

## OSG Slimhole Wireline Logging Sondes

J.Küick JUN-21

Tool Type	Sonde Name Parameter	T/p/Ø/length/weight/min.OH Ø/ max. hole Ø /log speed
Telemetry	<b>TS</b> telemetry, total natural Gamma Ray, motion detector	150°C/50 MPa/43 mm/1.29 m/7 kg/ ≈75 mm/-/10-20 m/min
Electric	<b>DLL</b> dual laterolog resistivities: deep & shallow (bottom tool string sonde)	150°C/80 MPa/43 mm/2.2 m w/o bridle/ 13 kg/ length bridle cable: 6.0 m ≈75 mm/250 mm/12-20 m/min
	<b>SP</b> spontaneous potential (analog sonde, standalone)	150°C/30 MPa/43 mm/0.86 m/3 kg/ ≈60 mm/250 mm/12 m/min
Sonic	<b>BS</b> borehole sonic, full waveforms (with centralizers)	150°C/80 MPa/52 mm/≈4.5 m/23 kg/ ≈75 mm/ 250 mm/6-8 m/min
Gamma	<b>SGR &amp; GR</b> spectrum of natural Gamma Ray activity: U, Th, K & total natural GR (combinable)	150°C/80 MPa/52 mm/1.24 m/11 kg/ ≈75 mm/250 mm/< 3 m/min (9m/min only GR)
Magnetic	<b>MS</b> magnetic susceptibility (bottom sonde)	150°C/80 MPa/43 mm/1.9 m/9 kg/ ≈75 mm/500 mm/8-12 m/min
	<b>DIP slim</b> total magn. field amplitude (bottom sonde)	see under the following item
Geometry	<b>DIP</b> oriented 4-arm dipmeter, four independent caliper readings, oriented borehole geometry (bottom sonde)	150°C/80 MPa/52 mm/2.69 m/13 kg/ ≈75 mm/250 mm/9 m/min
Imager	<b>ABI43 incl. GR</b> acoustic televiewer, total natural GR (with centralizers, standalone sonde system, ALT)	125°C/70 MPa/43 mm/3 m/14 kg/ ≈60 mm/500 mm/2-5 m/min
Mud Parameter	<b>MP</b> mud temperature, pressure & resistivity (combinable)	150°C/80 MPa/43 mm/0.8+2.0 m/14 kg/ ≈75 mm/-/5-15 m/min
	<b>TEMP</b> mud temperature (bottom sonde)	150°C/80 MPa/43 mm/1.05 m/8 kg/ ≈75 mm/-/5-15 m/min
Seismics	<b>SGC SlimWave</b> incl. <b>GR &amp; CCL</b> borehole geophone chain, 3-comp, 15 Hz, 17 levels (standalone sonde system, Sercel)	135 °C (150 °C)/100 MPa/43 mm/1.1 m/ 6.5 kg/≈75 mm/178 mm/stationary, level spacing: 10m, max. weight 260 kg
Fluid Sampler	<b>FS / PDS</b> 600 cm <sup>3</sup> , positive displacement type, mercury- free (combinable w/ TS-MP, Leutert)	180°C/100MPa/43 mm/3.9 m/30 kg/ ≈65 mm/-/stationary

The telemetry sub must be combined with all other sondes, except for ABI43, SP, SGC and FS. It has a G07 cable head connection. All slimhole tools are digital, except for SP and FS. The digital sondes require at least a single-conductor cable, except for DLL and ABI which require for a 4-conductor cable.

Possible tool combinations: SGR-MS, SGR-DLL, SGR-DIP, SGR-BS-MS, SGR-MP-MS, BS-MP-MS, SGR-MP-DIP

## OSG Slimhole Memory Logging Sondes

J.Kück JUN-21

Tool Type	Sonde Name Parameter	T/p/Ø/length/weight/min.OH Ø/ max. hole Ø /log speed
Memory- Battery	<b>MEMBAT</b> memory, battery, deviation	70°C/50 MPa/43 mm/1.25 m/6.5 kg/ 75 mm/-/-
Telemetry	<b>mTS</b> telemetry sub iMLS use in wireline mode (online)	70°C/50 MPa/43 mm/1.29 m/8 kg/ 75 mm/-/-
Gamma	<b>mSGR</b> spectrum of natural Gamma Ray activity: U, Th, K & total natural GR, inclination (combinable)	70°C/50 MPa/52 mm/1.24 m/11 kg/ ≈75 mm/250 mm/3 m/min
Magnetic	<b>mMS</b> magnetic susceptibility (bottom tool)	70°C/50 MPa/52 mm/1.4 m/7.5 kg/ ≈75 mm/250 mm/6 m/min
Electric	<b>mDIL</b> dual induction resistivities: deep & shallow; hole deviation (bottom tool)	70°C/50 MPa/43 mm/1.9 m/10 kg/ 75 mm/250 mm/6 m/min
Sonic	<b>mBCS</b> borehole compensated sonic, full waveforms (tool with centralizers; combinable)	70°C/50 MPa/52 mm/≈ 3.9 m/27 kg/ 75 mm/250 mm/6 m/min

These sondes can be run either in memory mode, with memory-battery sub (MEMBAT) or in wireline/online mode with telemetry sub (mTS) on top. The mTS has a GO4 cable head connection. The MEMBAT sub can be equipped with a mechanical GO4 head connection or with a fishing neck (spear head) to be deployed as *logging while tripping* of the drill string. The iMLS can also be deployed on a rope from any winch with a depth measuring system. Either MEMBAT or mTS combined with the mSGR are required to run all other memory tools. All memory tools are digital. In wireline mode they require at least a 4-conductor cable. Possible tool strings: SGR-MSUS, SGR-DIL, SGR-BCS, SGR-BCS-MSUS, SGR-BCS-DIL.

## OSG Slimhole Logging Sondes



## Wireline Logging Sondes

**BS** – slimhole wireline Borehole Sonic tool



**SGR** – slimhole wireline natural Spectrum Gamma Ray tool



**DLL** - slimhole wireline Dual LateroLog tool



DLL on-site verification with the calibrated resistances box (bridle cable length is 6 m)



DIP - slimhole wireline Dipmeter tool



**MS** - slimhole wireline Magnetic Susceptibility tool (mounted below telemetry sub)





SP – slimhole wireline Spontaneous Potential (analog, standalone sonde w/o GR)



**ABI43-2G** - slimhole wireline Acoustic Borehole Imager tool including total GR

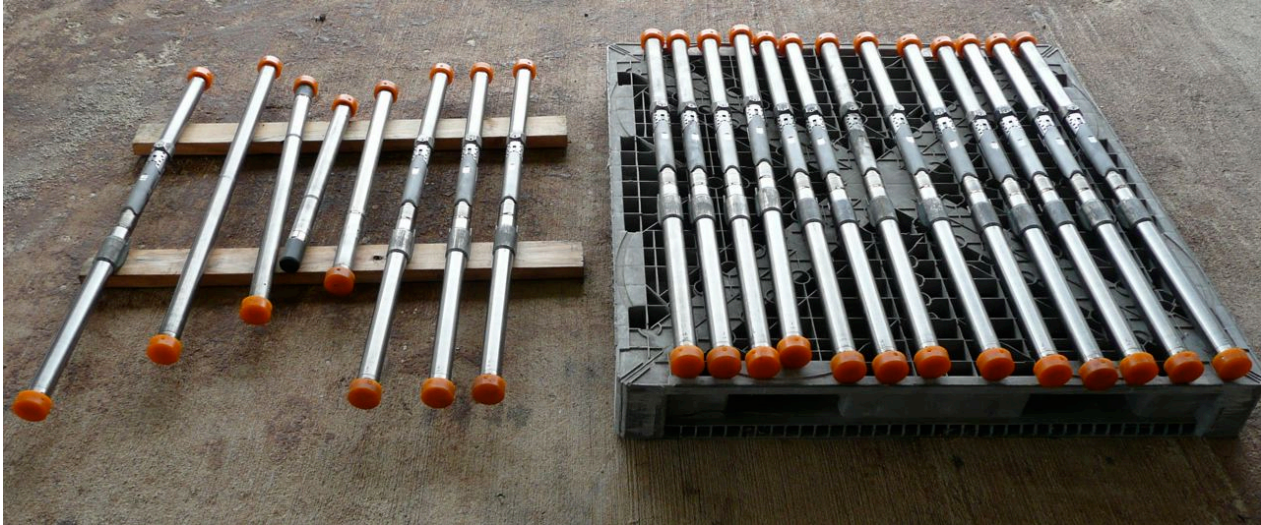


**FS – downhole Fluid Sampler tool**  
(the sampler is the long tube horizontally on top of the sample transfer device)



**FS tool bottom with sample entrance port**









Installation of the SW geophone chain requires for a minimum of two specialists.



## iMLS – icdp Memory Logging System

**mSGR** – slimhole memory Spectrum GR (left)

**mMSUS** – slimhole memory Magnetic Susceptibility (2nd left)

**mDIL** – slimhole memory Dual Induction Log tool (top 2nd right)

**iMLS Centralizers** – in-line and on-housing (bottom 2nd right)

**mBCS** – slimhole memory Borehole Compensated Sonic (right)



## iMLS – icdp Memory Logging System

**MemBat** – slimhole memory & battery top sub



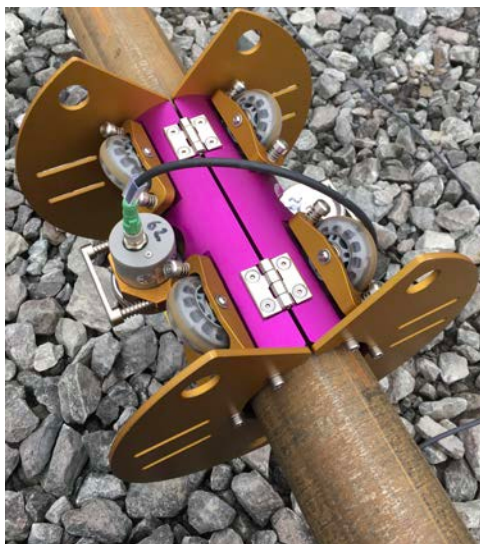
**mTS** – online telemetry for wireline logging mode of the memory tools



**iMLS Landing Unit** – with brass landing ring and fishing neck



**iDMD-W** – Depth Measuring Device for memory tool logging – wheel type





## Cable Heads, Cross-Overs & Sonde Weight

**G07 cable head** – Gearhardt-Owen type, 7-conductor, 1 1/2"



G07 head: connector side

**G04 cable head** - Gearhardt-Owen type, 4-conductor



G04 head: connector side



**Crossover G04-G07** – allows connection of logging tools with G07 tool head to the G04 cable head (left: G04, right: G07).



**Slimhole Wireline Logging Weight** – it is made of tungsten alloy has G07 connectors on both ends to fit between cable head and Telemetry Sub. It is used whenever mud or borehole conditions might hinder running in of tools.

(length = 2.30 m, OD = 43 mm, weight  $\approx$  40 kg).

