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## EStB – Diverter Systems

### Diverter System

The diverter system, as a mitigator, facilitates closure of the upward flow path of well fluid and packs off the annulus around the pipe in the wellbore or open hole when it is desired to divert wellbore fluids away from the rig. The components of the diverter system are the housing, annular type element, flowlines, diverter packer, flowline seals, lockdown dogs, flowline selector valve, overboard vent valves, trip tank valve. This excludes the diverter control system, which consists of pumps, accumulators, manifolds, valves, lines, and hydraulic fluid, to operate the diverter system.

**Parts and Components (Barrier Elements),** *i.e., Description of pressure containing parts and components that serve as part of a primary or secondary barrier envelope when required.*

None.

**Parts and Components (Mitigators),** *i.e., Description of fluid wet components or components used to directly prevent escalation of events required for system to work as a mitigator. These are components that apply mitigation directly to the hazard. This should not include control systems.*

**Housing** – Handles the loads between the rig and the riser system and provides the sealing surface and the lockdown mechanism for the diverter assembly.

**Annular Type** – A ring-shaped elastomeric packing unit comprises rubber and steel reinforcing inserts housed within the annular diverter body.

**Flowlines** – Piping exits the bell nipple or diverter housing and conducts drilling fluid and cuttings to the mud processing equipment.

**Diverter Packer** – A sealing component consists of a rubber/elastomer element that affects a seal in the diverter housing.

**Flowline Seals** – Elastomeric elements create a seal between the diverter housing and the diverter assembly.

**Lockdown Dogs** – Locking components that keep the diverter assembly from rising out of the diverter housing.

**Flowline Selector Valve** – A three-way flow control device installed in the diverter overboard line to allow the fluids to exit to a preselected direction while keeping an overboard diverter line always open.

**Overboard Vent Valve** – Full-opening valve that facilitates the shut-off of flow or allows passage of diverted wellbore fluids through the overboard line. It consists of port overboard and starboards overboard.

**Trip Tank Valve** – A tee on the flowline piping that provides access for fluid flow to the Trip Tank.

Injection Lines – Small-diameter conduits that enable injection of inhibitors or similar treatments (e.g. hydrate remediation, emulsifier.)

High Pressure Fluid Pump – Equipment utilized to inject fluid into a wellbore.

Valves – Components equipped with an adjustable aperture to control the rate of flow of fluid (e.g. Choke Valves.)

### Scope

Analysis on diverter systems will be limited to the period in which the equipment must perform as a mitigator during the drilling and/or workover phase of operations.

### Assumptions

- The equipment is field proven.
- The equipment is,
  - Manufactured according to specification
  - Installed as per Original Equipment Manufacturer guidelines
  - Maintained as required
  - Functioning properly
  - Verified as needed
  - Regularly tested
- Throughout the equipment’s lifecycle, the equipment is utilized within its prescribed applicable performance envelope (e.g., pressure, longevity, environment) and operated within design limits.

### Performance Requirements for Public Comments

Mitigators	
Part/Component	Performance Requirement
Housing	Must withstand the loads between the rig and riser system and contain the diverter element and any wellbore fluids.
Annular Type	Must seal against pipe in the hole and prevent flow of wellbore fluids to the rig floor.; Must be interlocked with the overboard vent valves so that one or the other remains open.
Flowlines	Must contain and conduct wellbore fluid overboard without leaking.
Diverter Packer	Must seal against pipe in the hole and prevent flow of wellbore fluids to the rig floor.; Must be interlocked with the overboard vent valves so that one or the other remains open.
Flowline Seals	Must seal to prevent wellbore fluids from escaping the diverter system.
Lockdown Dogs	Must keep the assembly locked within the diverter housing.
Flowline Selector Valve	Must contain and direct wellbore fluids from the wellbore to the overboard line downwind of the rig floor.
Overboard Vent Valve	At least one valve must fully open in divert mode to allow wellbore fluids to flow freely overboard away from the rig floor.
Trip Tank Valve	(1) Must allow routing of wellbore fluid to the Trip Tank. (2) Must seal to allow wellbore fluids to be diverted overboard.