



# API RP 1175 Pipeline Leak Detection Reliability Centered Maintenance (RCM) for Leak Detection Equipment

# Reliability Centered Maintenance (RCM) for Leak Detection Equipment

- Pipeline operators should establish written policies and procedures to ensure that all components of the Leak Detection System (LDS) and their supporting infrastructure components are designed for reliability and maintained appropriately.
- The process should include scheduled maintenance that is a part of a pipeline operator's policy and existing RCM program. Also, there should be a process for immediate maintenance and repair of LDS components that have failed or are providing inaccurate or "bad" readings.
- During RCM process it may be helpful to discuss the LDS and maintenance program with the users of the LDSs and/or with vendors.
- Identify qualifications of the maintenance personnel, roles and responsibilities, as well as design and maintenance criteria for all components of a LDP



# Reliability Centered Maintenance (RCM) for Leak Detection Equipment

- Consideration should be given to integrate the leak detection components into a pipeline operator's MMS or CMMS system or similar system to provide for automation of maintenance activity, schedule, and maintenance and failure tracking.
- All components integral to the reliability of a LDS should be identified and documented.
- These components should be physically tagged and/or their corresponding tracking database tags flagged to signify that they are components of the LDS.
- A CMMS may include the ability to capture real world reliability metrics.



## ■ RCM Process

1. What is the function of the particular item or component?
2. What is its associated performance standard?
3. In what ways can it fail?
4. What are the events that cause each failure of that component?
5. What happens when each failure occurs?
6. In what way does each failure matter to the LDS?
7. What procedures can be implemented to prevent consequence of failure (an active prevention approach)?
8. What can be done if a prudent or suitable preventive task cannot be found?

## ■ Design for Reliability and Maintainability (DfRM) Process

1. Team approach with Design for Reliability and Maintainability (DfRM) as a goal.
2. Gather maintenance data and develop into Reliability, Availability and Maintainability (RAM) models.
3. Develop/identify maintenance concepts using information from the Reliability, Availability, and Maintainability (RAM) models.
4. Design using selected maintenance concepts.
5. Design, analyze, test, and improve/optimize the LDS.
6. Engineering finalizes the design and implements the DfRM system.
7. Collect field maintenance data and develop Key Performance Indicators (KPI's).
8. Make field improvements as required by safety, economics, and other factors.
9. Design rules may be revised, new tools developed, and design approaches validated or revised.

