

AMPE13 WELL DRILLING EQUIPMENTS AND OPERATION

UNIT-1 DRILLING OPERATIONS

- 1.1 Location to Rig.
- 1.2 Release Well Bore Diagram, Crews
- 1.3 Operator- Drilling, contractor- Third Party Services
- 1.4 Rig Types- Land Types- Marine types

UNIT-2 COMPONENTS

- 2.1 Overall Drilling Rig, Drilling Sub systems- Power- Hoisting Line
- 2.2 Speeds and Loads Power- Loading Components
- 2.3 Drill Pipe, Heavy Weight Drill Pipe (HWDP), Drill String Loads Uniaxial.

UNIT-3 DIRECTIONAL DRILLING

- 3.1 Well Planning, Two Dimensional, Horizontal, Tools, Techniques, MWD, surveying
- 3.2 Radius of Curvature, Long's Method – Errors, Muds, Mud Use,
- 3.3 Property measurements, Types, - Pneumatic (Air, Gas, Mist, Foam),
- 3.4 Water based, Oil based, solids Control, Definitions,
- 3.5 Equipment, Problems, Contaminations Effect.

UNIT-4 HYDRAULICS

- 4.1 Classifications of Fluids, Rheological Models- Rotary Drilling Hydraulics
- 4.2 Jet Hydraulic Optimizing and Maximizing- Circulations Rate Selection
- 4.3 Drill Bit- Jet Sizing- Equivalent Circulations Density, Hole Cleaning.
- 4.4 Theory- Vertical and Deviated Holes, Annular Velocities
- 4.5 Carrying Capacity – Pills and Slugs.

UNIT-5 ORIGIN OF OVERPRESSURE

- 5.1 Kick Signs, shut –in Procedures, Kill sheets,
- 5.2 Kill Procedures, Driller's Methods
- 5.3 Engineer's Method (Wait and Weight)

References Book:

1. Standard Handbook of Petroleum and Natural Gas Engineering, 2nd Edition, William C Lyons, Gary C Pilisga, Gulf Professional Publishing