

OSG Slimhole Wireline Logging Sondes

J.Kück MAY-19

Tool Type	Sonde Name Parameter	T/p/Ø/length/weight/min.OH Ø/ max. hole Ø /log speed
Telemetry	TS telemetry, total natural Gamma Ray, motion detector	150°C/80 MPa/43 mm/1.29 m/7 kg/ ≈75 mm/-/10-20 m/min
Electric	DLL 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
	SP spontaneous potential (analog sonde, standalone)	150°C/30 MPa/43 mm/0.86 m/3 kg/ ≈60 mm/250 mm/12 m/min
Sonic	BS 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	SGR & GR 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	MS magnetic susceptibility (bottom sonde)	150°C/80 MPa/43 mm/1.9 m/9 kg/ ≈75 mm/500 mm/8-12 m/min
	DIP slim total magn. field amplitude (bottom sonde)	see under the following item
Geometry	DIP 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	ABI43 incl. GR 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	MP mud temperature, pressure & resistivity (combinable)	150°C/80 MPa/43 mm/0.8+2.0 m/14 kg/ ≈75 mm/-/5-15 m/min
	TEMP mud temperature (bottom sonde)	150°C/80 MPa/43 mm/1.05 m/8 kg/ ≈75 mm/-/5-15 m/min
Seismics	SGC SlimWave incl. GR & CCL borehole geophone chain, 3-comp, 15 Hz, 17 levels (standalone sonde system, Sercel)	135 (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	FS 600 cm ³ , 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 has a G07 cable head connection and must be combined with all other sondes, except for ABI43, SP, SGC and FS. 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.

OSG Slimhole Memory Logging Sondes

J.Kück MAY-19

Tool Type	Sonde Name Parameter	T/p/Ø/length/weight/min.OH Ø/ max. hole Ø /log speed
Memory- Battery	MEMBAT memory, battery, acceleration	70°C/50 MPa/43 mm/1.25 m/6.5 kg/ 75 mm/-/-
Telemetry	mTS telemetry sub iMLS use in wireline mode (online)	70°C/50 MPa/43 mm/1.29 m/8 kg/ 75 mm/-/-
Gamma	mSGR 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	mMS magnetic susceptibility (bottom tool)	70°C/50 MPa/52 mm/1.4 m/7.5 kg/ ≈75 mm/250 mm/3 m/min
Electric	mDIL dual induction resistivities: deep & shallow; hole deviation (bottom tool)	70°C/50 MPa/43 mm/1.9 m/10 kg/ 75 mm/250 mm/3 m/min
Sonic	mBCS borehole compensated sonic, full waveforms (with centralizers; combinable)	70°C/50 MPa/52 mm/≈ 3.9 m/27 kg/ 75 mm/250 mm/3 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 telemetry sub 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* (out the drill string). The iMLS can also be deployed on a rope & winch with a depth measuring system.

Either MEMBAT or mTS combined with the mSGR are required to use the other memory tools.

Possible tool strings: SGR-MSUS, SGR-DIL, SGR-BCS, SGR-BCS-MSUS, SGR-BCS-DIL.

All memory tools are digital and in wireline mode they require at least a 4-conductor cable.

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)

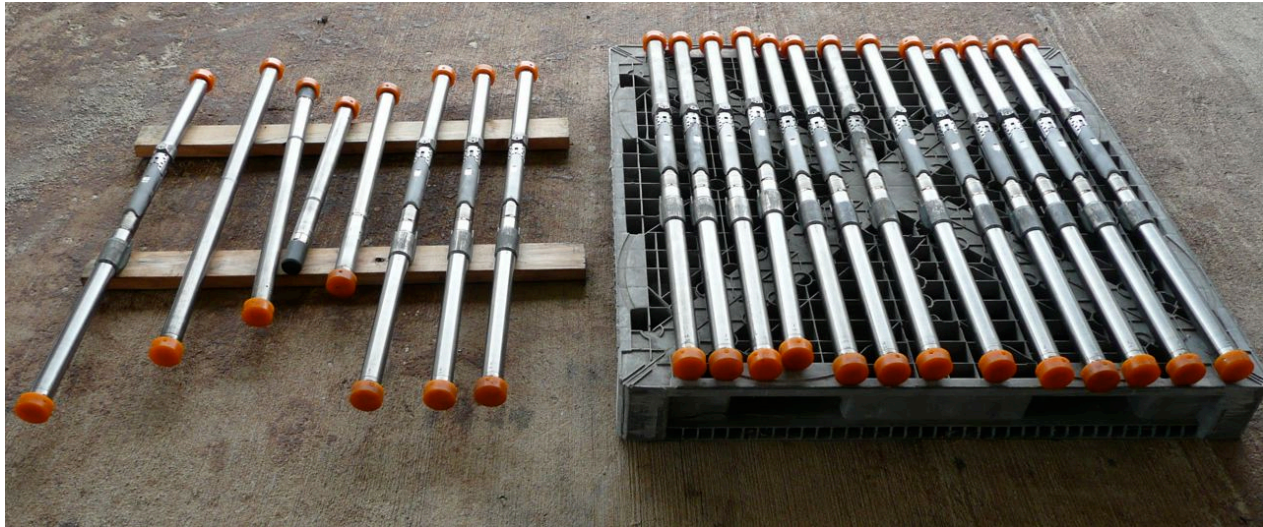


FS tool bottom with sample entrance port



SW – wireline SlimWave borehole geophone chain, 3-components,
levels, telemetry, GR & CCL

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



iMLS – icdp Memory Logging Sondes

MEMBAT – slimhole memory Memory & Battery top sub (top)

mMSUS – slimhole memory Magnetic Susceptibility tool (middle)

mSGR – slimhole memory Spectrum GR tool (bottom)



mDIL – slimhole memory Dual Induction Log tool



mBCS – slimhole memory Borehole Compensated Sonic tool

coming during 2019:

DMS-1 – Depth Measuring System for memory tool logging – wheel type

DMS-2 – Depth Measuring System for memory tool logging – rope type

mTS – Online Telemetry for wireline logging mode with the memory tools



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 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).

