Risk Based Inspection Case Studies:  
Does RBI improve plant safety?

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ABSTRACT

In order for a facility to extend the operating lifetime of pressure vessels and piping, safely and cost effectively, it is necessary to implement the latest inspection and maintenance strategies. Risk Based Inspection (RBI) has its roots in Process Safety Management and Mechanical Integrity programs and is gradually becoming accepted as good engineering practice for the implementation of inspection and maintenance programs. This paper describes the methodology, analysis and results of Risk Based Inspection studies conducted on several refineries and petrochemical facilities. These studies have resulted in numerous benefits for the plants, which include safety and compliance issues, cost savings, focussed inspection plans and assisting management in making informed, defensible operational decisions.

An important aspect of any RBI program is the practical application of the methodology in a facility. Inspection departments want to know how and when to inspect specific pieces of equipment and how to track inspections over a relatively long period of time. Typically 5, 10 and 15 year plans are useful for a facility when planning scheduled maintenance and turnaround activities. It is therefore important that once equipment items have been risk ranked and prioritized, a comprehensive inspection program is developed. The frequency and scope of inspections as well as appropriate NDE techniques need to be described in comprehensive inspection plans for each equipment item. By conducting the correct inspections, using the correct inspection techniques, and carefully documenting the inspection findings, facilities can reduce the overall risk associated with equipment items and improve plant reliability.