RP1177

Pipeline SMS

API RECOMMENDED PRACTICE FOR **STEEL PIPELINE CONSTRUCTION QUALITY MANAGEMENT SYSTEMS**

A Pipeline Safety Management System

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Significance of New Document

API Recommended Practice (RP) 1177 provides a framework for a quality management system (QMS) for onshore pipeline construction. By developing a robust QMS, operators know their pipelines are built using the appropriate procedures, and there is documentation to support.

API RP 1177 is intended to be used by an organization to develop either a stand-alone QMS or to develop the quality components in an organization's corporate management system.

Also, the appropriate QMS elements are specified to manage the construction process systematically from design verification, materials manufacturing, procurement, construction, inspection, and testing to initiation of operations.

The audience for API RP 1177 includes

Owners/operators, construction firms, construction support firms, subcontractors, survey crews, material providers, and others involved in pipeline construction.

Critical Components of the Document

A key element in the RP is the dialogue regarding Activity Quality Plans (AQPs), which are documents that establish procedures, minimum personnel qualifications, roles and responsibilities, inspection methods, and record requirements of construction activities. The intent of an AQP is to identify quality concerns and methods of control. Ideally, for pipeline construction, one should be developed for each construction task. Companies have to develop, review, and follow AQPs to sustain an effective Construction QMS. AQP requirements for the following construction tasks are given in API RP 1177, further ensuring operators take the right steps to verify quality assurance and control:

- Loading, Unloading
- Receipt, Storage
- Surveying, Staking
- ROW grading
- Ditching
- Stringing
- Field Bending
- Welding
- NDE of Welds
- Mechanical connections
- Coating and Repair
- Ditch Bedding
- Lowering-in
- Pipe Attachments(CP)
- Buoyancy Control
- As-Built Surveying
- Backfilling
- Tie-Ins
- Horizontal Directional Drilling
- Bored Crossings
- Fabricated Assemblies
- Pressure Testing
- Preservation and Drying
- In-Line Inspections
- Above Ground Surveys
- Closeout Documentation

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The Plan/Do/Check/Act (PDCA) Cycle:

To ensure success of a QMS, the achievement of quality objectives throughout the construction project must be evaluated. Additionally, methods to measure each process's effectiveness and enact continuous improvement of the QMS must be instilled. Both these steps need to be applied in a recurring manner, and if necessary, changes made. This practice is detailed below in the Construction QMS adaptation of the PDCA cycle.

- **Plan**
  This step entails establishing the objectives and processes necessary to deliver results in accordance with the organization's policies and the expected goals. By establishing output expectations, the completeness and accuracy of the process is also a part of the targeted improvement.

- **Do**
  This step is the execution of the plan designed in the previous step.

- **Check**
  This step entails the review of the results compared with established objectives. Those results are compared to the expected goals to ascertain any differences and deviations in implementation from the plan.

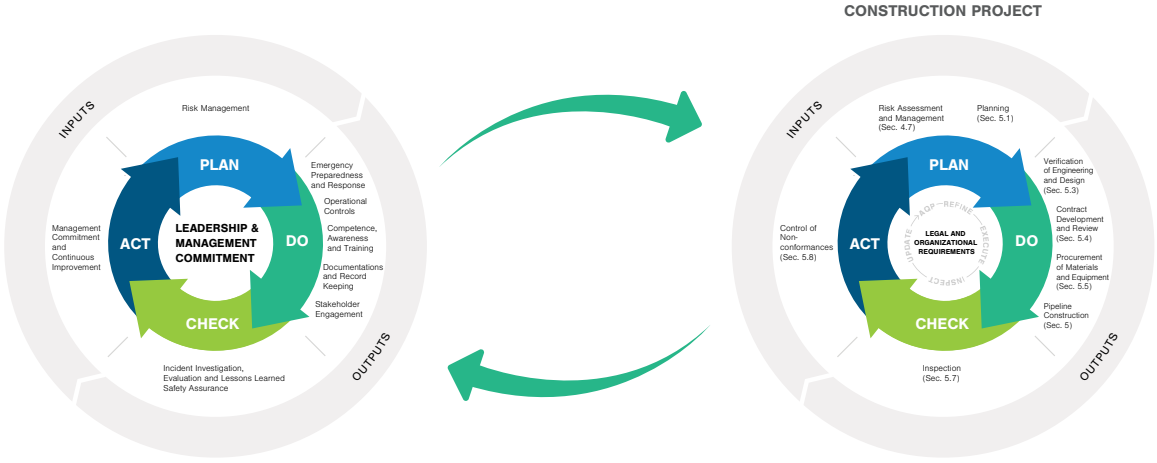
- **Act**
  This step is where the organization takes actions to improve process performance. This may include corrective actions focusing on significant differences between actual and planned results.

The management system principles are applied in a recurring manner to achieve continuous improvement. API RP 1173, Pipeline Safety Management Systems (Pipeline SMS), further details the PDCA cycle. An operator's Pipeline SMS serves as the umbrella framework with specific management systems, including QMS, subordinate to it ultimately forming a holistic approach to safety through metrics and implementation requirements.

Stakeholders Collaborating to Improve Safety

API documents standardize and disseminate best practices across the industry

- Developed via open, accredited processes, with formal review and comment periods;
- Provide all operators with the benefits of the industry's combined expertise in critical areas; and
- Once adopted and implemented, establishes standard practices across the industry.



America's Pipeline Industry:
Focused on Zero Incidents, Committed to Continuous Improvement