RBI Program Best Practices

INSPECTION & MECHANICAL INTEGRITY SUMMIT

Inspection, Mechanical Engineering, Corrosion & Materials

API

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RBI Program Best Practices

Key considerations that will help to develop a robust RBI program

- Making a business case
- Software demands
- Methodology options
- Defining the program
- Cleaning up the data
- Training resources
- Piloting the Program
- Implementation expectations
- Documenting the implementation
- Going live with RBI

Making a Business Case

Don’t make the mistake of trying to sell RBI as a cost-saving measure.

RBI is an investment into industry best practices used to optimize your inspection and maintenance budgets.

Common short-sights:

- Program preparation / design
- Cost of on-stream, highly effective inspections vs internal
- Evergreening / revalidation costs

RBI is based on relative risk which requires other assets to calibrate your methodology and risk tolerance. Common misconceptions / misapplications:

- Eliminating internals
- Cherry picking equipment

Software Demands

The use of an RBI software program standardizes the approach and improves repeatability.

Typically, semi-quantitative.

Does the software support your needs?

- Asset types
- Damage Mechanisms
- Process Streams

What training will be required for personnel to maintain?

- Power users and database administrators

Software updates.

Software Demands

Less popular solutions may have limited industry exposure.

- Support
- Resources

Is there a User group?

Integration (e.g., existing IDMS) and support?

Maintenance requirements: annual fees, evergreening.

Methodology Options

Qualitative: typically, a points-based approach heavy on SME input.

Semi-quantitative: most common and typically software oriented. Requires some calculation and may have qualitative aspects.

Quantitative: You cannot cost-effectively calculate absolute risk to a large grouping of assets. Think of this as a level 3 FFS.

Hybrid approach:

- Qualitative screening of assets to determine which to include in a deeper semi-quantitative analysis
- Qualitative for certain assets or damage mechanisms and semi-quantitative for others

Goal is to prioritize inspections based upon the risk results.

Defining the Program

Building an RBI program document is essential to success and compliance.

Purpose served:

- Details how API 580 requirements (shall's) have been addressed
- Details which API 580 recommendations (should's) are and are not incorporated
- Documents the methodology and software being used
- Baseline for piloting and evergreened as the program evolves
- Serves as a resource for site personnel
- Auditing and KPI resource

Defining the Program

Building an RBI program document is essential to success and compliance.

What it can include:

- In-scope vs. out-of-scope equipment/component types
- Inspection Strategies (LoIE)
- Inspection planning requirements
- Risk tolerance / risk target
- Roles and Responsibilities
- Software settings
- KPIs
- Other program interactions (MOC, FFS, PHA, etc.)
- Documentation requirements
- Auditing requirements
- Implementation specification

Cleaning Up the Data

How accurate and complete is your data?

Design data should be updated prior to the RBI implementation rather than during.

- Consider in-house resources, if available, or experienced external resources.
- Incorporate field verification, as needed.

Process data (HMB, Fluid modeling) can also be performed ahead of the implementation.

Consider updating or validating the following ahead of the implementation P&IDs, PFDs, CCDs, HMBs, CMLs, Inspection history.

- Digital copies of all help tremendously.

Training Resources

Prepare learning materials for all roles in the program.

- Internal resources
- External resources (should have their own generic policy and/or procedures)
- Resource qualification
- Competency demonstration and auditing

All roles should understand how their inputs are used within the program (software).

Piloting the Program

Once you have chosen a methodology and software (if required), it is time to test it all. This is referred to as “piloting”.

The benefits of piloting include:

- Gauging readiness (data, resources)
- Understanding resource needs
- Estimated time to completion
- Testing integration with other programs e.g., CCD, IOW, MOC
- Gauging accuracy and precision
- Adjusting the program

Plan some contingency for budget and schedule.

Select a manageable set of equipment i.e., one or two units.

No matter how well you have planned, do not expect you will get it right the first time.

Implementation Expectations

Projects rarely go exactly as planned. Expect issues to arise and when they do:

- Scope flexibility can improve success
- Post-project vs. change order

For multiple units, the overall implementation schedule should consider reassessment timeframes. Spread the implementations over several years.

Set expectations early and ensure all parties agree on final product.

- Preview deliverable templates and examples

Assign an internal resource as RBI Lead or Champion who can track the project to completion and coordinate resources.

Maintain an action log and track/document actions to completion.

Documenting the Implementation

Document every RBI project:

- Pilot, Initial assessments and Reassessments
- Enough information that a separate group could use the documentation to recreate the assessment and have the same results.
- Deliverables should be at a unit level

Going Live With RBI

Once up and running with RBI:

- Evergreening
- KPIs and auditing
- Maintain the team training (e.g., resource flow)
- Integration with internal systems (MOC, PHA, TAR schedules)
- Beware of software updates

Closing

As with most things in life, your peer network can serve as an excellent resource.