Improving Leak Detection System Design, Redundancy and Accuracy

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Mission

Development of a set of recommendations, expert guidance and draft procedures that will:

- Be accessible to all operators (including the smaller ones),
- Try to reduce the extended and laborious front-end engineering, and
- Standardize the approach to designing an appropriate LDS for pipelines.

The results are intended as:

- Source documents and expert, accessible guidance for use in operations, and
- A reference for developers of pipeline standards and regulatory content.

Key issues

Assessing requirements: One single technology or approach will probably not provide good performance for all objectives, on any given pipeline.

Systematic Requirements Analysis (which is itself based on a Risk Analysis) is the first step in any engineering design process.

Exploring ways to combine multiple technologies and physical principles into one system in order to address all requirements better.

The owner/operator needs to be able to predict system performance – and therefore cost/benefit – more readily and reliably from the design than he can today.

A full lifecycle approach to LDS, which includes technologies, processes and human factors, is critical to success.

Research topics

1. An approach that improves the ability of the industry to design and engineer fit-for-purpose LDS for a wide range of pipeline systems more reliably and more rapidly;

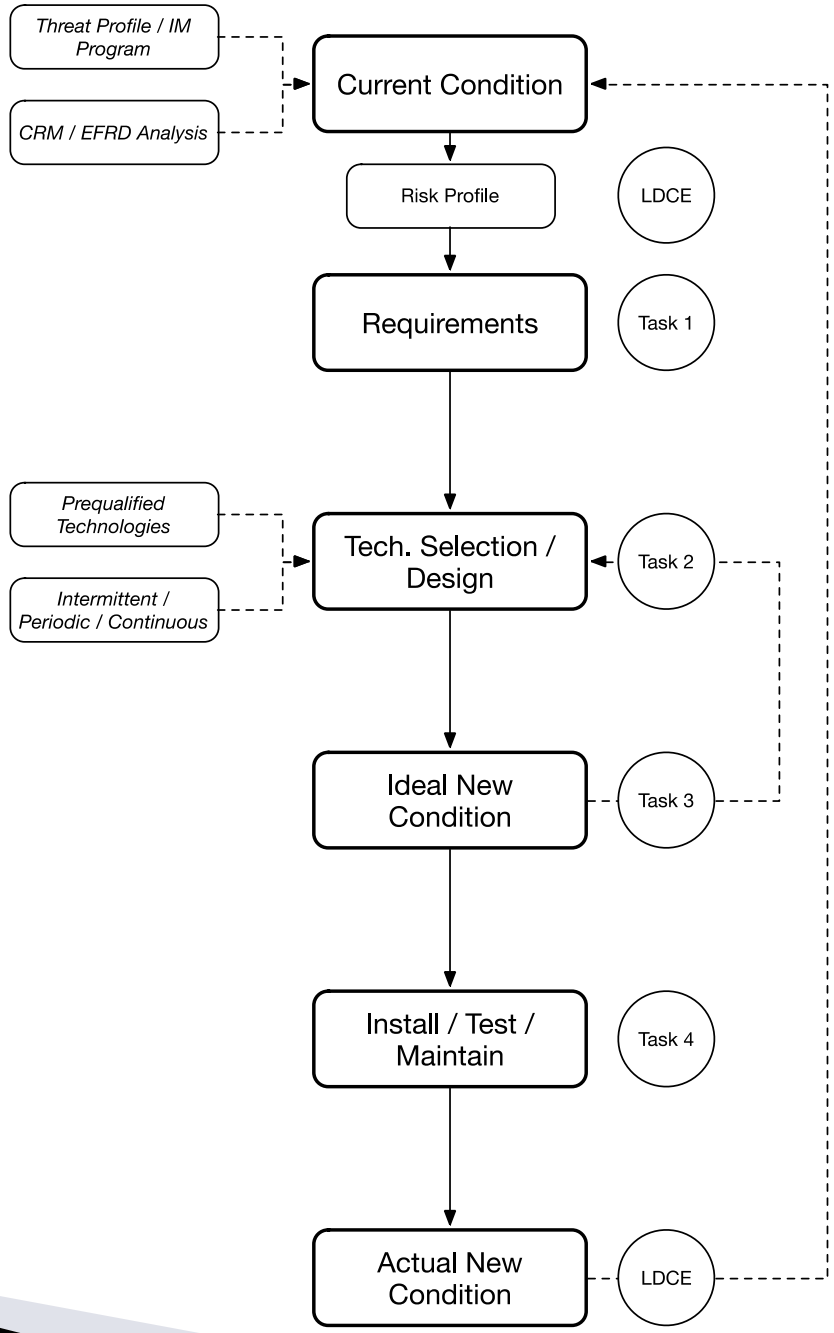
2. Improving the reliability and accuracy of LDS by developing a standard methodology for technology selection and engineering;

3. Systematic predictions of performance;

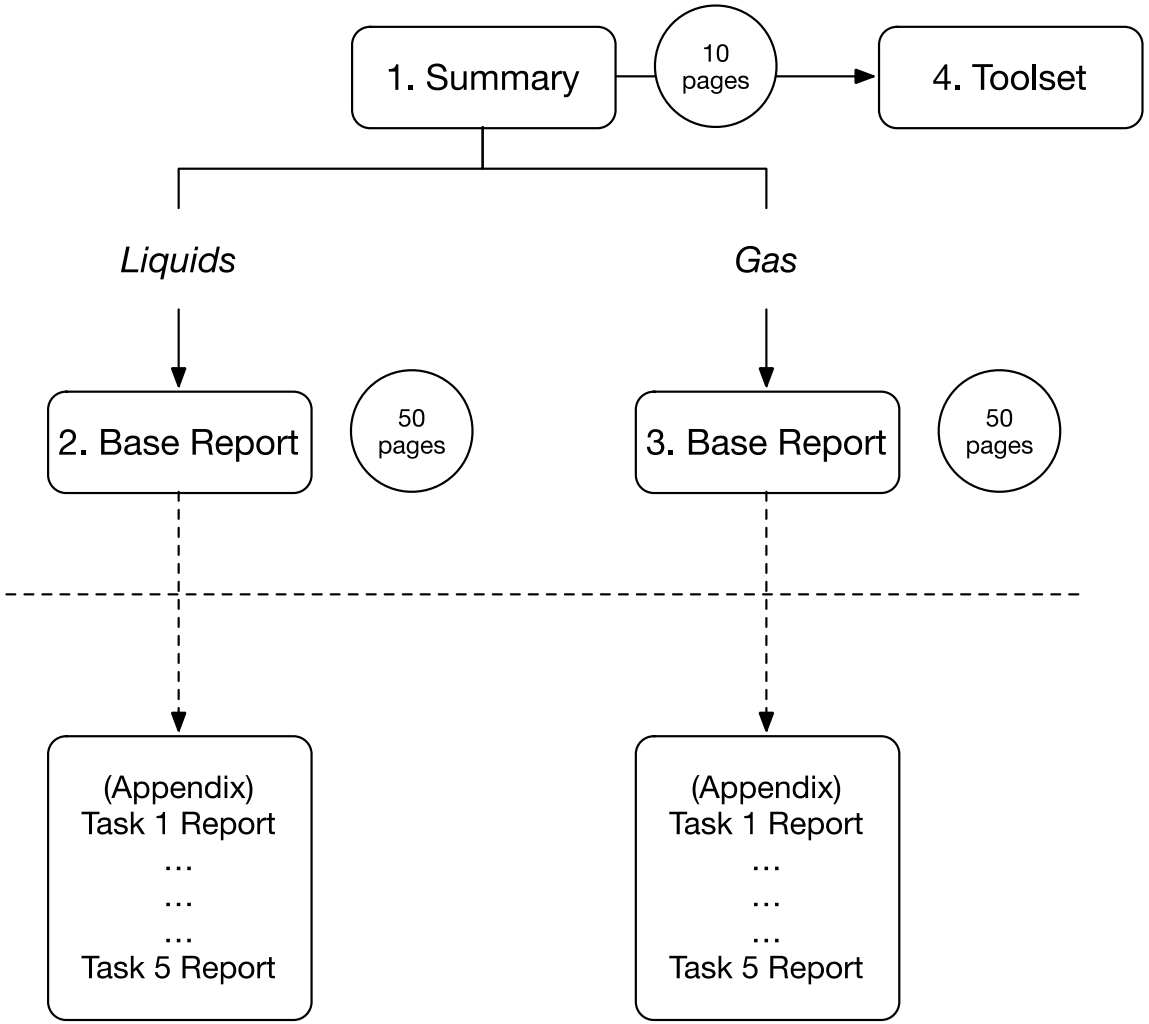
4. Specification and quantification of the impact of installation, calibration and testing of LDS on their performance; and

5. Retrofit issues.

Approach


Threat Profile / IM Program
CRM / EFRD Analysis
Current Condition
Risk Profile
LDCE
Requirements
Task 1
Prequalified Technologies
Intermittent / Periodic / Continuous
Tech. Selection / Design
Task 2
Ideal New Condition
Task 3
Install / Test / Maintain
Task 4
Actual New Condition
LDCE

Deliverables



Strategy

Liaison with a strong Industry Technical Committee. They provided exposure to the key industry associations (API, AGA, INGAA, AOPL, etc.)

The importance of synergy with other initiatives in progress, notably API RP 1175, API Pub 1149 and others

The importance of making the documentation accessible to all operators

A particular outreach to natural gas operators, smaller operators and upstream

Coordination with important State Regulators

Thank You

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