DS-1 Cat 5 Inspection Program for Drill Pipe

Tool Joint

Visual Connection: Visual examination of connections, shoulders, and tool joints and profile check of threads, measurement of box swell.

To Evaluate:
Handling damage, indications of torsional damage, galling, washouts, fins, visibly non-flat shoulders, corrosion, weight/grade markings on tool joint and pin flat.

Dimensional 2: Measurement or Go-No-Go gaging of box OD, pin ID, shoulder width, tong space, box counterbore, plus measurement or Go-No-Go gaging of pin lead, counterbore depth, box counterbore, pin flat length, bevel diameter, seal width, and shoulder flatness.

To Evaluate:
Torsional capacity of pin and box, torsional matching of tool joint and tube, adequate shoulder to support makeup stresses, adequate gripping space for tongs, plus evidence of torsional damage, potential box thread engagement with pin flat, excessive shoulder width, sufficient seal area to avoid galling, non-flat shoulders.

*Blacklight Connection: Fluorescent wet magnetic particle inspection using active DC current.

To Evaluate:
Fatigue Cracks - *Users may consider omitting Blacklight Connection Inspection of drill pipe tool joints from the Category 5 inspection program unless tool joint fatigue cracks have occurred.*

Heat Checking: Dry or wet fluorescent magnetic particle inspection.

To Evaluate:
Longitudinal Surface Flaws

Tube

Visual Tube: Full length visual examination of the inside and outside surfaces of used tubes.

To Evaluate:
Straightness, mechanical or corrosion damage, debris such as scale or drilling mud.

OD Gauge: Full length mechanical gaging of the outside diameter of used drill pipe tubes.

To Evaluate:
Diameter variations caused by excessive wear or mechanical damage, expansions caused by string shot, reductions caused by overpull.

UT Wall Thickness: Wall thickness is measured around one circumference of the drill pipe tube using an ultrasonic thickness gage.

To Evaluate:
Tube wall thickness below the specified acceptance limits, minimum cross-sectional area of the tube.

EMI (Electromagnetic Inspection): Full length scanning (excluding external upsets) of drill pipe tube using the longitudinal field (transverse flaw) buggy type unit.

To Evaluate:
Flaws such as fatigue cracks, corrosion pits, cuts, gouges, and other damage that exceed the specified acceptance limits.

*MPI (Magnetic Particle Inspection) Slip/Upset: Examination of the external surface of drill pipe and HWDP upsets and slip areas, and HWDP center pad using the active-field AC yoke dry visible magnetic particle technique.

To Evaluate:
Flaws such as fatigue cracks, corrosion pits, cuts, gouges, and other damage that exceed the specified acceptance limits. *For ferromagnetic components, Wet Visible Contrast Inspection may be substituted for MPI Slip/Upset Area Inspection.*

UT Slip/Upset: Examination of Drill Pipe and HWDP upsets and slip areas using shear wave ultrasonic equipment.

To Evaluate:
Flaws such as fatigue cracks, corrosion pits, cuts, gouges, and other damage that exceed the specified acceptance limits.