

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.

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°.

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.

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

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.

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.

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.