LWD 1

Directional Probes Overview

What are the Directional Probes?

DM - Directional Module

PM - Position Monitor

PCD - Pressure Case DEP II

DEP - Directional Electronic Probe

DEP II - Directional Electronic Probe II

MEP - Mud-pulse Electronic Probe

MEP II -Mud-pulse Electronic Probe II

Position Monitor

- Primarily used for negative pulse services.
- Electronics built into a 2” O.D. pressure case.
- Internal calibration done in Houston only.
- Calibrated for a range of temperatures.
- Dumb sensor – calibration factors have to manually stored in INSITE.
- Requires a internal pressure transducer to determine pumps on/pumps off conditions.
- Quartz hinged accelerometers.

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Directional Module

- Primarily used for positive pulse services.
- Also replacing the Position Monitor (PM) in negative pulse.
- Electronics built into a 2” O.D. pressure case.
- Internal calibration done in Houston only.
- Normally used as a hot hole tool (Solar 175).
- 1553 Serial Manchester communications only.
- Kemlon connectors found on both ends.
- Serial No. and Part No. always indicate top of tool.
- High side tool face found on the bottom (alignment hole).

CAUTION: USING THE WRONG POSITION CAN TURN INCLINATION FROM 0° TO 180°.

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Pressure Case DEP II

- 4 Stage Evolution:
  - Pressure Case DEP II (PCD)
  - Pressure Case DEP II – Kemlon (PCD K)
  - Pressure Case DEP II – Ruggedized (PCD R)
  - PCD-C
  - All types have electronics built into a 1-3/4” pressure case.
  - Interfaces with FEWD tools
  - Custom Data String (CDS) Capability, MEP Mode, GAM Mode, EMT Mode, MGT Mode.
- PCD
  - 10-pin amphenol connector on top
  - 7-pin amphenol connector on bottom
  - High side tool face found on bottom (flat area).
  - RS 232 serial communications on top.
  - Uses coil cord connectors if gamma services included.

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Pressure Case DEP II

- PCD-K
  - 10-pin amphenol connector on top, kemlon connector on bottom.
  - Allows Manchester 1553 communications to FE tools i.e. EWR-P4, CNP …
  - Problems were encountered with cracked kemlon connectors.
- PCD-R
  - Same type of connector setup as with the PCD K.
  - Kemlon boot was re-designed.
- PCD-C
- Kemlon boot on both sides

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Directional Electronic Probe

- 2 Stage Evolution:
  - Directional Electronic Probe (DEP)
  - Directional Electronic Probe II (DEP II)
  - All tools require manual insertion into a 1-3/4” sensor pressure case.
  - From this point onwards, all directional modes were electronically switched using a surface computer.
- DEP
  - 7 pin amphenol connector on top.
  - High side tool face found on bottom (T-slot) which indicates Gx position.
  - Option available to take pumps-off survey by adding a lithium battery on upper housing.

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Directional Electronic Probe

- **DEP II**
  - 10-pin amphenol connector on top, 7-pin amphenol connector on bottom.
  - Bottom coil cord connected to a brass crossover and kemlon connector.
  - Lithium battery replaced with Manchester 1553 communications board.
  - Allowed capability to attached FE tools if required.
  - Currently being phased out and replaced with PCD-R.
  - Custom Data String (CDS) Capability, MEP Mode, GAM Mode, EMT Mode, MGT Mode.

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Mud Pulse Electronic Probe

- 2 Stage Evolution:
  - Mud Pulse Electronic Probe (MEP)
  - Mud Pulse Electronic Probe II (MEP II)
  - All tools require manual insertion into a 1-3/4” sensor pressure case.
- MEP
  - 1st generation Sperry-Sun Directional probe.
  - 7-pin amphenol connector on top.
  - High side tool face found on bottom (T-slot) which indicates Gx position.
  - Manual switching for directional modes using a screwdriver.

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