API RP 1173 Planning Tool Spreadsheet Guide
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API RP 1173 *Pipeline Safety Management Systems*, FIRST EDITION, July 2015, is a voluntary recommended practice that was specifically prepared for the pipeline industry. Pipeline operators already use a variety of safety management systems (formal and informal) to satisfy regulations and internal expectations for safety management, and many of these systems address various requirements of RP 1173. Pipeline operators may want to take the steps necessary to verify that their existing safety management systems explicitly conform with some or all of the requirements of RP 1173, and to modify them as needed. This guide explains a gap analysis and work planning spreadsheet which can be used by pipeline operators to help them review their current management systems and programs against the requirements of API RP 1173, to identify any gaps, and to develop plans to address each gap.

Implementation activities will span across a pipeline operator's organizational units, across its different functions, and include its many different types of personnel. This effort will require buy-in from all levels of the organization, a detailed plan and everyone's awareness of how they fit into implementation and its success. The spreadsheet provides a tab to document all the parties who will be involved in the implementation process.

Operators can start by performing a "gap analysis" to see how their existing systems might already satisfy some of the requirements of RP 1173 and to identify any gaps. They will then need to develop and implement action plans to address each gap. The Planning Tool spreadsheet will assist them in that endeavor.

This Planning Tool spreadsheet summarizes the requirements of the RP, but it does not contain them verbatim. It is sufficiently detailed to assist the operator in implementation of the RP. The Planning Tool spreadsheet will help the pipeline operator:

- Identify the key personnel to be involved in the development of a pipeline safety management system (PSMS).
- Establish the roles and responsibilities of the key personnel.
- Link and compare the pipeline operator's existing management systems to the requirements of API RP 1173.
- Identify any gaps between the pipeline operator's existing management systems and API RP 1173.
- Identify and prioritize required and optional actions to address each gap.
- Identify owners for each activity.
- Track actions through implementation.

The industry has developed this guide and its associated spreadsheet, as well as 3 booklets and a peer-to-peer sharing guideline, to assist pipeline operators with the development and implementation of pipeline safety management systems that conform to the RP. All of these tools are available online at www.pipelinesms.org.

Disclaimer

This guide and the associated spreadsheet, as well as the other materials and website, are not a replacement for, nor do they provide any interpretation of, API RP 1173. The examples given in this guide and the spreadsheet are just that – examples, which might be appropriate for one company in one circumstance, but not for others. These materials are not mandatory, and impose no additional requirements upon pipeline operators. They are intended to assist companies to get started on the journey towards a fully functional and effective PSMS, while realizing that each company will take their own path. Each company should develop a PSMS that is suited to their operations and company structure, and then continue to modify that PSMS as conditions change.

Overview

The Planning Tool Spreadsheet has 2 tabs, as shown below. The first tab (named "Pipeline Operator") allows the pipeline operator to identify all of the personnel who will be responsible for PSMS development and implementation. The second tab (named "Gap Analysis") has rows which correspond to the major requirements found in the RP, and columns that can be used to document current programs, identify potential gaps, and develop action plans for each of those requirements.
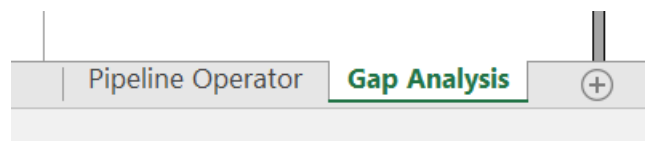
The persons using the Planning Tool Spreadsheet should read the RP beforehand to gain an understanding of the actual requirements and how they are inter-related. Even then, the Planning Tool Spreadsheet is best used with a copy of API RP 1173 in hand. The spreadsheet summarizes the various requirements within the RP, but does not quote the requirements verbatim. To connect the spreadsheet summary to the actual language of the RP, each question in the spreadsheet identifies the corresponding RP element or sub-element. The actual language of the RP will put the spreadsheet question into the larger context, and help the user to make appropriate decisions about the existence of any gaps as well as to identify any necessary actions to address them.

Some cells in the spreadsheet have been filled in with EXAMPLE information shown in red type. These cells should be over-written with the actual responses for the operator.

PIPELINE OPERATOR TAB

The RP describes 3 types of employees: "Top Management", "Management", and "Employees". The Pipeline Operator Tab can be used to identify the specific people who are to be involved in the development and implementation of the RP at each of these levels, and to clarify their roles and responsibilities. By completing this tab, the pipeline operator will satisfy several requirements of API RP 1173 and will be starting the implementation process.

TOP MANAGEMENT

The leadership and public commitment of "Top Management" is essential to the development and implementation of an effective PSMS. According to the RP:

> Top management shall lead and demonstrate its commitment to the development, implementation…of its PSMS by:…
> c) …clear accountability for implementation…
> g) identifying the executive(s) accountable for implementation … [of] each element of the PSMS.
> [API RP 1173, Element 5.4.1]

The pipeline operator can satisfy these requirements by filling in the 'Top Management' table with the names of the executive leadership that will be accountable for the implementation of specific PSMS elements. While only one person will be Accountable for each element, other executives are likely to be Involved. Place an "A" in the column for each PSMS element that the executive will be accountable for during the PSMS implementation and an "I" in the table to indicate each executive that is involved in that element's implementation.

MANAGEMENT

The support and dedication of "Management" is required to ensure that proper resources are allocated and stewarded to achieve the timely development and implementation of an effective PSMS. According to the RP:

> Top management shall lead and demonstrate its commitment to the development, implementation,…of its PSMS by:…
> g) identifying the … managers responsible for each element of the PSMS.
> [API RP 1173, Element 5.4.1]

The pipeline operator can satisfy this requirement by filling in the 'Management' table with the names of the managers that will be responsible for the implementation of specific PSMS elements. For each identified manager, place an "R" in the column for each PSMS element that the manager will be responsible for during the PSMS implementation, and an "I" for each which one that is involved in that element's implementation.

IMPLEMENTATION TEAM

The Implementation Team members are appointed by Management to actually do the work required for PSMS development and implementation. For each team member, identify what his or her role will be on the team for each element. If the team member is leading a group for implementing an element, place an "L" under that element number. Some team members may be subject matter experts and resources for certain elements and will be identified with an "S" under that element number. Others will be Involved in that element's implementation. Mark involvement with an "I" in the appropriate element column. The Notes section can be used to document the specific duties and assignments for each member of the team.

GAP ANALYSIS TAB

The Gap Analysis tab contains a summary list of the RP requirements, as well as several columns that allow the user to identify existing programs relevant to those requirements, identify and describe any gaps, identify and prioritize actions to close each gap, and assign responsibility and due dates for those actions and track them to completion.

Below is an example of how the various columns in the Gap Analysis tab might be completed for spreadsheet question 7.1: *Is there a procedure for performing risk management?*

API RP 1173 REQUIREMENT COLUMN

The Requirement column in the Gap Analysis tab contains a series of high-level questions derived from the requirements in API RP 1173. It is a guide for the organization to compare its current programs against the basic requirements in the RP, and to develop and implement an action plan for further improvements. For example, below is an "API RP 1173 Requirement" question related to the RP sub-element 7.1:

A	B
API RP 1173 Sub-element	**API RP 1173 Requirement**
7.1	Is there a procedure for performing risk management?

EXAMPLE EVIDENCE COLUMN

Pipeline operators frequently have many different systems that address a variety of needs. Some of the existing systems may not be identified as "safety management", and instead may be part of other work processes such as budgeting, human resources, public relations, operations, maintenance or engineering. Some of these may be formal with written documentation, and others may be informal with little written documentation. All of these systems may be relevant to a PSMS, and may need to be evaluated during the gap analysis process. The Planning Tool has listed, for each question, some examples of documents and records that may have the requested information, process or plan.

The Example Evidence column contains information to help the user answer the Requirement question. Below is the Example Evidence contained in the spreadsheet relevant to question 7.1:

B	C	D	E
API RP 1173 Requirement		**Example Evidence**	
Is there a procedure for performing risk management?		Risk Management procedure. Process hazards analysis procedure.	

ACTUAL EVIDENCE COLUMN

The Actual Evidence column is where the user can document the processes, systems and/or procedures that are currently in use which fully or partially address the Requirement. It may have entries like these:

API RP 1173 Requirement	Example Evidence	Actual Evidence (list the relevant documents / procedures)
Is there a procedure for performing risk management?	Risk Management procedure. Process hazards analysis procedure.	*EXAMPLE* *Pipeline pressure test procedure.* *Risk-based pressure test alternative procedure.* *Gulf of Mexico pipeline navigational risk and inspection procedure.* *Navigable water crossing risk evaluation.*

The examples given in the "Example Evidence" column are not the only way to demonstrate conformance to the RP. The person answering the question for the pipeline organization should evaluate all potential information sources and list the relevant systems in the "Actual Evidence" column of the spreadsheet.   If there are multiple processes, systems and procedures, it is recommended that the user document which process, system or procedure addresses which part of the requirement.

GAP COLUMN

Once the current systems are identified in the 'Actual Evidence' column, the user can then compare these systems to the RP's requirements and internal expectations, and determine if a gap exists. Gaps exist when the current systems do not address the full requirements of the RP, or do not meet internal expectations beyond the requirements of the RP. The user should refer to the text of the RP to determine if their existing systems address all of the RP's requirements.

The RP discusses some aspects of the safety management system which are not requirements. These are contained in the Notes or contain words such as 'may' or 'should' (instead of "must" or "shall"). These things may be good ideas for a pipeline operator's PSMS, and the operator may decide that they should be done. The spreadsheet allows these things to also be documented as "gaps" even though their implementation is not required to be in conformance to the RP. These are the operator's internal expectations.

Based on the comparison of the requirements in the RP and internal expectations versus the information placed in the Evidence column, the user will be able to document a 'Yes', there is a gap, or 'No', there is not a gap, answer. These answers are documented in the Gap column. Note that management systems require documentation of how the required activities are to be done. The lack of a documented process would be a "gap", even if the pipeline operator may simply need to put into writing the informal process that is already in use in order to close the gap.

In this example, the risk management procedure as described in 7.1 should evaluate the threats to all the pipeline assets, which includes ancillary equipment like pumps, metering stations, etc. The above procedures did not include the ancillary equipment. In addition, the first two procedures are concerned with initial testing, but they do not address operational threats. The last two procedures are concerned

with operational issues, but are limited to navigable waters. Therefore, there are gaps in the procedures for performing risk management.

DESCRIPTION OF GAP OR GAPS

This column is used to document the identified gap or gaps. The gap should be specific. Vaguely documented gaps can result in actions that will not completely close the gap. Add new rows for additional gaps. For this example, there are two gaps:

- Procedures do not cover all pipeline assets.
- Procedures do not identify the threats to the pipelines except the topic threat.

To add additional rows for gaps, click in the last Description of Gap or Gaps box for this section and then open the 'Insert Cells' pulldown, click on 'Insert Sheet Rows' and a blank row will be added above this row.

DESCRIPTION OF POTENTIAL ACTIONS TO CLOSE GAP COLUMN

If the Gap column has a 'Yes' answer, the Description of Potential Action(s) to Close Gap column is where the specific action steps will be documented that when completed will be able to change the answer to a 'No'. The actions also may be items to improve existing systems beyond the Recommended Practice requirements.

There may be several potential solutions for each gap, and users are encouraged to identify as many potential solutions as possible. There are some good reasons for this 'brainstorming' approach. First, one of the potential solutions to a gap may be a potential solution for a different gap or gaps. You may discover you can solve multiple gaps with a single solution. Second, different potential solutions may need different resourcing or amount of resourcing. If the resources to resolve the issue are not readily available, a different solution may be implemented with the available resources. Third, Management or Top Management may simply prefer one solution to the others and they have the final decision making responsibilities. For some pipeline organizations, the list of potential actions will be long. A long list is not a problem but it should be managed wisely for the organization to make steady progress.

API RP 1173 is a safety management system that includes continuous improvement. Action items should be completed in priority order, with the available resources. Time, personnel, and budget should be considered when building the action plan. All actions do not need to be completed at once but can be spread out over time.

In this example, for the first gap of "procedures do not cover all pipeline assets", the following potential actions could address the gap:

- Identify the other pipeline assets and develop procedures for each asset.
- Develop a risk management procedure for all pipeline assets.
- Identify the risk assessment method to be included in the risk management procedure(s). [What-if, Checklist, HAZOP, FMEA, other?]

J	K	L	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.	
EXAMPLE *Procedures do not cover all pipeline assets.*		*EXAMPLE* *Identify the other pipeline assets and develop procedures for each asset.*	
		EXAMPLE *Develop a risk management procedure for all pipeline assets.*	
		EXAMPLE *Identify the risk assessment method to be included in the risk management procedure(s). [What-if, Checklist, HAZOP, FMEA,*	

To add additional rows for potential actions, click in the last Description of Action box for this section and then open the 'Insert Cells' pulldown, click on 'Insert Sheet Rows' and a blank row will be added above this row.

REQUIRED, OPTIONAL OR NOT CHOSEN COLUMN

Many potential actions may be listed, but not all actions are needed to initiate the continuous improvement cycle or establish the management system. Actions that are simply incremental improvements may be identified as 'Optional'. If the action is needed to initiate the continuous improvement cycle or establish the management system, the action should be identified as 'Required'. Because the list of potential actions is the result of a 'brainstorming' approach, some actions may be mutually exclusive. When the decision is made for which actions will be completed, the excluded actions will be identified as 'Not Chosen'.

In this example, the first two potential actions are two different approaches for closing the gap, but only one is needed. The first option was Not Chosen (NC). The third action is not needed to close the gap, but it is a good idea to be included with either of the first two potential actions. It is shown as Optional (O).

K	L	N	N	O
	Description of Potential Action(s) to Close Gaps. Use additional rows for each Potential Action.		**Required (R),**	
	EXAMPLE *Identify the other pipeline assets and develop procedures for each asset.*		*NC*	
	EXAMPLE *Develop a risk management procedure for all pipeline assets.*		*R*	
	EXAMPLE *Identify the risk assessment method to be included in the risk management procedure(s). [What-if, Checklist, HAZOP, FMEA,*		*O*	

PRIORITY COLUMN

Prioritization of the selected actions is done after all the potential actions have been evaluated. Not all actions will have the same level of priority. Some actions must be completed before others can begin. Other actions might be "nice to have", but not necessary for implementation of the PSMS. The assigned priorities should consider:

- the action items that must be completed before others can be done
- the actions that are necessary to initialize the continuous improvement cycle
- the actions that are necessary to conform to the requirements of the RP
- the availability of resources.

The Priority column is used to document the organization's decisions about relative priority of each action item. The Planning Tool spreadsheet allows each action to be given a priority ranking (high, medium or low). The criteria of what is high, medium or low is for the tool user to define. An example method to determine High, Medium, and Low is:

- High – The action is required, other actions are dependent on this action being completed, the action addresses key risk management concerns, the action addresses known safety issues.
- Medium – The action may or may not be required, the action completion is not needed for other High priority actions to be completed, the action improves the effectiveness of existing activities or actions.
- Low – The action is not required, it does not address key safety or integrity management issues, the action is independent of other actions being completed.

Some organizations use a common prioritization scheme across all systems. The Planning Tool user may set up a different prioritization scheme than the one suggested here.

Returning to the example, the priorities for the second and third potential actions would both be High. The second action is Required and is directly related to how the organization will manage risk. Even though the third action was designated Optional, it is a high priority because if it is going to be done, it should be completed before the second action.

OWNER COLUMN

For each action, an owner is to be identified. The Owner will be accountable for completing the action by the identified due date. The Owner should be a person even though the action may require a team. After the actions have been assigned, the new workload for the action owners should be evaluated to ensure they can fulfill their normal job responsibilities while making timely progress on the assigned action items.

DUE DATE COLUMN

For each action, a completion or due date should be assigned. The due date should be realistic taking into consideration the amount of work involved with the action, the amount of day-to-day work the Owner is managing, and the need for other actions to be completed prior to the assigned action. It may be appropriate to assign and reassign actions and due dates through several iterations of this process during the implementation program.

STATUS COLUMN

The Status column is to document the status of the action for completion. It is a good practice to not identify an action as complete until it has been verified. This can be done through audits or assessments.

Description of Potential Action(s) to Close Gaps. Use additional rows for each Potential Action.	Required (R),	Priority (H,M,L)	Owner	Due Date	Status
EXAMPLE *Identify the other pipeline assets and develop procedures for each asset.*	*NC*				
EXAMPLE *Develop a risk management procedure for all pipeline assets.*	*R*	*H*	John Doe	9/1/2016	Not started.
EXAMPLE *Identify the risk assessment method to be included in the risk management procedure(s). [What-if, Checklist, HAZOP, FMEA,*	*O*	*H*	Jane Doe	6/1/2016	In progress, on target for due date.

Next Steps

Once the Action Plan is developed, the pipeline organization can begin the process of addressing the actions and implementing the safety management system. During the implementation process, operators are encouraged to continue to think of ways to improve their systems, and to modify the Planning Tool spreadsheet accordingly. These types of ongoing modifications are entirely consistent with the continuous improvement process.