GM 4067

Schlumberger

Company:	**BATTELLE**
Well:	**DEVCO UNIT #1**
Field:	**WESTLAND**
County:	**GUERNSEY**
State:	**OHIO**

BOREHOLE COMPENSATED SONIC
GAMMA RAY

2008

County: GUERNSEY
Field: WESTLAND
Location: X: 2231670
Well: DEVCO UNIT #1
Company: BATTELLE

LOCATION

X: 2231670
Y: 708110
1255'NL & 650'EL OF PARTIAL SEC 23

Elev.:		
	K.B.	1080 ft
	G.L.	1070 ft
	D.F.	1080 ft

Permanent Datum:	GROUND LEVEL	Elev.:	1070 ft
Log Measured From:	KELLY BUSHING	10.0 ft	above Perm. Datum
Drilling Measured From:	KELLY BUSHING		

API Serial No.	Section	Township	Range
34-059-2-4067-00-00	23	WESTLAND	

RECEIVED
MAY 16 2008

Logging Date	16-Mar-2008			
Run Number	ONE			
Depth Driller	8897 ft			
Schlumberger Depth	8902 ft			
Bottom Log Interval	8900 ft			
Top Log Interval	1572 ft			
Casing Driller Size @ Depth	8.625 in @ 1574 ft		@	
Casing Schlumberger	1572 ft			
Bit Size	7.875 in			
Type Fluid In Hole	BRINE			
MUD Density / Viscosity	9.5 lbm/gal	42 s		
MUD Fluid Loss / PH		8		
MUD Source Of Sample	HRLA			
RM @ Measured Temperature	0.029 ohm.m @ 176 degF		@	
RMF @ Measured Temperature	0.019 ohm.m @ 176 degF		@	
RMC @ Measured Temperature	0.040 ohm.m @ 176 degF		@	
Source RMF / RMC	CALCULATED	CALCULATED		
RM @ MRT / RMF @ MRT	0.029 @ 180	0.019 @ 180	@	@
Maximum Recorded Temperatures	180 degF			
Circulation Stopped / Time	16-Mar-2008	4:00		
Logger On Bottom / Time	16-Mar-2008	12:30		
Unit Number / Location	3046	WESTON, WV		
Recorded By	THOMAS BALL / JESSE CATES			
Witnessed By	BILL RIKE			

	Run 1	Run 2

Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth			@	
Casing Schlumberger				
Bit Size				
Type Fluid In Hole				
MUD Density / Viscosity				
MUD Fluid Loss / PH				
MUD Source Of Sample				
RM @ Measured Temperature			@	
RMF @ Measured Temperature			@	
RMC @ Measured Temperature			@	
Source RMF / RMC				
RM @ MRT / RMF @ MRT	@		@	
Maximum Recorded Temperatures				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

@						Run 3
	@	@	@	@		
@						Run 4

DISCLAIMER

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OTHER SERVICES1	OTHER SERVICES2
OS1: LATEROLOG	OS1:
OS2: COMPENSATED NEUTRON	OS2:
OS3: GAMMA RAY / CALIPER	OS3:
OS4: LITHO DENSITY	OS4:
OS5: ECS / SIDEWALL CORES / CMR	OS5:

REMARKS: RUN NUMBER 1

FIRST RUN DEPTH CONTROL USED.

ALL PRESENTATIONS AS PER CLIENT REQUEST.

MUCH RUGOSE AND OUT OF GAUGE HOLE

FLUID LEVEL AT 521FT

THANK YOU FOR CHOOSING SCHLUMBERGER!

YOUR CREW TODAY: KEITH HELLEMS, MIKE FLEMING & JAY MESSINGER

REMARKS: RUN NUMBER 2

RUN 1

SERVICE ORDER #: AMQ5-00008
PROGRAM VERSION: 15C0-309
FLUID LEVEL: 521 ft

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

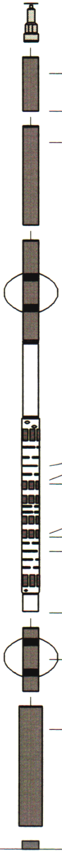
RUN 1

SURFACE EQUIPMENT

GSR-U/Y
WITM (DTS)-A

DOWNHOLE EQUIPMENT

RUN 2



LEH-Q LEH-Q			41.9
DTC-H ECH-KC 9358 DTCH0-A DTCH1-A	CTEM TelStatus ToolStatu	38.8 36.7	39.7
SGT-N SGH-K SGC-TB SGD-TAB	Gamma Ray	35.8	36.7
DSLT-FTB DSLC-B ECH-KH SLS-W	USN UHN USF UHF LSF LHF LHN LSN DSLT Aux.	18.8 18.0 17.8 15.0 14.8 14.0 10.6	31.2
ECC-A ECH-A 389 ECC-A	ECC Statu	8.9	10.6
ECS-A ECS-A 67 NSR-F 2179 ECSD-A ECSH-A	Detector	5.8	7.1
BNS-CCS	DF Tension HV	0.0	0.5

TOOL ZERO

MAXIMUM STRING DIAMETER 5.00 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

MAIN PASS 5" = 100FT

Input DLIS Files

DEFAULT	ECS_SONIC_029PUP	FN:34	PRODUCER	16-Mar-2008 21:07	8911.0 FT	6096.5 FT

Output DLIS Files

ECS .035	FN:43		16-Mar-2008 21:47	8911.5 FT	6097.0 FT

OP System Version: 15C0-309

MCM

ECS	15C0-309	ECC-A	15C0-309
DSLT-BB	15C0-309	SGTN	15C0-309
DTCH	SKK-3493-EDTCB		

PIP SUMMARY

⊣ Integrated Transit Time Minor Pip Every 1 MS
⊣ Integrated Transit Time Major Pip Every 10 MS

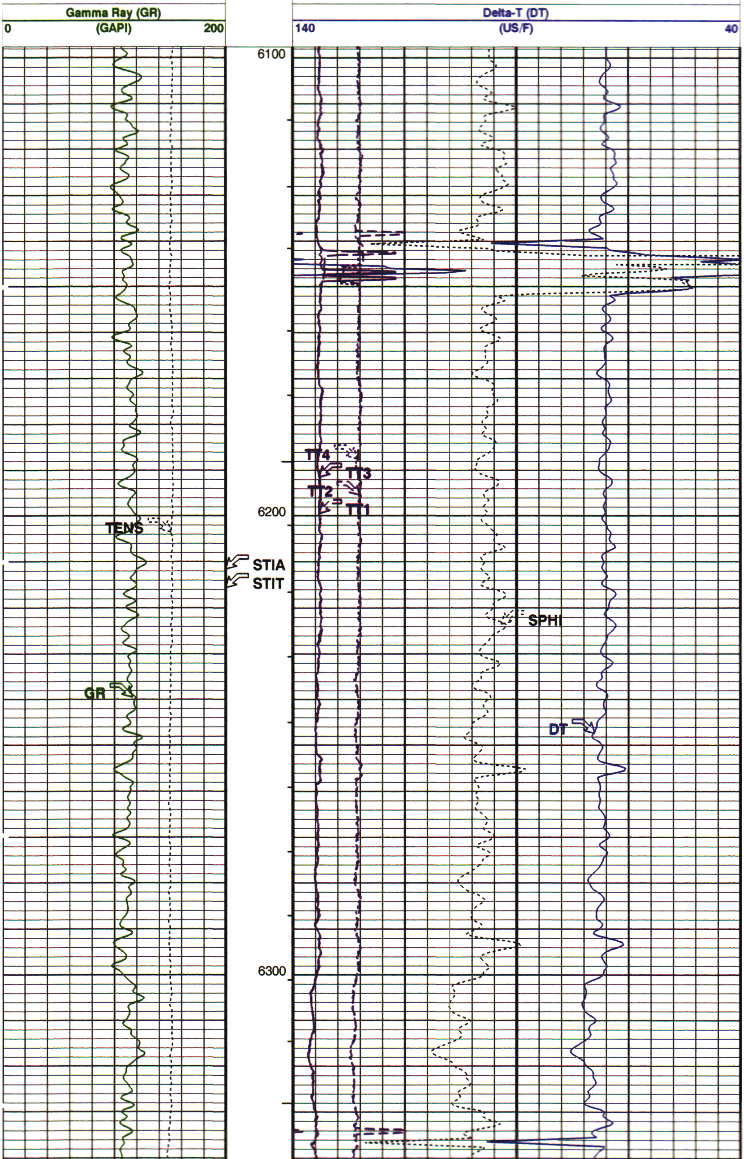
▶ Time Mark Every 60 S

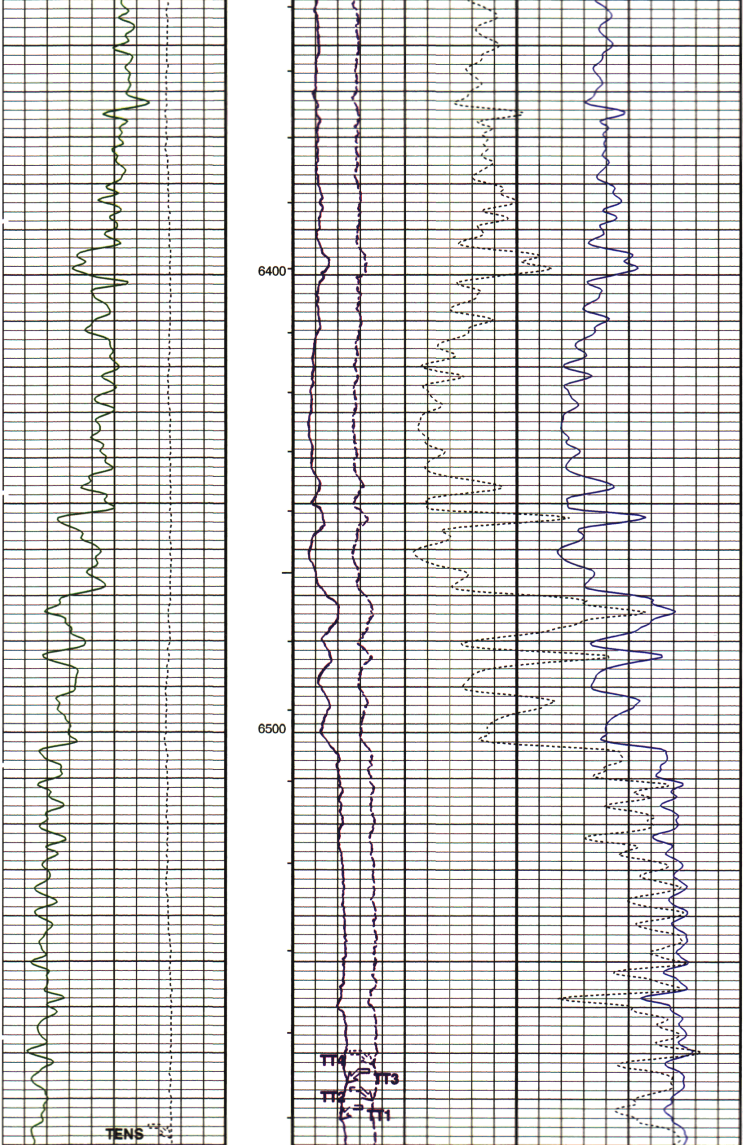
Transit Time 4 (TT4)	600	(US)	200
Transit Time 3 (TT3)	600	(US)	200
Transit Time 2 (TT2)	600	(US)	200
Transit Time 1 (TT1)	600	(US)	200

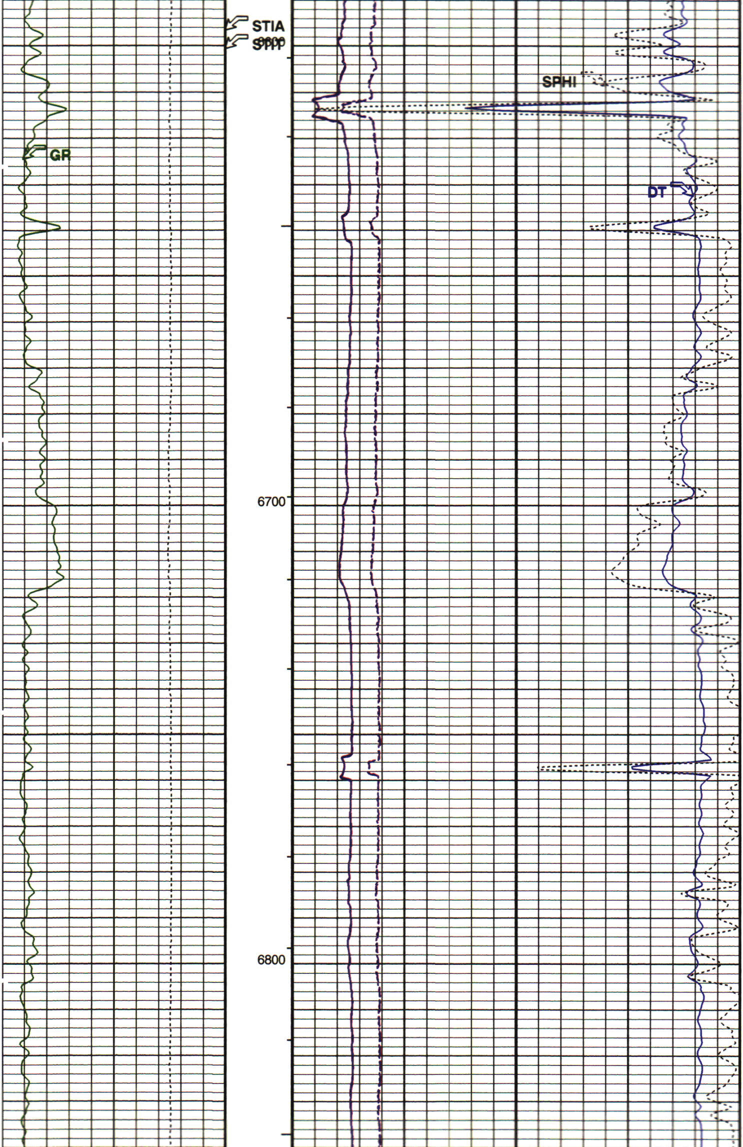
🟥 GR > 400 From LHT1 to GR2

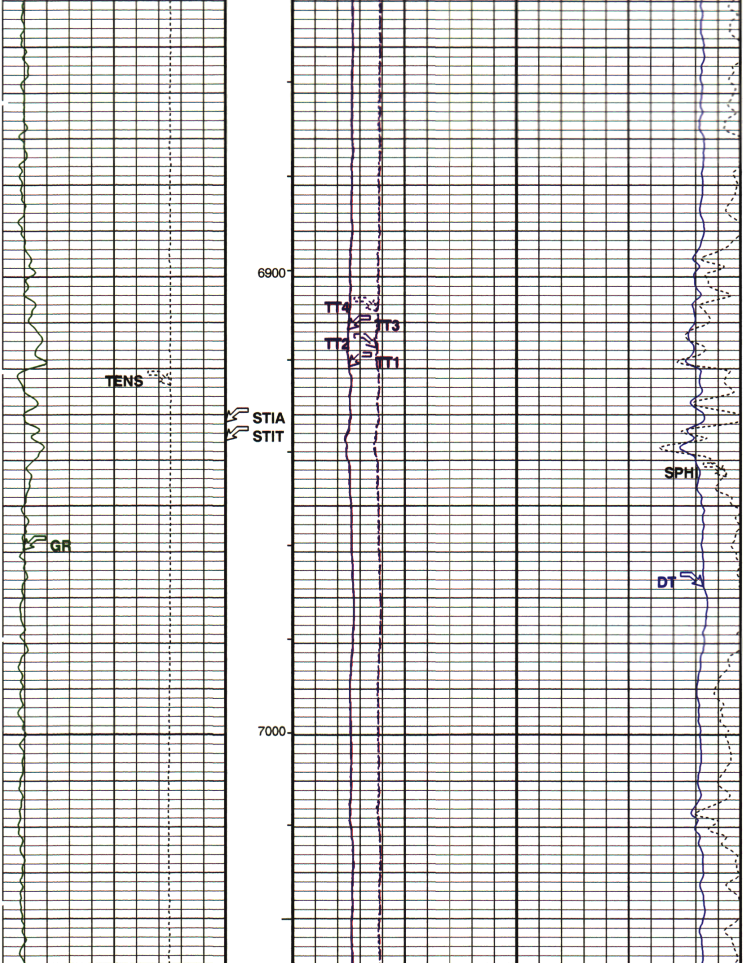
🟩 GR > 200 From LHT1 to GR1

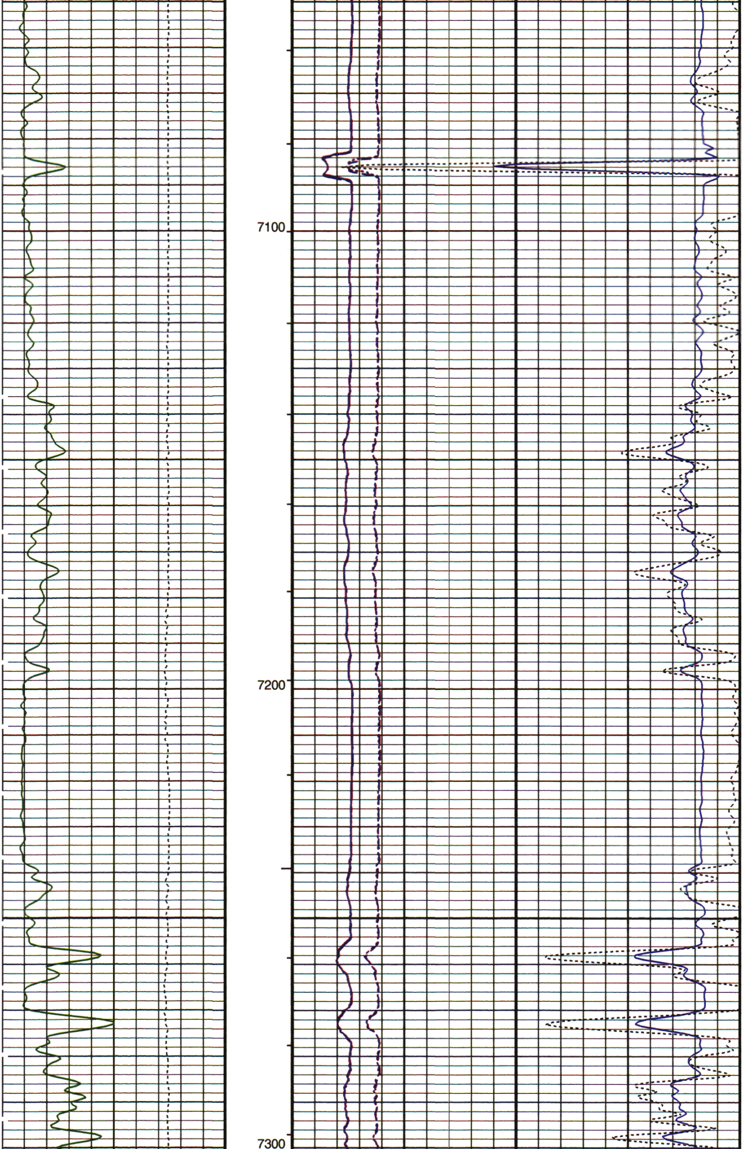
Tension (TENS)	10000	(LBF)	0
Sonic Porosity (SPHI)	0.3	(V/V)	-0.1

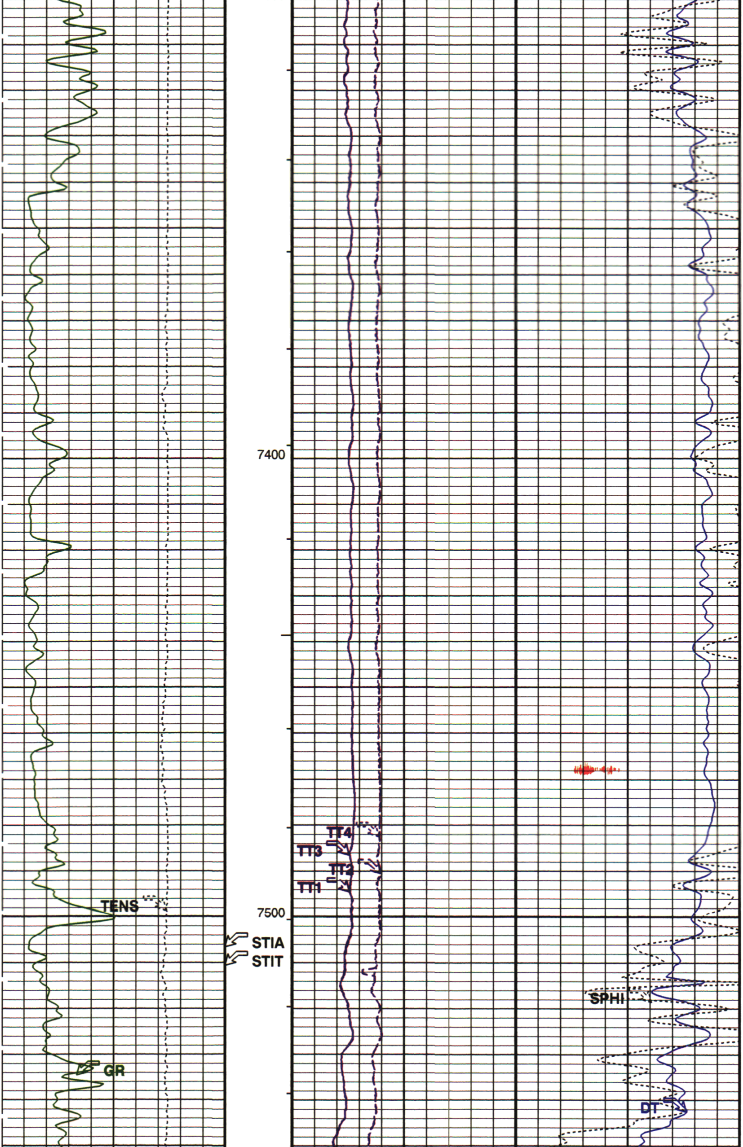


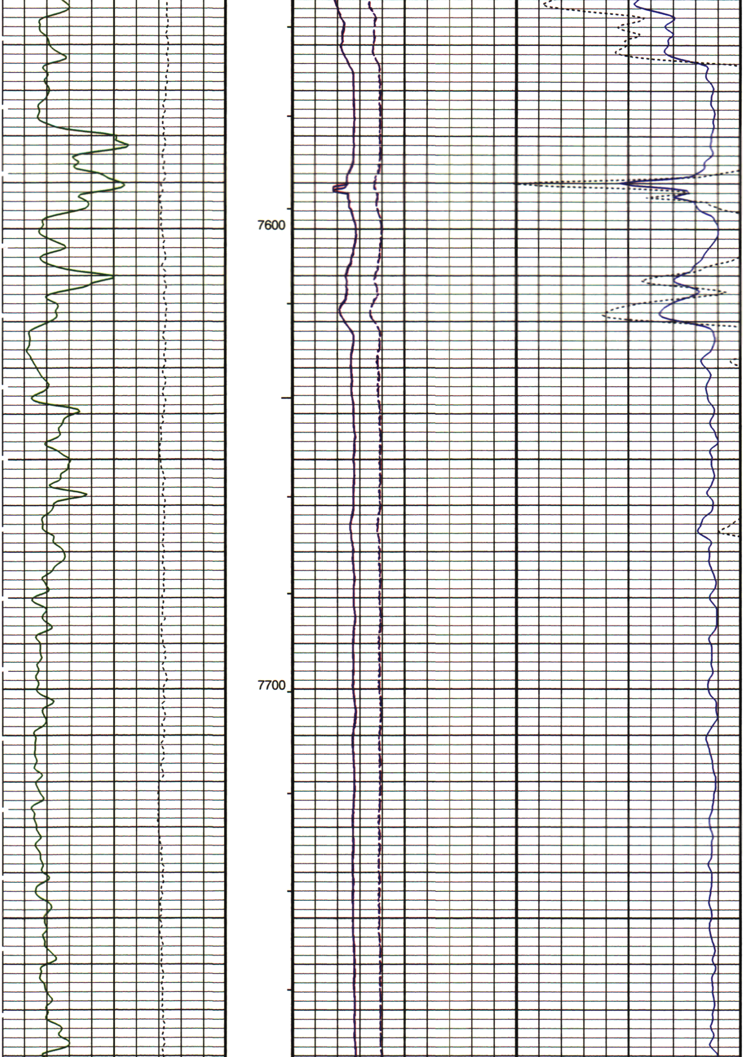


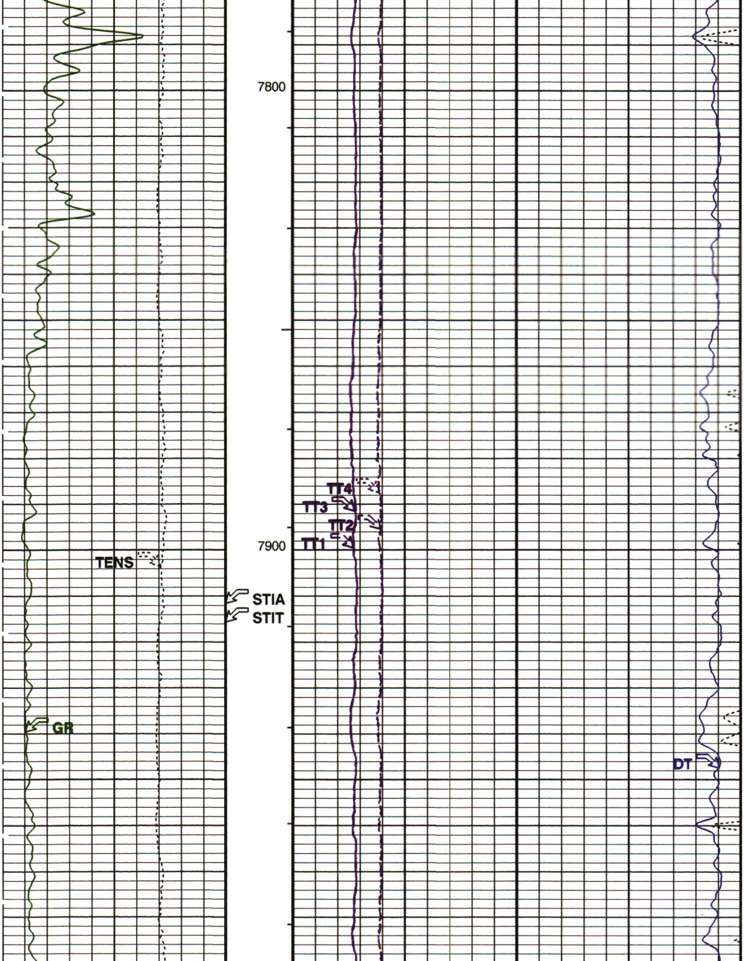


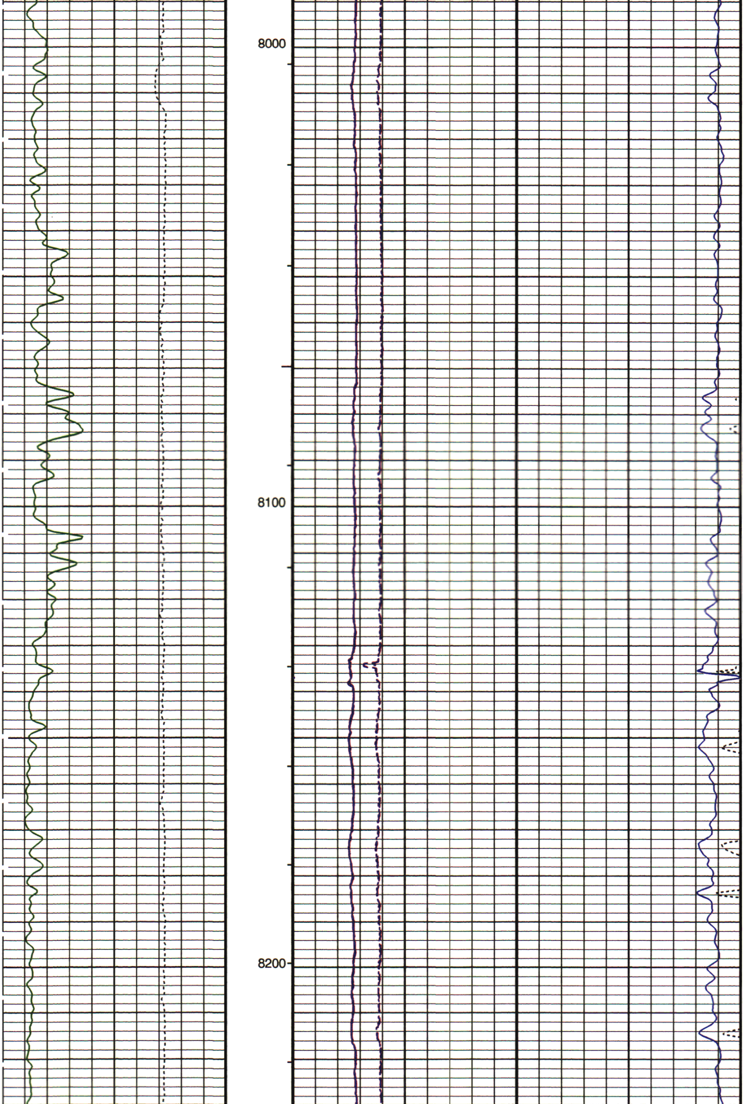


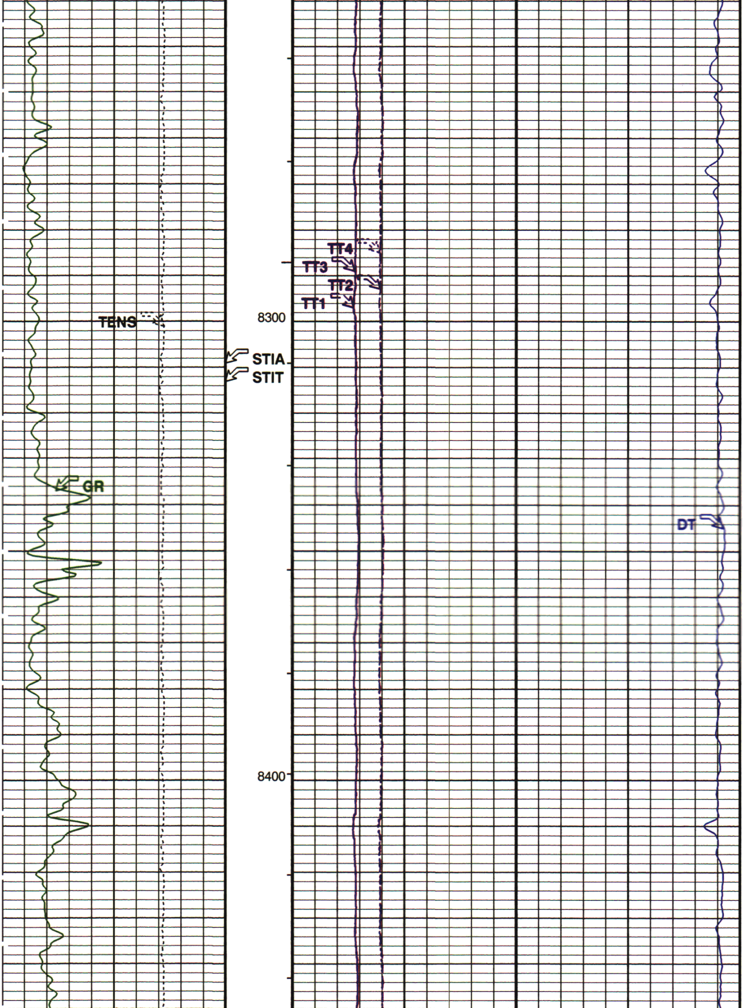


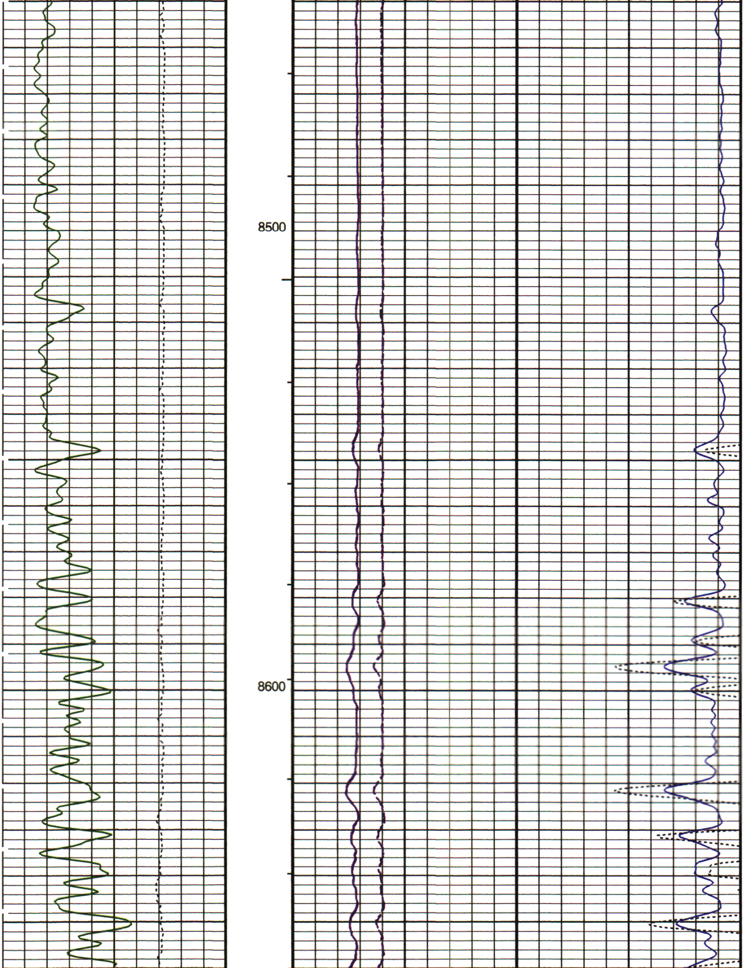


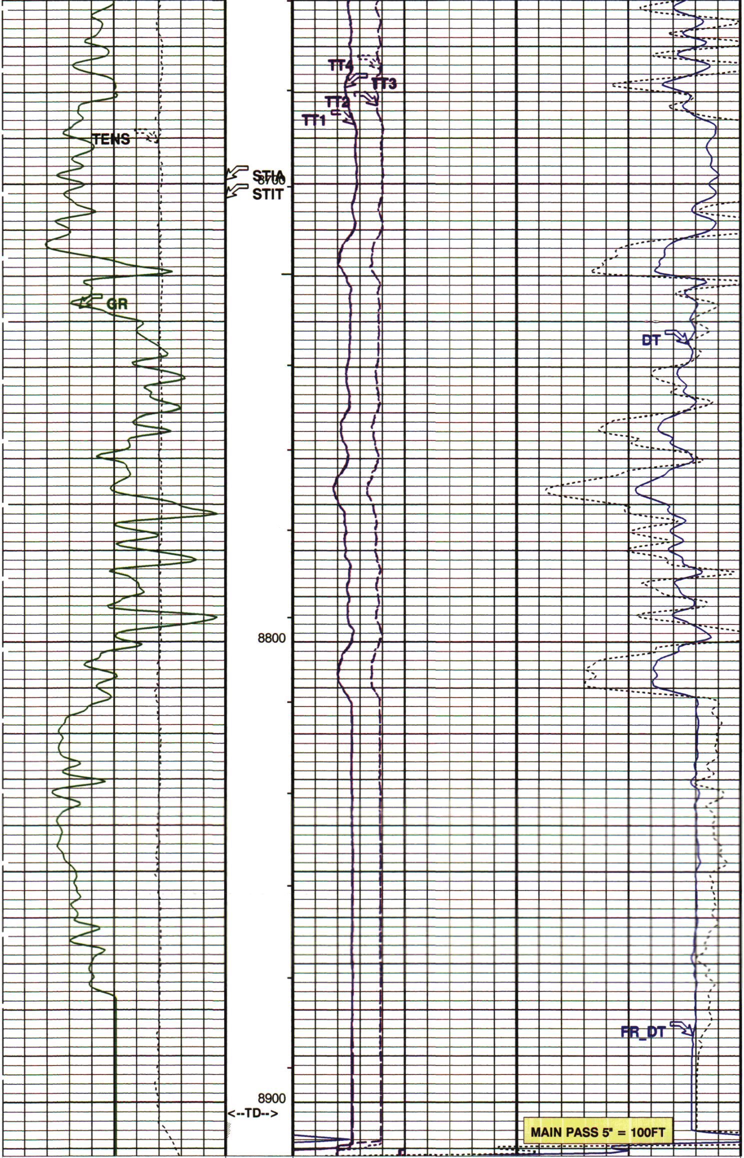












Gamma Ray (GR)			Delta-T (DT)		
0	(GAPI)	200	140	(US/F)	40
Tension (TENS)			Sonic Porosity (SPHI)		
10000	(LBF)	0	0.3	(V/V)	-0.1

🟩 GR > 200 From LHT1 to GR1

🟥 GR > 400 From LHT1 to GR2

Transit Time 1 (TT1)		
600	(US)	200
Transit Time 2 (TT2)		
600	(US)	200
Transit Time 3 (TT3)		
600	(US)	200
Transit Time 4 (TT4)		
600	(US)	200

PIP SUMMARY

⊣ Integrated Transit Time Minor Pip Every 1 MS

⊣ Integrated Transit Time Major Pip Every 10 MS

▶ Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	ECS-A: Elemental Capture Spectroscopy Tool		
DO	Depth Offset	0.5	ft
EPHV	ECS High Voltage Manual Setting	1200.0	V
EPSC	ECS Pulse Shape Compensation Manual Setting	40000	
NCCA_OFFSET_WALK2	SpectroLith Normalized Calcium Yield Offset Value (WALK2)	0.000	
NCFE_OFFSET_WALK2	SpectroLith Normalized Iron Yield Offset Value (WALK2)	0.000	
NCSI_OFFSET_WALK2	SpectroLith Normalized Silicon Yield Offset Value (WALK2)	0.000	
NCSUL_OFFSET_WALK2	SpectroLith Normalized Sulfur Yield Offset Value (WALK2)	0.000	
NCTI_OFFSET_WALK2	SpectroLith Normalized Titanium Yield Offset Value (WALK2)	0.000	
RDF_FACT2	ECS Marquardt RDF Coefficient	0.250	
SPEC_BARITE_LOGIC	Automatic Barite Logic for Spectroscopy Processing	ON	
SPEC_CAL_STDS	Spectral Standards used for Calibration Factor Processing	SFT_178_7	
SPEC_CSG_LOGIC	Automatic Casing Logic for Spectroscopy Processing	ON	
SPEC_CSG_LOGIC_THRESHOLD	Automatic Casing Logic Threshold Value for Spectroscopy Processing	0.500	
SPEC_ELE_STD_SHFT_FAC	Calibration Factor for Elemental Spectral Standards	0.800	
SPEC_EPAV	Algorithm Version for Spectroscopy Processing	5.100	
SPEC_ESAT_ACCUM_TIME	Total Acquisition Spectrum Accumulation Time for Calibration Factor Processing	0.000	s
SPEC_FLEN_ASAL	Filter Length for Calculated Apparent Salanity	17	
SPEC_FLEN_ESAT	Filter Length for Spectrum Acquisition Time for Elemental Statistical Uncertainty Calculation	5	
SPEC_FLEN_FES_CORR	Filter Length for Iron and Sulfur Relative Yield Correction (depth frames)	9	
SPEC_FLEN_WALK2	Filter Length for Relative Yields from WALK2 Model (depth frames)	3	
SPEC_MARQ_ACCUM_TIME	Marquardt Accumulation Time (seconds)	60.000	
SPEC_MARQ_MAX_ITERATIONS	Maximum Number of Iterations for Marquardt Solver	15	
SPEC_OBM_LOGIC_THRESHOLD	Automatic Oil Base Mud Logic Threshold Value for Spectroscopy Processing	0.030	
SPEC_PROC_START_CHANNEL	Starting Channel Number for Spectroscopy Processing	39	
SPEC_PROC_STOP_CHANNEL	Ending Channel Number for Spectroscopy Processing	239	
SPEC_STACK_LEVELS	Number of Raw Spectra to Stack for Spectroscopy Processing	3	
SPEC_WLEN_ASAL_BSL	Window Length for Calculated Apparent Salinity Baseline Removal for Salt Processing	100	
SPEC_WLEN_ESSR_BSL	Window Length for Spectral Count Rate (ESSR) Baseline Removal for Salt Processing	100	
SPEC_WLEN_H_BSL	Window Length for Hydrogen Relative Yield Baseline Removal for Coal Processing	100	
SPL_CH_OFFSET_OPTION	SpectroLith Cased Hole Offset Logic	AUTOMATIC	
SPL_CLAY_MODEL_LOGIC	SpectroLith Automatic Clay Model Logic	ON	
SPL_CLAY_MODEL_LOGIC_LB	SpectroLith Automatic Clay Model Logic Lower Bound	0.005	
SPL_CLAY_MODEL_LOGIC_THRESHOLD	SpectroLith Automatic Clay Model Logic Clay Fraction Threshold	0.200	
SPL_CLAY_MODEL_LOGIC_UB	SpectroLith Automatic Clay Model Logic Upper Bound	0.018	
SPL_CLAY_OFFSET	SpectroLith Clay Offset for Calibrated Model	0.000	
SPL_CLAY_SLOPE	SpectroLith Clay Slope for Calibrated Model	1.000	
SPL_COAL_OPTION	SpectroLith Coal Processing Option	BITUMINOUS	
SPL_HI_FETI_LOGIC	SpectroLith Automatic High Iron Titanium Logic	OFF	
SPL_HI_FETI_LOGIC_MULT	SpectroLith Automatic High Iron Titanium Logic Multiplication Factor	0.800	

SPL_MIN_COAL_THRESHOLD	SpectroLith Minimum Coal Threshold	0.200	
SPL_SALT_ESSR_THRESHOLD	SpectroLith Spectral Count Rate Threshold for Salt Logic	0.950	
SPL_SALT_OPTION	SpectroLith Salt Processing Option	ON	
SPL_SALT_SICAFE_THRESHOLD	SpectroLith Silicon+Calcium+Iron Threshold for Salt Logic (Si+Ca+Fe Relative Yields)	0.050	
SPL_SALT_WEVA_THRESHOLD	SpectroLith Dry Weight Evaporite (WEVA) Threshold for Salt Processing Logic	0.000	
SPL_SIDERITE_OPTION	SpectroLith Siderite Option	ON	
SPL_SULFUR_MIN_LOGIC	SpectroLith Automatic Sulfur Mineral Logic	ON	
SPL_TI_CONSTRAINT	SpectroLith Titanium Constraint	OFF	
WTMT	ECS Weight Spectrum Desired Acquisition Time	60	s

ECC-A: Elemental Capture Cartridge - A

DHCV_ECC	ECC Downhole Controller Software Version	512	
DHNV_ECC	ECC Downhole Software Version	768	
DO	Depth Offset	0.5	ft

DSLT-FTB: Digitizing Sonic Logging Tool

AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	us
BILI	Bond Index Level for Zone Isolation	0.800	
BISS	Bond Index Source Selection for BIQL	BI	
CBAF	CBL Adjustment Factor	1.000	
CBLG	CBL Gate Width	45	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	61.000	mV
CDTS	C-Delta-T Shale	100.0	us/ft
CMCF	CBL Cement Type Compensation Factor	1.000	
CTHI	Casing Thickness	0.235	in
DDEL	Digitizing Delay	0	us
DETE	Delta-T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DFAD_ATC	DFAD Automatic Threshold Control	ON	
DFAD_TYPE	DFAD type	DFAD2	
DIVL	DSLT Depth Sampling Interval	20	
DO	Depth Offset	0.5	ft
DRCS	DSLT DLIS Recording Size	100	
DSIN	Digitizing Sample Interval	10	
DTCM	Delta-T Computation Mode	FULL	
DTF	Delta-T Fluid	189.0	us/ft
DTFS	DSLC Telemetry Frame Size	236	
DTM	Delta-T Matrix	56.000	us/ft
DWCO	Digitizing Word Count	100	
FATT	Acoustic Attenuation due to Fluid	0.000	dB/ft
FCF	CBL Fluid Compensation Factor	1.000	
GAI	Manual Gain	40	
GOBO	Good Bond	0.530	mV
HRSP	High Resolution Spacing	5.118	in
ITTS	Integrated Transit Time Source	DT	
LTUT	Lower to Upper Transmitter Spacing Ratio	1.000	
MAHTR	Manual High Threshold Reference	20506	
MATT	Maximum Attenuation	18.028	dB/ft
MCCF	MAP Cement Type Compensation Factor	1.000	
MCI	Minimum Cemented Interval for Isolation	10.000	ft
MGAI	Maximum Gain	80	
MIGA	Minimum Gain	1	
MMSA	MAP Minimum Sonic Amplitude	0.000	mV
MNHTR	Minimum High Threshold Reference	704	
MODE	Sonic Firing Mode	BHC	
MSA	Minimum Sonic Amplitude	0.162	mV
NMSG	Near Minimum Sliding Gate	210	us
NMXG	Near Maximum Sliding Gate	447	us
NUMP	Number of Detection Passes	2	
RATE	Firing Rate	R15	
SDTH	Switch Down Threshold	20000	
SFAF	Sonic Formation Attenuation Factor	0	dB/ft
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta-T	98	us/ft
SGCW	Sliding Gate Closing Width	25	us
SGDT	Sliding Gate Delta-T	78	us/ft
SGW	Sliding Gate Width	84	us
SLEV	Signal Level for AGC	4737	
SPFS	Sonic Porosity Formula	R-H	
SPSO	Sonic Porosity Source	DT	
SUTH	Switch Up Threshold	1000	
VDLG	VDL Manual Gain	40.000	
WAGC	Waveform AGC Allow/Disallow	OFF	
WGAI	Waveform Manual Gain	20	
WGDT	Waveform Gain Delta-T	240	us/ft
WGIN	Waveform Gain Interval	2540	us
WMAG	DFAD Waveform Magnifier	1.000	
WMOD	Waveform Firing Mode	FULL	
ZCMT	Acoustic Impedance of Cement	6.800	Mrayl

SGT-N: Scintillation Gamma Ray Tool - N

BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	180.0	degF
DO	Depth Offset	0.5	ft
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	GEN9	
GTSE	Generalized Temperature Selection	TEMP	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
SOGR	SGT Standoff Distance	0.000	in
TPOS	SGT Centered/Eccentered	ECCENTERED	
DTC-H: DTS Telemetry Tool			
DDLG	Digital Telemetry Module Downlink Gain	AUTOMATIC_	
DDLS	Digital Telemetry Module Downlink Shape	AUTOMATIC_	
DO	Depth Offset	0.5	ft
DULG	Digital Telemetry Cartridge Uplink Gain	AUTOMATIC_	
DULM	Digital Telemetry Cartridge Uplink Mode	T5T7	
DULR	Digital Telemetry Cartridge Uplink Rate	350KBS	
TMRI	Telemetry Error Msg Report Interval (for SCP)	60	s
TSRI	Telemetry Status Report Interval (for IO Mon)	10	s
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	180.0	degF
CD	Casing Shoe Depth	1572.0	ft
DO	Depth Offset	0.5	ft
FCD	Future Casing (Outer) Diameter	5.500	in
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	GEN9	
GTSE	Generalized Temperature Selection	TEMP	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
IHVC	Integrated Hole Volume Control	SNAP	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
SHT	Surface Hole Temperature	68.000	degF
VCEM	Cumulated Cement Volume	21.916	ft3
VHOL	Cumulated Hole Volume	42.786	ft3
STI: Stuck Tool Indicator			
DO	Depth Offset	0.5	ft
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.500	ft
TDD	Total Depth - Driller	8897.0	ft
TDL	Total Depth - Logger	8902.0	ft
PERT: Preliminary Evaluation - Real Time			
ARTS	AIT Rt Selection (for ALLRES computation)	AIT_TWORESA60	
BDPS	Bulk Density Processing Selector	STANDARD	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	180.0	degF
CLIM	Caliper Limit for Bad Hole	999.0	in
CNPS	Corrected Neutron Porosity Selector	NPHI	
DO	Depth Offset	0.5	ft
DRUL	DRHO Upper Limit	999.0	g/cm3
FCAL	Caliper Presence Flag	PRESENT	
FCGR	CGR Presence Flag	PRESENT	
FEXP	Form Factor Exponent	2.000	
FLDT	Bulk Density Presence Flag	PRESENT	
FNUM	Form Factor Numerator	1.000	
FPHI	Form Factor Porosity Source	DPHZ	
FSON	Sonic Presence Flag	ABSENT	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	GEN9	
GTSE	Generalized Temperature Selection	TEMP	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIME	
PMAX	PHI Maximum	0.500	ft3/ft3
POUT	Porosity Output Lithology	LIMESTONE	
RG21	RHO Grain (2-Mineral Model, Min-1)	2.710	g/cm3
RG22	RHO Grain (2-Mineral Model, Min-2)	2.644	g/cm3
RG23	RHO Grain (2-Mineral Model, Min-3)	2.877	g/cm3
RG31	RHO Grain (3-Mineral Model, Min-1)	2.710	g/cm3
RG32	RHO Grain (3-Mineral Model, Min-2)	2.644	g/cm3
RG33	RHO Grain (3-Mineral Model, Min-3)	2.877	g/cm3
RTCO	RTCO - Rt Invasion Correction	YES	
RTLF	RT Limit Flag	NO_LIMIT	
RWF	Resistivity of Free Water	0.020	ohm.m
SHT	Surface Hole Temperature	68.000	degF
UF	U Fluid	0.398	
UM21	U Matrix (2-Mineral Model, Min-1)	13.770	
UM22	U Matrix (2-Mineral Model, Min-2)	4.779	
UM23	U Matrix (2-Mineral Model, Min-3)	8.997	
UM31	U Matrix (3-Mineral Model, Min-1)	13.770	
UM32	U Matrix (3-Mineral Model, Min-2)	4.779	
UM33	U Matrix (3-Mineral Model, Min-3)	8.997	
FEQL: Formation Evaluation Quick Look			
CSXO	Coefficient of Sxo	1.000	
DLLM	DPOR Lower Limit for Mineral Detection	0.350	ft3/ft3
DO	Depth Offset	0.5	ft
EDSE	EPT Data Selector	STANDARD	
FEPT	EPT Option Flag	NONE	

FEXP	Form Factor Exponent	2.000	
FNUM	Form Factor Numerator	1.000	
FPHI	Form Factor Porosity Source	DPHZ	
GDCL	Grain Density Clean Reading	0.000	g/cm3
GDSH	Grain Density Shale Reading	2.900	g/cm3
GRCL	Gamma Ray Clean Reading	0.000	gAPI
GRSH	Gamma Ray Shale Reading	200.0	gAPI
GULM	Gamma Ray Upper Limit for Mineral Detection	999.0	gAPI
KGR	Kill GR Shale Index (USE, KILL)	USE	
KPN	Kill NPES Shale Index (USE, KILL)	USE	
KRH	Kill RHGA Shale Index (USE, KILL)	USE	
KSP	Kill SP Shale Index (USE, KILL)	USE	
LSWB	SWB Limit Selector (NO_LIMIT, LIMIT)	NO_LIMIT	
MDET	Mineral Flag (NONE, COAL, SALT)	NONE	
NLIM	Neutron Limit for Mineral Detection	0.010	ft3/ft3
NPCL	NPES Clean Reading	0.000	ft3/ft3
NPSH	NPES Shale Reading	0.500	ft3/ft3
RWB	Bound Water Resistivity	0.100	ohm.m
RXOF	RXO Presence Flag	ABSENT	
SDGC	Clean Grain Density Selector	GDCL	
SEXP	N in Water Saturation Equation	2.000	
SIS	Three Mineral Shale Index Selector	NOT_USED	
SPCL	SP Clean Reading	-200.000	mV
SPSB	SP Shale Baseline	0.000	mV
SPSH	SP Shale Reading	0.000	mV
SWMN	Sw Minimum	0.050	ft3/ft3
TPCN	Time Propagation of non-shale	7.200	ns/m
TPM1	Time Propagation, Matrix-1 <Limestone>	9.800	ns/m
TPM2	Time Propagation, Matrix-2 <Sandstone>	7.200	ns/m
TPM3	Time Propagation, Matrix-3 <Dolomite>	8.700	ns/m
TPSH	Time Propagation of Shale	8.900	ns/m
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SPEEDCORRECTEDDEPTH	
AMD	Azimuth of Maximum Deviation		
APD	Above Permanent Datum	10.000	ft
APIN	API Serial Number	34-059-2-4067-00-00	
BDEP	Depth of Before Calibration		
BG	Gas Formation Volume Factor, Bg		
BLI	Bottom Log Interval	8900.0	ft
BO	Oil Formation Volume Factor, Bo		
BPP	Bubble Point Pressure		
BPT	Bubble Point Temperature		
BS	Bit Size	7.875	in
BSAL	Borehole Salinity	120000.0	ppm
BSDF	Bit Size Depth From		
BSDT	Bit Size Depth To		
BW	Water Formation Volume Factor, Bw		
CADD	Cement Additives		
CADT	Casing Depth To		
CASG	Casing Grade		
CASN	Casing String Number		
CBDR	Casing Bottom of Driller	1574.0	ft
CBLO	Casing Bottom of Logger	1572.0	ft
CDEN	Cement Density		
CDF	Casing Depth From		
CJT	Cement Job Type	Primary	
CLAB	County/Rig Label	County:	
CN	Company Name	BATTELLE	
CN1	Company Name Line 1		
CONT	Continent		
CONTYP	Conveyance Type	WIRELINE	
COUN	County or Rig Name	GUERNSEY	
CSIZ	Current Casing Size	8.625	in
CTOP	Estimated Cement Top		
CWEI	Casing Weight	24.000	lbm/ft
CWLO	Cement Water Loss		
DATE	Date as Month-Day-Year	16-Mar-2008	
DCS	Date Circulation Stopped	16-Mar-2008	
DEPREM1	Depth Remark 1	First Run Depth Control	
DEPREM2	Depth Remark 2	as Per SLB standard	
DEPREM3	Depth Remark 3		
DEPREM4	Depth Remark 4		
DEPREM5	Depth Remark 5		
DEPREM6	Depth Remark 6		
DFD	Drilling Fluid Density	9.500	lbm/gal
DFL	Drilling Fluid Loss		
DFPH	Drilling Fluid PH	8.000	
DFT	Drilling Fluid Type	BRINE	
DFV	Drilling Fluid Viscosity	42.000	s
DIFF	Maximum Permitted Depth Difference	1.000	ft
DLAB	Date Logger At Bottom	16-Mar-2008	
DMF	Drilling Measured From	KELLY BUSHING	
DO	Depth Offset	0.5	ft
EDF	Elevation of Derrick Floor	1080.0	ft
EGL	Elevation of Ground Level	1070.0	ft
EKB	Elevation of Kelly Bushing	1080.0	ft
ELZ	Elevation of Log Zero	1080.0	ft
ENGI	Engineer's Name	THOMAS BALL / JESSE CATES	
ENVI	Acquisition Environment	FTB_TELEMETRY	
EPD	Elevation of Permanent Datum	1070.0	ft
FL	Field Location	X: 2231670	
FL1	Field Location Line 1	Y: 708110	
FL2	Field Location Line 2	1255'NL & 650'EL OF PARTIAL SEC 23	
FLEV	Fluid Level	521.0	ft
FLSHSTRM	Flush depth-delayed streams to output at end	DOWNLOG_ONLY	
FN	Field Name	WESTLAND	

GGRA	Gas Gravity		
HID1	Header Identifier Line 1	GAMMA RAY	
HID2	Header Identifier Line 2	CALIPER	
HIDE	Header Identifier	BOREHOLE COMPENSATED SONIC	
HLD	Header Legal Disclaimer	INCLUDE	
IBG	1/Gas Formation Volume Factor, 1/Bg		
IDWCD	IDW Calibration Date (dd-Mmm-yyyy)	dd-Mmm-yyyy	
IDWCSN	IDW Calibrator Serial Number	1	
IDWLCN	IDW Calibration Cable Type	7-46P	
IDWSN	IDW Serial Number	2844	
IDWTYP	IDW Type	IDW-B	
IDWWC1	IDW Wheel Corrrection 1	-2	
IDWWC2	IDW Wheel Corrrection 2	-6	
ILL1	Instrumentation Logo Line 1		
ILL2	Instrumentation Logo Line 2		
JETA	Job Events Auto Save	ALLOW	
LATI	Latitude		
LCC	Logging Company Code	440	
LCL	Logging Cable Length	16430	ft
LCMT	Lead Cement Type		
LCN	Logging Cable Name (Type)		
LCSN	Logging Cable Serial Number	6460	
LCVO	Lead Cement Volume		
LLAB	Section Label	Section	
LMF	Log Measured From	KELLY BUSHING	
LOGMODE	Depth Logging Mode	MEASURED_DEPTH	
LOGSEQ	Log Sequence	FIRST_LOG_IN_WELL	
LONG	Longitude		
LUL	Logging Unit Location	WESTON, WV	
LUN	Logging Unit Number	3046	
MCSS	Mud Cake Sample Source	CALCULATED	
MCST	Mud Cake Sample Temperature	176.0	degF
MFSS	Mud Filtrate Sample Source	CALCULATED	
MFST	Mud Filtrate Sample Temperature	176.0	degF
MHD	Maximum Hole Deviation	1.000	deg
MMDU	Magnetic Mark Depth Units	FEET	
MRT	Maximum Recorded Temperature	180.0	degF
MRT1	Maximum Recorded Temperature 1	180.0	degF
MRT2	Maximum Recorded Temperature 2		
MRT3	Maximum Recorded Temperature 3		
MSS	Mud Sample Source	HRLA	
MST	Mud Sample Temperature	176.0	degF
NATI	Nation		
NLS	Nominal Logging Speed		
ODEN	Oil Density		
OPER	Operator's Code	3046	
OS1	Other Services Line 1	LATEROLOG	
OS2	Other Services Line 2	COMPENSATED NEUTRON	
OS3	Other Services Line 3	GAMMA RAY / CALIPER	
OS4	Other Services Line 4	LITHO DENSITY	
OS5	Other Services Line 5	ECS / SIDEWALL CORES	
PBVSADP	Use alternate depth channel for playback	NO	
PDAT	Permanent Datum	GROUND LEVEL	
PVER	Program Version	15C0-309	
R1	Remark Line 1	FIRST RUN DEPTH CONTROL USED.	
R10	Remark Line 10		
R11	Remark Line 11		
R12	Remark Line 12		
R13	Remark Line 13		
R14	Remark Line 14		
R15	Remark Line 15	THANK YOU FOR CHOOSING SCHLUMBERGER!	
R16	Remark Line 16		
	YOUR CREW TODAY: KEITH HELLEMS, MIKE FLEMING & JAY MESSINGER		
R17	Remark Line 17		
R2	Remark Line 2	ALL PRESENTATIONS AS PER CLIENT REQUEST.	
R3	Remark Line 3		
R4	Remark Line 4	MUCH RUGOSE AND OUT OF GAUGE HOLE	
R5	Remark Line 5		
R6	Remark Line 6	FLUID LEVEL AT 521FT	
R7	Remark Line 7		
R8	Remark Line 8		
R9	Remark Line 9		
RANG	Range		
RIGTYP	Rig Type		
RLAB	Range Label	Range	
RLDT	Reference Log Date (dd-Mmm-yyyy)	dd-Mmm-yyyy	
RLNM	Reference Log Name		
RLRN	Reference Log Run Number		
RMB	Resistivity of Mud - BHT	0.029	ohm.m
RMCS	Resistivity of Mud Cake Sample	0.040	ohm.m
RMFB	Resistivity of Mud Filtrate - BHT	0.019	ohm.m
RMFS	Resistivity of Mud Filtrate Sample	0.019	ohm.m
RMS	Resistivity of Mud Sample	0.029	ohm.m
RULB	Rig Up Length at Bottom	0.000	ft
RULS	Rig Up Length at Surface	0.000	ft
RUN	Run Number	ONE	
RW	Resistivity of Connate Water	1.000	ohm.m
SCD_ACCEL	Accelerometer driving Speed Corrected Depth	HILT	
SCORR	Stretch Correction	5.000	ft

SECT	Section	23	
SGOR	Solution Gas Oil Ratio		
SIMULATE_DELAY	Simulate Acquisition Delay	0.000	
SLAB	State/Province Label	State:	
SON	Service Order Number	AMQ5-00008	
SPEE	Simulated Logging Speed	1800	ft/h
STAT	State or Province	OHIO	
STDLC	Subsequent Trip Down Log Correction		
STEM	Surface Temperature	35.000	degF
TCA	Tail Cement Additives		
TCDE	Tail Cement Density		
TCS	Time Circulation Stopped	4:00	
TCTY	Tail Cement Type		
TCV	Tail Cement Volume		
TCWL	Tail Cement Water Loss		
TD	Total Depth	6216.0	ft
TLAB	Time Logger At Bottom	12:30	
TLI	Top Log Interval	1572.0	ft
TLLAB	Township Label	Township	
TNDCD	Tension Device Calibration Date (dd-Mmm-yyyy)	dd-Mmm-yyyy	
TNDCSN	Tension Device Calibrator Serial Number	269314	
TNDGN	Tension Device GAIN	1.000	
TNDOFF	Tension Device Offset	0.000	
TNDSN	Tension Device Serial Number	1362	
TNDTYP	Tension Device	CMTD-B/A	
TOWN	Township	WESTLAND	
TREF	Reference Tension of the Cable	1000.0	lbf
TWS	Temperature of Connate Water Sample	100.0	degF
UWID	Unique Well Identification Number	34-059-2-4067-00-00	
WITN	Witness's Name	BILL RIKE	
WN	Well Name	DEVCO UNIT #1	
ZRCS	Tool Zero Reference Check at Surface	54.000	ft

Format: SONI5 **Vertical Scale: 5" per 100'** **Graphics File Created: 16-Mar-2008 21:47**

OP System Version: 15C0-309

MCM

ECS	15C0-309	ECC-A	15C0-309
DSLT-BB	15C0-309	SGTN	15C0-309
DTCH	SKK-3493-EDTCB		

Input DLIS Files

DEFAULT	ECS_SONIC_029PUP	FN:34	PRODUCER	16-Mar-2008 21:07	8911.0 FT	6096.5 FT

Output DLIS Files

ECS .035	FN:43	16-Mar-2008 21:47

REPEAT PASS 5" = 100FT

Input DLIS Files

DEFAULT	ECS_SONIC_025LUP	FN:26	PRODUCER	16-Mar-2008 18:18	8907.5 FT	8665.0 FT

Output DLIS Files

DEFAULT	ECS_SONIC_039PUP	FN:50	PRODUCER	16-Mar-2008 22:07	8907.0 FT	8670.5 FT
BATTELLE_HILL_1	ECS_SONIC_039PUP	FN:51	PRODUCER	16-Mar-2008 22:07	8907.0 FT	8670.5 FT

OP System Version: 15C0-309

MCM

ECS-A	15C0-309	ECC-A	15C0-309
DSLT-FTB	15C0-309	SGT-N	15C0-309
DTC-H	SKK-3493-EDTCB		

PIP SUMMARY

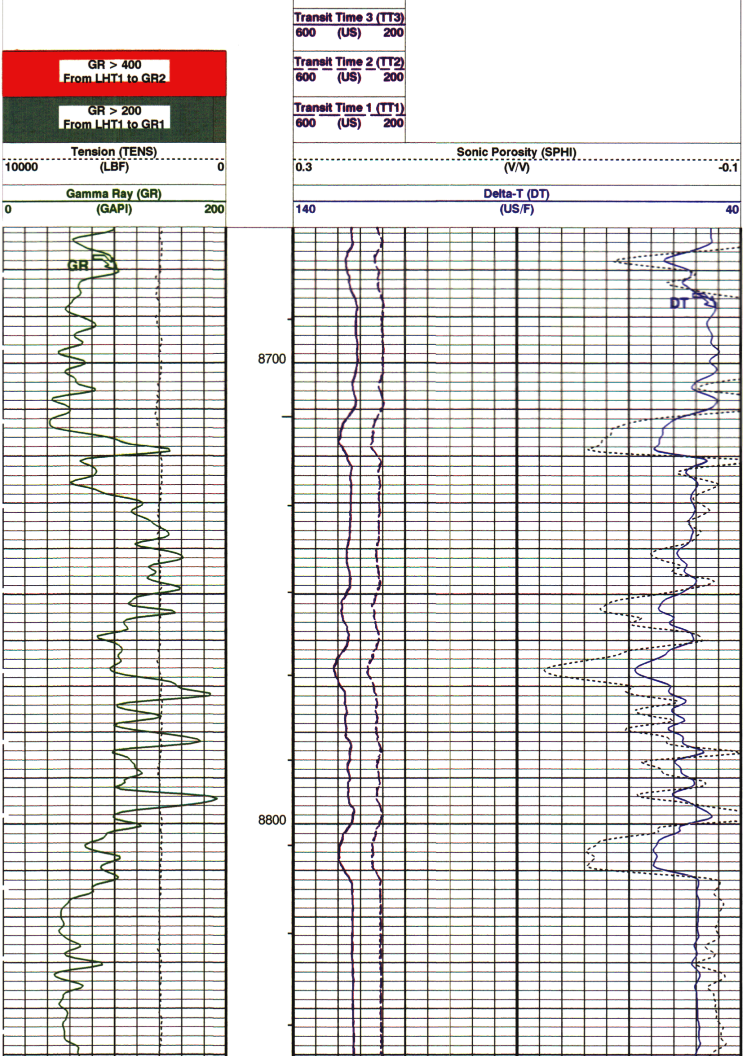
⊣ Integrated Transit Time Minor Pip Every 1 MS

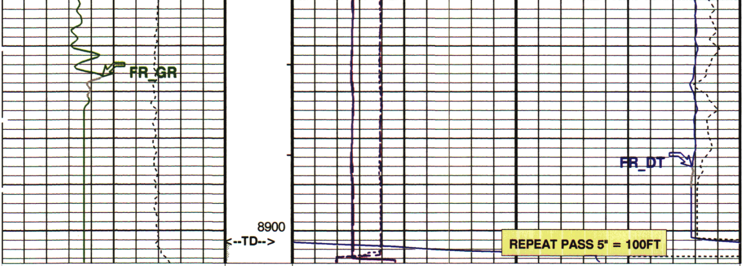
⊣ Integrated Transit Time Major Pip Every 10 MS

▶ Time Mark Every 60 S

Transit Time 4 (TT4)

600 (US) 200





Gamma Ray (GR)
0 (GAPI) 200

Tension (TENS)
10000 (LBF) 0

GR > 200
From LHT1 to GR1

GR > 400
From LHT1 to GR2

Delta-T (DT)
140 (US/F) 40

Sonic Porosity (SPHI)
0.3 (V/V) -0.1

Transit Time 1 (TT1)
600 (US) 200

Transit Time 2 (TT2)
600 (US) 200

Transit Time 3 (TT3)
600 (US) 200

Transit Time 4 (TT4)
600 (US) 200

PIP SUMMARY

⊣ Integrated Transit Time Minor Pip Every 1 MS
⊣ Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	ECS-A: Elemental Capture Spectroscopy Tool		
	ECS Marquardt Spectrum	** V **	
SPEC_BARITE_MUD_FLAG	Barite Mud Flag for Spectroscopy Processing	Off	
SPEC_CSG_DEPTH	Casing Depth for Spectroscopy Processing	-999.75	FT
SPEC_ELE_STD_SHFT_FAC	Calibration Factor for Elemental Spectral Standards	0.8	
SPL_CLAY_MODEL	SpectroLith Clay Model	Arenite	
SPL_SULFUR_MINERAL	SpectroLith Sulfur Mineral Option	Pyrite	
	DSLT-FTB: Digitizing Sonic Logging Tool		
	DSLT Firing Mode	BHC	
	Telemetry Mode	DSLC_FTB	
AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	1	
CBLG	CBL Gate Width	45	US
CDTS	C-Delta-T Shale	100	US/F
DDEL	Digitizing Delay	0	US
DETE	Delta-T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	100	
DSIN	Digitizing Sample Interval	10	
DTCM	Delta-T Computation Mode	FULL	
DTF	Delta-T Fluid	189	US/F
DTFS	DSLC Telemetry Frame Size	236	
DTM	Delta-T Matrix	56	US/F
DWCO	Digitizing Word Count	100	
GAI	Manual Gain	40	
HRSP	High Resolution Spacing	5.118	IN
ITTS	Integrated Transit Time Source	DT	
LTUT	Lower to Upper Transmitter Spacing Ratio	1	
MAHTR	Manual High Threshold Reference	20506	
MGAI	Maximum Gain	80	
MIGA	Minimum Gain	1	
MNHTR	Minimum High Threshold Reference	419	
MODE	Sonic Firing Mode	BHC	
NMSG	Near Minimum Sliding Gate	168	US
NMXG	Near Maximum Sliding Gate	447	US
NUMP	Number of Detection Passes	2	

RATE	Firing Rate	R15	
RDFA	Reset DFAD	OFF	
SDTH	Switch Down Threshold	20000	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta-T	56	US/F
SGCW	Sliding Gate Closing Width	25	US
SGDT	Sliding Gate Delta-T	34	US/F
SGW	Sliding Gate Width	84	US
SLEV	Signal Level for AGC	4737	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DT	
SUTH	Switch Up Threshold	1000	
VDLG	VDL Manual Gain	40	
WAGC	Waveform AGC Allow/Disallow	OFF	
WGAI	Waveform Manual Gain	20	
WGDT	Waveform Gain Delta-T	240	US/F
WGIN	Waveform Gain Interval	2540	US
WMOD	Waveform Firing Mode	FULL	

SGT-N: Scintillation Gamma Ray Tool - N

BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	180	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN

FEQL: Formation Evaluation Quick Look

CSXO	Coefficient of Sxo	1	
DLLM	DPOR Lower Limit for Mineral Detection	0.35	CFCF
EDSE	EPT Data Selector	STANDARD	
FEPT	EPT Option Flag	NONE	
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
GDCL	Grain Density Clean Reading	0	G/C3
GDSH	Grain Density Shale Reading	2.9	G/C3
GRCL	Gamma Ray Clean Reading	0	GAPI
GRSH	Gamma Ray Shale Reading	200	GAPI
GULM	Gamma Ray Upper Limit for Mineral Detection	999	GAPI
KGR	Kill GR Shale Index (USE, KILL)	USE	
KPN	Kill NPES Shale Index (USE, KILL)	USE	
KRH	Kill RHGA Shale Index (USE, KILL)	USE	
KSP	Kill SP Shale Index (USE, KILL)	USE	
LSWB	SWB Limit Selector (NO_LIMIT, LIMIT)	NO_LIMIT	
MDET	Mineral Flag (NONE, COAL, SALT)	NONE	
NLIM	Neutron Limit for Mineral Detection	0.01	CFCF
NPCL	NPES Clean Reading	0	CFCF
NPSH	NPES Shale Reading	0.5	CFCF
RWB	Bound Water Resistivity	0.1	OHMM
RXOF	RXO Presence Flag	ABSENT	
SDGC	Clean Grain Density Selector	GDCL	
SEXP	N in Water Saturation Equation	2	
SIS	Three Mineral Shale Index Selector	NOT_USED	
SPCL	SP Clean Reading	-200	MV
SPSB	SP Shale Baseline	0	MV
SPSH	SP Shale Reading	0	MV
SWMN	Sw Minimum	0.05	CFCF
TPCN	Time Propagation of non-shale	7.2	NS/M
TPM1	Time Propagation, Matrix-1 <Limestone>	9.8	NS/M
TPM2	Time Propagation, Matrix-2 <Sandstone>	7.2	NS/M
TPM3	Time Propagation, Matrix-3 <Dolomite>	8.7	NS/M
TPSH	Time Propagation of Shale	8.9	NS/M

HOLEV: Integrated Hole/Cement Volume

BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	180	DEGF
FCD	Future Casing (Outer) Diameter	5.5	IN
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF

PERT: Preliminary Evaluation - Real Time

ARTS	AIT Rt Selection (for ALLRES computation)	AIT_TwoResA60	
BDPS	Bulk Density Processing Selector	Standard	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	180	DEGF
CLIM	Caliper Limit for Bad Hole	999	IN
CNPS	Corrected Neutron Porosity Selector	NPHI	
DRUL	DRHO Upper Limit	999	G/C3
FCAL	Caliper Presence Flag	PRESENT	
FCGR	CGR Presence Flag	PRESENT	

FEXP	Form Factor Exponent	2	
FLDT	Bulk Density Presence Flag	PRESENT	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FSON	Sonic Presence Flag	ABSENT	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PMAX	PHI Maximum	0.5	CFCF
POUT	Porosity Output Lithology	LIMESTONE	
RG21	RHO Grain (2-Mineral Model, Min-1)	2.71	G/C3
RG22	RHO Grain (2-Mineral Model, Min-2)	2.644	G/C3
RG23	RHO Grain (2-Mineral Model, Min-3)	2.877	G/C3
RG31	RHO Grain (3-Mineral Model, Min-1)	2.71	G/C3
RG32	RHO Grain (3-Mineral Model, Min-2)	2.644	G/C3
RG33	RHO Grain (3-Mineral Model, Min-3)	2.877	G/C3
RTCO	RTCO - Rt Invasion Correction	YES	
RTLF	RT Limit Flag	NO_LIMIT	
RWF	Resistivity of Free Water	0.02	OHMM
SHT	Surface Hole Temperature	68	DEGF
UF	U Fluid	0.398	
UM21	U Matrix (2-Mineral Model, Min-1)	13.77	
UM22	U Matrix (2-Mineral Model, Min-2)	4.779	
UM23	U Matrix (2-Mineral Model, Min-3)	8.997	
UM31	U Matrix (3-Mineral Model, Min-1)	13.77	
UM32	U Matrix (3-Mineral Model, Min-2)	4.779	
UM33	U Matrix (3-Mineral Model, Min-3)	8.997	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	8897.00	FT
TDL	Total Depth - Logger	8902.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	120000.00	PPM
CSIZ	Current Casing Size	8.625	IN
CWEI	Casing Weight	24.00	LB/F
DFD	Drilling Fluid Density	9.50	LB/G
DO	Depth Offset for Playback	-0.5	FT
FLEV	Fluid Level	521.00	FT
MST	Mud Sample Temperature	176.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.0193	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	6216	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: SONI5 Vertical Scale: 5" per 100' Graphics File Created: 16-Mar-2008 22:07

OP System Version: 15C0-309

MCM

ECS-A	15C0-309	ECC-A	15C0-309
DSLT-FTB	15C0-309	SGT-N	15C0-309
DTC-H	SKK-3493-EDTCB		

Input DLIS Files

DEFAULT	ECS_SONIC_025LUP	FN:26	PRODUCER	16-Mar-2008 18:18	8907.5 FT	8665.0 FT

Output DLIS Files

DEFAULT	ECS_SONIC_039PUP	FN:50	PRODUCER	16-Mar-2008 22:07
BATTELLE_HILL_1	ECS_SONIC_039PUP	FN:51	PRODUCER	16-Mar-2008 22:07

Company:	**BATTELLE**
Well:	**DEVCO UNIT #1**
Field:	**WESTLAND**
County:	**GUERNSEY**
State:	**OHIO**

Schlumberger

BOREHOLE COMPENSATED SONIC
GAMMA RAY