

- **Programs associated with the Safety Assurance element:**
 - PSMS Audits
 - Evaluation of PSMS Effectiveness and Maturity
 - Safety Culture Survey
 - Key Performance Indicators
 - Stakeholder Engagement Feedback Process
 - PSMS Management Review Meetings



EVALUATION TOOL

Short Question Name	Element # / Requirement / Section #	Score	Comments	"Shall" #
	6. Safety Assurance - Section 10			
Audit Management	The Operator has established risk-based audits / evaluations with defined criteria, scope, frequency, methods, and record retention; prioritizes processes with higher risk and business criticality; tracks findings and recommendations to closure with defined response times; with reports to Management. Management ensures timely closure of recommendations.			10.2.1-3 10.2.1-4 10.2.2-3 10.2.6 10.2.6-1 10.2.6-2 10.2.6-3
Operator Conformance	The Operator ensures that it is conforming to its PSMS (including suppliers and contractors), at the Element and Process level, and evaluates every Element at least every 3 years.			10.2.1-1 10.2.2-1 10.2.2-2 10.2.2-4
PSMS Conformance	The Operator ensures that its PSMS conforms to the RP at the Element and Process level, and evaluates every Element at least every 3 years.			10.2.1-1 10.2.2-1 10.2.2-2 10.2.2-4
PSMS Maturity	The Operator evaluates the maturity of the processes and procedures in its PSMS (comprehensive, systematic, integrated) using performance measures and benchmarking.			10.2.3-3 10.2.5-1 10.2.5.a 10.2.5.b 10.2.5.c 10.2.5-2
Risk Management	The Operator evaluates effectiveness of risk management, including the results of stakeholder engagement under Section 6; risk analysis under Section 7; management of change under Section 8; any incident investigations, findings, recommendations, and lessons learned, both internal and external, under Section 9; audits under Section 10; management reviews under Section 11; emergency response issues under Section 12; personnel issues under Section 13; as well as near-miss experiences and abnormal operating data, as appropriate.			10.1 10.2.1-2 10.2.3-1 10.2.3-4 11.2



EVALUATION TOOL – EFFECTIVENESS SCORE

Automatic Deductions		# Incidents	
# Incidents with PHMSA Fatalities (might also have PHMSA injuries)			0
# Non-Fatal Incidents with PHMSA Injuries			0

Relative KPI Results	Operator Results v/ Industry Peer Average		
	Industry Avg.	Operator Avg.*	Ratio
Liquid Transmission			
ROW incidents / kmile	0.67		0.00
PHMSA IPE / kmile	0.48		0.00
OSHA Injury Rate	0.8		0.00
			Avg. KPI Score
			Final KPI Score (after deductions)

Automatic Deductions Scoring		Deduction
# Incidents with PHMSA Fatalities (might also have PHMSA injuries)	Each Incident	-0.5
# Non-Fatal Incidents with PHMSA Injuries	Each Incident	-0.25

Relative KPI Scoring		Score
Operator Averages v/ Industry Peer Averages	<= 25%	1
	>25% to <= 50%	0.75
	>50% but <= 75%	0.5
	<75% to <=90%	0.25
	<90% to <= 150%	0
	>150% but <= 200%	-0.25
	>200%	-0.5

Data Sources

Incidents: Use the most recent data available.
 Use 3 years of data for all operators to calculate that operator's KPI averages.
 Use the most recent 12 months or reporting year for OSHA data.
 Use the most recent 12 months for PHMSA injury and fatality data regardless of operator size.

Note: the OSHA injury rate for all PL segments in 2016 ranges from 0.7 to 0.9, including construction.



CONCLUSION

- **The guidance you need to create a PSMS program is included in the Implementation and Evaluation Tools.**
- **Adopting the tools and customizing them to your needs is what we found to be effective.**
- **PSMS is a journey, and the first step of any journey is getting started.**



Pipeline SMS