RBI is a well-recognised best practice for optimising the frequency of inspections and the detail of the inspection scheme of examination. However people do not always gain the maximum benefits from RBI studies. This can be due to a poor initial study, not implementing the study actions in full or from not keeping the RBI up to date as changes occur.

Changes to operating conditions, actual equipment condition at the latest inspection, equipment criticality or improving RBI practices can all alter the level of risk associated with a particular inspection scheme. These changes can either make the current level of inspection inadequate for the risk level, or more onerous and expensive than required. Along with other risk management approaches, e.g. PHAs and safety cases, it is good practice to periodically review RBI studies to make sure they remain optimised.

RBI revalidation is a process that checks if a RBI study has been successfully implemented and sustained, implementing improvements where required.

What we offer
The approach to a revalidation exercise depends on the fitness for purpose of the current RBI studies and inspection schemes. So ABB starts with an initial ‘audit’ to assess the effectiveness of these. This rapid audit looks at the robustness of the RBI studies, the implementation of recommendations, significant changes in operations and samples some of the inspection documentation. The outcome is to determine what the next steps should be and can vary from taking no significant action to carrying out a full RBI study.

The graph below illustrates the possible assessment outcomes from the audit.

Risk Based Inspection (RBI) optimises inspection schemes, but needs to be kept up to date to sustain the benefits.
The best time for revalidation is after a full inspection cycle, to use the inspection findings in comparison with the RBI expectations. We look at the following areas in the audit:

- How the scope of the original RBI study was selected
- The RBI methodology used e.g. quantitative versus qualitative, corrosion loops or on an equipment specific basis
- The RBI team composition and experience
- The data available to the team
- How the risk likelihoods and consequences selected compare to industry norms
- Whether studies were conducted with limited operational and inspection data leading to conservative assumptions
- If the current inspection plans accurately reflect the RBI study recommendations
- If the current operating conditions conform to the original RBI input
- Comparison of inspection findings against RBI assumptions and expectations
- Has the learning from inspections been used to update inspection schemes
- The maintenance history of the items in the review
- How inspections plans and RBIs are updated following inspection

The next steps will be tailored, according to a company’s specific objectives and the outcome of the audit, but the flowchart illustrates typical next steps.

Often a revalidation review of the latest RBI will be beneficial. This would be appropriate when the RBI actions have not been fully implemented, process changes have occurred, inspection history shows unidentified deterioration mechanisms etc.

The review is a highly efficient process that confirms or updates the key assumptions and risk assessments carried out as part of the RBI. This involves:

- Reviewing the original RBI study documentation
- Reviewing inspection history and schemes
- Confirming current operating conditions and practices
- Holding a group session, or a series of 1:1 meetings to sign off any changes recommended.

The time taken to carry out a review depends on the information available, but will typically be an order of magnitude less than to carry out a full RBI study.

We could carry out a full RBI study, where the initial study was flawed or there have been significant changes to the basis of the study. ABB can lead studies, using our leading RBI+ methodology and software, and can provide functional experts to the study where required.

Where the latest RBI study has been well carried out and implemented there may be some minor benefits and actions to take: such as minor updates to inspection schemes.

Benefits

- Optimised inspection schemes are sustained
- Reduced risks to safety and production
- Inspection costs are optimised and focussed at areas of real risk
- Highly effective use of time in completing the review
- Confidence (internally and externally) that inspection risks are well managed and understood

Why ABB?

ABB have over 20 years experience of carrying out RBI reviews and have applied the RBI+© methodology to over 100,000 equipment items. The cost savings from our RBI studies typically amount to a 40% reduction in inspection costs. We are also a leading provider of inspection management services which gives us a deep understanding of the whole inspection / integrity management lifecycle and best practices. Our operating history and in depth functional expertise gives us the leading edge capability across all types of asset. ABB can perform such an RBI revalidation exercise as an independent consultant, benchmarking a company’s RBI system against industry best practice.