

“When it takes Supreme Efforts to get to the Source of the Energy”



SPECIALISTS IN DIRECTIONAL, HORIZONTAL,  
AND MULTI LATERAL GEO STEERING



## SSES MWD and Directional Drilling Equipment

Mud Pulse MWD/Gamma and EM MWD/Gamma available, all of which is fully retrievable.

Features	Benefit	Feature	Benefit
<b>Pressure Drop Across Tool</b>	Flow Loop (Calculated using orifice) (70 PSI @ 500 gpm @ 11-16" I.D. D.C.)	<b>Absolute Accuracies</b>	
<b>Pulsation Dampeners</b>	Recommended	<b>Azimuth</b>	±0.1 deg. (inclination >5 deg.)
<b>Static Survey Procedures</b>	Stop rotary, stop pumps, hold for 40 seconds (programmable to other values) start pumps	<b>Inclination</b>	±0.1 deg.
<b>Tool Face Update Rate</b>	Averages 1.0 seconds (function of probe width)	<b>Crossover to Highside Tool Face</b>	Programmable to any value desired, 5 deg. is typical
<b>Survey Transmission Time</b>	Typical 16-50 seconds (function of probe width and data qualifiers)	<b>Gamma Sample Rate</b>	One sample per 1.8 seconds - measured, 20 samples per minute - downhole memory and is programmable
<b>Standard Assembly</b>	17' (5.2m) from the top of the UBHO sub. Value may change depending on the length of the bore in the UBHO sub.	<b>Maximum/Minimum Pressure Drop</b>	Not applicable
<b>Sensors Currently Available</b>	Directional, Gamma Ray, Tool Temperature	<b>Tool Programmability</b>	As surface and while downhole if enabled
<b>Pulse Telemetry Type</b>	Positive Mud Pulse-sensored or slipper	<b>Tool O.D. (1.768 retrievable)</b>	Used in models from 2.5" - 9.5" with the standard tool. Only the UBHO sub (no manual intervention) has to be changed
<b>Tool Configuration</b>	UBHO Sub (Maleless Sub) and Probe. Configuration of probe is variable. Installation can be above UBHO in EM mode.	<b>Equivalent Bending Stiffness</b>	As for standard and Borel MWD. Has been used for short radius applications with BUR as high as 109 deg.
<b>Absolute Accuracies</b>	<i>All of MWD's these are functions of accuracy</i>	<b>Maximum Operating Temperature</b>	150 deg. C. (302 deg. F.) High temperature tool (175 deg. C.) available
<b>Gravity Tool Face</b>	±0.05 - ±0.30 deg. Programmable but better description is pointing accuracy 0.15 Deg. For displacement of 2" per 1000' displacement	<b>Tool Power Sources</b>	Standard battery is 8 cell "D" lithium battery (nominal rated to 150 deg. C.) Typical hours 250-240 hours with constant tool faces.
<b>Magnetic Tool Face</b>	±0.05 - ±0.30 deg. Programmable	<b>Standard Cells</b>	Tandem batteries can be run for optimizing battery utilization and below energy ratio issue. High temperature battery (175 deg. C) available

Feature	Benefit
<b>Maximum Hydrostatic Pressure</b>	Standard: 20,000 PSI
<b>Mud Flow Rate</b>	Up to 1200 GPM - Collar I.D. - 2.12" Down to GPM - Collar I.D. - 2.15"
<b>Maximum Mud Velocity</b>	No limit
<b>Maximum Size LCM</b>	Handles most LCM when added in slowly to the circulating system. Continued influx cause problems. Medium sized cut plug is also a problem but large and small are OK.
<b>Wireline Retrievability</b>	Tool is fully retrievable with exception of the UBHO sub (minimal investment), and with the appropriate wireline and fishing tools.
<b>Customer Programmable Survey Data Configuration</b>	Survey data and qualifiers, as many as desired, needed, can be programmed and transmitted.

### Tool Dimensions

Tool Length (Unassembled)	Length w.O.D.	Weight (lb)
Pulse Module	9.5" x 1.75"	29
Bit Module	6.9" x 1.75"	28
Electronic Module	28.5" x 1.75"	38
Gamma Ray Assembly	29.5" x 1.75"	38
Interconnect Modules	14" x 1.75"	11
Fishing Neck/Program Plug	19.12" x 1.75"	10
<b>Total Tool Length (Assembled)</b>		
Standard Drilling Section		
Directional Only Assy	25 1/2 feet	150
Directional & Gamma Assy	32 1/2 feet	208
Random Position Section		
Directional Only Assy	32 1/2 feet	308
Directional & Gamma Assy	39 1/2 feet	340

**Hot hole tools can handle continual operating temperatures up to 335° F with maximum exposures of 350° F**

- All equipment is retrievable.
- Experience in numerous basins across the US.
- Proven tools that will get the job done.
- Experienced field hands you can count on.
- Flexibility to customize orders and packages to fit what each client wants.
- Capable of acquiring tools, such as resistivity, if the client desires.



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