

Casing and Tubing Inspection: Getting What You Need

Abstract

A casing or tubing failure in a solution mining well will adversely affect the economics for the project. Tubular failures have been categorized in five areas, according to their cause. This paper reviews these five areas and addresses the following issues related to one specific area--inspection of the material:

- Since I buy tubular goods that have been inspected, why do I need to inspect them again?
- How do I decide what inspection services to purchase?
- What steps must I take to ensure that the inspections are properly performed?

The information provided will allow the purchaser to make informed decisions regarding inspection of tubular goods.

The "ADIOS" Elements

Failure prevention requires managing all the factors and drivers that together cause a failure. The upstream Exploration and Production business has categorized failures into five areas and applied the acronym "ADIOS". These five areas are:

Attributes (A): These are the metallurgical properties and dimensions that are built into each tubular component during its manufacture. Typical attributes include strength, toughness, hardness and other metallurgical properties that will affect load capacity. When we purchase tubulars, material test reports ("MTR's") should be requested and supplied for each heat treat lot in the order.

Design (D): Tubular design is selecting components that will maintain their integrity throughout the life of the well. This requires defining the operating conditions, such as pressure, temperature and axial load, for critical operations. Obviously, if the design is not done correctly, failure is more likely.

Inspection (I): The purpose for inspecting new tubular goods is to ensure that they comply with the design parameters. Most often, inspections can be grouped into two categories—dimensional and flaw detection. Dimensional inspections include wall thickness, inside diameter ("ID") and thread dimensions. Flaw detection inspections are designed to detect manufacturing flaws such as laps, seams and cracks. Inspection must be combined with design to ensure that materials are selected and procured which will maintain integrity throughout the life of the well. Notably absent from the list are inspection methods designed to verify the metallurgical properties of the pipe. These