



Standards Resource & Research Request (SR³) Form Pipeline Standards

Document Information

Standard Designation:	RP 1173									
Title:	Pipeline Safety Management Systems									
Edition:	2									
Budget Year:	2023-2024									
Committee/Subcommittee/Group: (check all that apply if a joint project)	SMS VG	x	Public Awareness & Engagement VG		Cybernetics VG		Operator Qualifications VG			
	Pipeline Integrity VG		Emergency Response VG		Construction & Operations VG		Underground Storage VG			
	Gathering Lines VG		Environment, Health & Safety VG		COPS					
Priority Matrix Ranking: (to be completed by API Staff)	x	Priority 1 (Rank 10-15)				Priority 2 (Rank 7-9)			Priority 3 (Rank ≤6)	
UN Sustainable Development Goal (to be completed by API Staff)		#7 Access to Energy			#8 Economic Growth		x	#9 Resilient Infrastructure		Other
API Energy Excellence Program (to be completed by API Staff)	x	Yes			No					
Proposed Action:		New Standard				x	Revise Current Standard			
		Withdraw Current Standard					Research Only			
Proposed Funding Type:		Budget Request					Special Solicitation			
Total Funding Request (Parts A & B):	\$	0								
Name of Submitter(s):	John Buflod									
Date:	2 March 2023									

Part A – Resource Plan

I. Background and Information:

1. Explain the business need for the proposed action. Indicate potential cost savings to industry where possible.

API RP 1173 is the cornerstone of API's pipeline standards documents and programs. This document has been implemented by operators across the industry, from distribution to gathering to transmission. It is the basis for API's 1173 Assessment program. The PDCA model established in 1173's 1st Edition is the foundational process which underlies most of the updated standards published since then, including in such critical documents as RP 1160, RP 1175, and RP 1162. By revising 1173, the industry will demonstrate its commitment to SMS, to the continual improvement process, and pipeline safety.

2. What is the scope of the standard?

This recommended practice (RP) establishes a pipeline safety management systems (PSMS) framework for organizations that operate hazardous liquids and gas pipelines jurisdictional to the US Department of Transportation. Operators of other pipelines may find this document applicable useful in operating to their systems.



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This RP provides pipeline operators with safety management system requirements that when applied provide a framework to reveal and manage risk, promote a learning environment, and continuously improve pipeline safety and integrity. At the foundation of a PSMS is the operator's existing pipeline safety system, including the operator's pipeline safety processes and procedures. This RP provides a comprehensive framework and defines the elements needed to identify and address safety for a pipeline's life cycle. These safety management system requirements identify what is to be done, and leaves the details associated with implementation and maintenance of the requirements to the individual pipeline operators. The document does not explicitly address personnel safety, environmental protection, and security, but the elements herein can be applied to those aspects of an operation.

3. Is this standard on the work program of another standards development organization (SDO)?

Yes ☐ No ☒

If yes, specify SDO and standard designation/project title/contact

If yes, is the work being coordinated with the appropriate group? Are there special circumstances that would justify independent API initiation of the proposed action?

4. Are a volunteer chair and group of experts available to perform the proposed action?

Please include names and company affiliation and indicate chair, if available.

Chair TBD ; volunteers will largely be drawn from Standards Policy Work Group which developed the scope of the 2nd Edition. We hope to determine a chair (or preferably, co-chairs) by the time of the SMS Team's next meeting in March.

5. Is there a need to commit resources to supplement the development of the draft? Would a paid content specialist accelerate progress on the development/revision? Is there a readily available content specialist?

No. There are many volunteers who can assist with this limited revision. There may be a desire for a technical editor, but that has not yet been determined. The task group will be built out of the 1173 Standards Policy group, which represents operators who participate in the SMS Excellence Team, but will include other interested parties.

6. Are there special format requirements for final document, i.e. knowledge of ISO template required, significant graphics, photos or equations) required that would need extraordinary resources?

Yes ☐ No ☒

If Yes, please provide details:

7. Please provide any other information that is pertinent to the proposed action.

This revision is proposed to be limited in scope. We do not intend to overhaul the standard entirely. Revision efforts will focus on increasing clarity of intent, re-enforcing the core messages of scalability and flexibility. Beyond the task group's core knowledge, we also intend to bring in learnings from those companies which have participated in the 1173 Assessment program to build a superior document. The 1173 Standards policy group has created a list of topics to be discussed in the revision, which will be circulated to the COPS along with this SR3 for their review.



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8. **What are the implications of not initiating the proposed action?** Include potential safety, reliability, environmental and financial impacts that may arise.

Without updating 1173, the industry will appear to be allowing SMS to stagnate, when in fact, it is putting an enormous amount of energy into improving implementation and improving SMS for the industry. Additionally, as the whole of industry continues on its SMS journey, it is important to build consensus around the core document which was initially written and balloted by a narrower segment of the industry than currently applies it. While the standards policy group was largely in favor of keeping the core document intact, there were a number of topics and sections which were discussed as areas for improvement.

9. **Is there research proposed to accomplish the proposed action?**

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
If yes, complete Part B of this form.			

II. Project Timing

Proposed start date:	1 June 2023	Proposed date draft will be ready for letter ballot:	31 June 2024
TG/WG: (estimated number of volunteers needed)	30	Content Management: (\$ amount "if needed" or volunteer)	volunteer

PART B – Research Plan

I. Background and Information

1. **Proposed Research Title:**

2. **Proposed Project Scope:**

3. **Research Amount:**

\$	<input type="text"/>
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4. **What is the business need for the proposed research?**

5. **Is the proposed research edition-specific for a single standard or will it result in technology enhancement for multiple standards?**

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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If multiple standards, please cite the standards effected:

6. **Research Timing:**

<input type="checkbox"/>	Research is necessary prior to scheduled revision.
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<input type="checkbox"/>	Research can be done concurrent with revision.
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7. How does the research support the proposed action identified in Part A?

8. Is a joint industry project (JIP) a possibility?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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If Yes, with whom?	<input type="text"/>
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9. Are there opportunities for leveraged research with other organizations?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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What organizations?	<input type="text"/>
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10. What are the implications of not performing the proposed research?

II. Dates and Funding:

Estimated Completion Date	Prior Research Funding Requested	Anticipated Future Research Funding Needs					
	\$ <input type="text"/>	Year 2: \$	<input type="text"/>	Year 3: \$	<input type="text"/>	Year 4: \$	<input type="text"/>

PART C – Proposal Feedback/Approval Information

For API Use ONLY

COPS comments to Proposer/WG:	<input type="text"/>
Date approved by COPS:	<input type="text"/>
Date entered into API Publications DB:	<input type="text"/>



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API RP 1173, Pipeline Safety Management Systems

First Edition published July, 2015

List of potential sections for update by RP 1173 Standards Policy Group (SPG)

General

- SPG should formally consider how best to incorporate applicability/guidance for contractors in 1st edition.
 - Appendix or addendum to outline relevant sections of RP 1173 that apply to contractors
 - How best to implement contractor SMS and integrate with operator's SMS
- Standardization of RP 1173 section numbers with PSMS element numbers
 - E.g., On fact sheets, website, etc., 'Competence, Awareness & Training' is Element #9, whereas in RP 1173, 'Competence, Awareness & Training' is Section #13.
 - On page 6, the 9th element is CAT, but listed as element #13
 - Makes it challenging to communicate across the company and/or with contractors to ensure they are all clearly understand.
- More and better graphics will help the document be better absorbed by the reader. Development of graphics may also lead to improvements in the text in explaining the conceptual connections between elements.
- Hopkins' "Organising for Safety: How structure creates culture" was published subsequent to the first version of RP 1173. Should the group review the suggestions of this book as an input to revisions (assuming there is a favorable opinion of Hopkins' book)? If there is interest on this, James can send a summary of key suggestions and arguments from this book. In my view, Hopkins' previous books have been influential in our industry and the drive toward SMS in our industry. Meanwhile, this newest book is on the topic of how structure and culture work together, a key concern for effective SMSs in our industry.
- Include Note or informative reference or some reference to API Std 1164, as well as 780 & 781 in Section 7, Risk Management
- Regarding centralization of risk management, should RP 1173 say anything to help clarify the expectations of integration with other company safety programs and management systems? Integration is appropriate for both efficiency and effectiveness reasons. For efficiency, companies want to avoid multiple unstandardized parallel structures. For effectiveness, organizations "need to ensure they are looking at all the risks and at the organization as a single system, rather than having multiple, competing, 'Safety Management Silos.'" —Beyond SMS, 2008.



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- **Process Maps** (with Suppliers, Inputs, Process, Outputs & Customers, SIPOC) – develop element integration process maps to clearly define the interrelations of elements to provide a broader view of the application of 1173 beyond the limited singular element view, which can contribute to work silos.
- **Build on Federal minimal requirements** – improve the connection between existing compliance requirements and the 1173 requirements to re-emphasize that actions are needed to move *beyond a culture of compliance*. Some approaches of application point to compliance as meeting the intent (checking the box), where others view 1173 as something new. Clarity in the understanding of compliance requirements as they apply and contribute to the SMS will improve how operators make these connections. Also, it helps clarify expectations of what is needed and helps answer the routine question and comment of “How is this different than DIMP/TIMP”, for example.
- **Scalability:** To address concerns from small operators, include a precise threshold for when the RP should be applied in its entirety vs. when only specific elements should be incorporated. For example (*see third comment under Introduction*):
 - Integration and communication between various pipeline safety programs (IM, OQ, PA, EP&ER, etc)
 - Safety Culture, including: stop-the-job, etc.
- Confusion, clarity needed around use of “shall have a procedure...” vs. “shall...”
- **Definition of implementation?**
 - An Operator can consider their SMS to be fully implemented upon completion of the following criteria:
 - Complete an initial gap assessment
 - Identify and assign corrective actions associated with the gap assessment
 - Complete and document Management Review processes in accordance with the Operators written procedure

Plan-Do-Check-Act Cycle

- Consider changing “Act” to “Adjust” in the PDCA graphic and description
 - Pages viii, ix, 6
- Consider further development of the PDCA graphic:
 - Management Review is not included
 - Stakeholder Engagement may belong in the Plan phase
 - Some of the other elements may also fit best in another portion – EP & R?
- Embed PDCA in the elements to help the user better understand, apply, and continually reinforce the concept for application and learning by building the routine and strengthening the culture.



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Sections

- **Introduction**

- For the benefit of pipeline operators, it may be worth specifically stating that the term “safety” here is not to be confused with occupational safety, which are things typically covered by OSHA, but a wider scope: pipeline, personnel, and public safety.
- Add guidance for operators on how to prepare employees and contractors for PSMS & impacts to safety culture, including their responsibilities for identifying and recognizing risk. While this is addressed in the Stakeholder Engagement section, its criticality may be worth bringing forward into the Introduction Section.
- Should there be discussion about the fact that this document is voluntary for operators under a certain size? (*see eighth comment under General for scalability.*)
- Managing the Safety of Complex Processes:
 - Reframe the discussion on complex processes. For some operators, processes do not have to be complex to be effective. By stating that “safe and effective pipeline operations” yields complex processes, early in the RP authors are setting the tone that things have to be complicated to be effective.
- Goal of this Document and its Safety Management System Framework:
 - Consider including the larger industry wide goal: Assist operators of all sizes in improving aspects of their pipeline safety programs. Is aiding operators in ‘conformance’ of the RP an actual goal?
 - Add language that ties some of the existing pipeline safety regulatory requirements to the PSMS process in this section. For example, replace “risk management” in the second sentence with something more generic, such as “pipeline safety programs”.
 - More clarification needed around “continuous improvement”: How are operators expected to show it? What does “continuous” mean?
 - The RP suggests that ‘continuous improvement’ is a required tenet of the RP. Consider focusing on the need for operators to *adjust* or follow through on identified areas of improvement.
- Flexibility:
 - Change out the term “safety systems” in fifth line with “management systems”.
- Scalability:
 - Consider adding a threshold that is concrete / precise within the document below which this RP may not make sense in its entirety. (*see eighth comment under General for scalability and third comment under Introduction.*)



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- **Section 1 - Scope**

- The use of the term “requirements” is frequent in this section, starting in the second paragraph. There may be better words that can be used such as “framework”, “recommendations”, “provisions”, or in some cases just removing the word “requirement”. This comment is not to reduce the importance of RP 1173, but for an industry that is regulated the term “requirement” may have different interpretations than may be intended in this recommended practice.

- **Section 3 – Terms, Definitions, Acronyms, and Abbreviations**

- Consider adding a definition for “Incident”. *(also see comment under Section 9)*

- **Section 4 – Essential PSMS Elements** *(also see second comment under General)*

- This section has PSMS Elements numbered in Sections 5 through 14. If there is any way to put them all in one big section and then number them 1 through 10, it may be easier to refer to them. For example, it may work to have section 4 start off the way it does currently with the list of the 10 elements, but then rather than the current Section 5 being Leadership and Management Commitment what if Section 4.1 was Leadership and Management Commitment, and Section 4.2 was Stakeholder Engagement, and Section 4.3 was Risk Management and so on. This may seem unnecessary but having the 10 elements always be tied to a 1 through 10 count reinforces them in an easy manner.

- **Section 5 – Leadership and Management Commitment**

- Consider consolidating Top Management and Management roles.
- Recommendation to add clarity around how involved should “top management” be in PSMS? Is it just resources allocation or should top management truly meet each of ‘shall’ statements that are currently in the RP? Who is Top Management & are they the appropriate ones to set goals / etc.?
- (Comment applied to all following sections) Bring in the SMS maturity concept more to increase clarification and reduce misinterpretations or confusion through “should” or “shall” statements. So for example, for each element it is not a pass/fail whether you meet all the shall and should statements but you can look at each element and then there could be an evaluation as to whether you meet the intent of the element on a scale of 1 through 5. If writing each element section with the concept that they are open to an evolving level of maturity by operators it will promote the concept of continuous improvement and will present a system that is less regulatory or litigative and more productive. This would promote continuous improvement, particularly among lesser developed programs, as well, giving them a clear path to what their ultimate goal is. IF these changes were made, there would need to be the inclusion of the maturity model and the definitions of each level of maturity. Potential re-writing for Sections 5.1 and 5.2:



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- “The element description below summarizes a Level 5 maturity that operators and contractors should work towards”:
- “5.1 General - Leadership and Management Commitment of PSMS includes a shared understanding of safety culture where top management communicates expectations by documenting the pipeline operator’s policies, goals, and commitment to safety, as well as identifying safety responsibilities of personnel at all levels. The pipeline operator improves upon the PSMS and measure its effectiveness and maturity in accordance with the requirements of this document.”
- “5.2 Goals and Objectives – Leadership and Management Commitment is where top management establish goals and objectives for its PSMS. The objectives are measurable and consistent with overall safety policies and objectives. Top management create a culture within the organization that encourages openness and two-way dialogue so learnings from incidents and events can ultimately reduce the risk of recurrence. The health of this culture is assessed, and leadership commitment is visible to address areas of concern and opportunity.”
- Section 5.4.1 – Top Management
 - Suggest adding an item to the top management responsibility list: “clarify accountability, responsibility, and decision-making governance to enable the management system.”
- **Section 6 – Stakeholder Engagement**
 - Consider changing the title to “Staff and Stakeholder Engagement”
 - This change ties better with what we want to see in company culture, employee and contractor commitment. Staff may be the most important stakeholders in the long run. Further, this element could also be described as the “voice of the customer” from quality management, in addition to being described as about communication (similar to moving this element to Plan phase).
 - Section 6.1 General starts with, “The pipeline operator shall maintain a process and a plan”, but unsure what is acceptably considered a process and a plan (e.g., written plan, dedicated policy, spreadsheet, etc.?) “Process” is defined in Section 3.1.33, but “plan” is not defined. Create definition for plan or remove to minimize confusion.
 - Section 6.2 – “The pipeline operator shall establish processes to communicate”, but in Section 6.1, says plan is required to internal stakeholders as well. Need clarification of language on what is needed and expected.
 - Section 6.2 – Is there overlap between this element and Section 13 – Competence, Awareness and Training?



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- **Section 7 – Risk Management**

- Enhance language to not only recognize and align with compliance-required Integrity Management Plans (i.e.: Transmission, Distribution, Supplemental Gas, Customer Owned Assets, Measurement & Regulation, etc.), but also the expectation that more is needed to be built and put in place in order to progress beyond compliance. RP should help set the expectations that some current programs don't currently meet this requirement.
- Section 7.5 on Periodic Analyses states that "Risk assessments should be reviewed at least annually", but this is in conflict with both DOT/CFR and ISO 14001:
 - DOT 49 CFR 195.452(j)(2): "An operator must conduct a periodic evaluation as frequently as needed."
 - ISO 14001, A.6.1.1.: "...there is no requirement for formal risk management or a documented risk management process."
 - Change 7.5 to better align with DOT CFR and ISO 14001, replacing current language with "Risk Assessment shall be reviewed periodically based on risk factors determined by the organization."
- Section 7.5 – Consider adding more on engaging employees in identifying and managing risk. If adding guidance, consider explaining the interplay between the following elements: Safety Assurance, Risk Management, and Operational Controls.

- **Section 8 – Operational Controls**

- Section 8.1.2.a.3:
 - Temporary Operations and their associated procedures are produced on an as needed basis (as noted in the section). These procedures are created before work begins, and no longer needed after the temporary work is completed. Should these be required to be "maintained"? Consider removing this or making a dedicated section for Temporary and Permanent in Section 8.3.
- Section 8.2.1 General:
 - Duplicative language in this paragraph. Consider deletion: "The pipeline operator shall assure that pipeline systems subject to this document are designed, manufactured, fabricated, installed, operated, maintained, inspected, and ~~tested pipeline systems subject to this document~~ to maintain safety in a manner consistent with the specified requirements, regulations, and applicable standards."
- Section 8.3: Management of Change (MOC)
 - Better alignment with terminology used in regulations and ASME B31.8S
 - Clarity over development of a procedure vs. doing an action (see ninth comment under Introduction) for MOC, Quality Control, Incident Investigation, determining and documenting lessons learned.



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- Section 8.3.2.1: Need for further clarification/standardization of the MoC Technology change category
 - “The types of changes that a MoC procedure shall address shall include: 1) Technology”
 - Clarification if this is intended to include changes in IT applications?
 - If so, the IT application industry change standard is called “Change Management”. How should this be addressed in RP 1173, 8.3.2 to minimize confusion between RP 1173 MoC in all categories and IT Change Management?
- Section 8.4: Use of Contractors
 - Consider adding a risk ranking of the contractors’ work scope to their assessment. This would trigger a higher contractor HSE performance expectation to be selected for use on higher risk work.
- **Section 9 – Incident Investigation, Evaluation, and Lessons Learned**
 - Expand the expectations of identifying and capturing Lessons Learned beyond incidents. It is implied from a continuous improvement standpoint that 1173 requires you to learn, but it only calls for Lessons Learned as associated to Incidents, which misses the spirit and true intent of the doc and allows operators to revert to traditional compliance (narrow) perspective when interpreting and applying the requirement. Also, clarity of the definition of Incident would reduce confusion associated to DOT reporting criteria.
 - *(For definition of incident, see first comment under Section 3)*
- **Section 10 – Safety Assurance**
 - Expand the requirements to include aspects of a quality management system. A greater focus and expectation regarding quality assurance and management – specifically around ensuring/monitoring/testing of effectiveness and sustainability, beyond typical audit compliance and conformance. Focusing on the Check and Act more to help operators understand the required shift and focus (culturally) to the Check and Act, which is critical to truly enhancing work practices, reducing risk, and improving safety performance.
 - Section 10.4 – Performance Measurement and Analysis of Data
 - The third paragraph lumps lagging KPIs, leading KPIs and process KPIs together. Consider breaking each of these items out into bullet points, as seen in other sections of the RP, to make it easier to read and allows operators to understand exactly what they “shall” do.
- **Section 12 – Emergency Preparedness & Response**
 - Drilling is included in the list of elements a procedure should include. It should be a standalone requirement.



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- Section 12 refers at a high level to emergency management requirements. Suggestion to further simplify and “incorporate by reference RP 1174” as it provides much more detail and specific requirements. This change would eliminate some confusion that is out there regarding EM and build a solid link between these documents.
- **Section 13 – Competence, Awareness & Training**
 - Need for additional clarifications/standardization on training requirements of PSMS
 - Is the true intent for operators to conduct specific training on the PSMS and specific elements, or rather to ensure the operator’s employees and contractors are trained on how PSMS should be applied to their daily work?
- **Section 15 – Executing a Pipeline Safety Management System Strengthens Safety Culture**
 - The title of Section 15 feels more like a statement. Consider updating the title of Section 15 to “*Contributions of a Pipeline Safety Management System to Safety Culture*”.
 - Is safety culture adequately addressed in Section 15 or should it be a standalone element? Is learning culture adequately defined in the RP?
 - Section 15.2 – Contribution of Leadership and Management Commitment
 - May benefit from increased clarity here. (*see comment on Section 5.4.1*)
 - Section 15.4 – Contribution of Risk Management
 - Suggest removing the phrase “they ‘own’ it” in second paragraph. Although the spirit is good, believe it could be sending in inaccurate message as it relates to who has accountability to identify risks vs who is accountable for eliminating or treating risks.