Schlumberger

LITHO - DENSITY / NEUTRON

COMPANY	EARTH REFERENCE SYSTEMS
WELL	SHAHAN #1
FIELD	WILDCAT
COUNTY	KNOX
STATE	MISSOURI

RECEIVED OCT 0 1989

The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

Run No.	1
Service Order No.	563968
Drilling Fluid Level	
Salinity	80.0 PPM
Rmf @ BHT	2.874 OHMM
Rmc @ BHT	3.662 OHMM
Logging Speed	10000.0 F/HR
EQUIPMENT DATA	
Tool Number 1	DRS 2764
Tool Number 2	NSC 937
Tool Number 3	CNC 244
Tool Number 4	TCM 484
Tool Number 5	TCC 737
Tool Number 6	SGC 205
Tool Number 7	
Tool Number 8	
Tool Number 9	
Tool Number 10	
Tool Number 11	
Tool Number 12	
REMARKS:	

MATRIX=2.65 THRU ST. PETER

CREW: M. DAVIS

THANKS FOR USING SCHLUMBERGER!

AFTER SURVEY TOOL CHECK SUMMARY

PERFORMED: 01-OCT-1989 11:05
PROGRAM FILE: GTS (VERSION 32.2 88/12/01 88/11/16)

CNTH TOOL CHECK

INPUT	BEFORE JIG	AFTER JIG
CNTC	2922.01	2925.70
CFTC	1317.68	1313.02

CHANGE IN THERMAL POROSITY AT 20 PU IS .143 PU

BEFORE SURVEY: BACK: 19-SEP-1989 16:41 JIG: 19-SEP-1989 16:47
AFTER SURVEY CHECK: BACK: 28-AUG-1989 14:53 JIG: 19-SEP-1989 16:52

LDTC TOOL CHECK

DENSITY RESISTIVITY SONDE NUMBER : 2764
NUCLEAR SERVICE CARTRIDGE NUMBER : 937
POWERED DETECTOR HOUSING NUMBER : 2810
POWERED GAMMA-GAMMA DETECTOR NUMBER : 2813
LDT LOGGING SOURCE NUMBER : 7133
LDT CALIBRATION MODE : WATE

	MEASURED BACKGROUND BEFORE	AFTER	UNITS	TOLERANCE ON BEFORE-AFTER
LU	61.4	61.4	CPS	+/- 1.0
LS	46.5	46.5	CPS	+/- 1.0
LITH	4.7	4.7	CPS	+/- 0.3
SS1	14.6	14.7	CPS	+/- 0.5
SS2	10.1	10.1	CPS	+/- 0.5

HV SETTINGS
HV LS: 1487.8 V
HV SS: 1516.7 V

BKGD BKGD
BEFORE SURVEY: 19-SEP-1989 16:41 AFTER SURVEY: 28-AUG-1989 14:53

CP 32.2 FILE 8 01-OCT-1989 11:05

EVENT MARK SUMMARY:

OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
IHV	10.0000 F3	LEFT EDGE
ICV	10.0000 F3	RIGHT EDGE

CEMENT VOLUME = 222.606 F3 (ASSUMING 4.50000 IN O.D. CASING)
HOLE VOLUME = 318.863 F3
FROM 1064.5 TO 193.0 FEET

CHANGED PARAMETERS

NAME	VALUE	UNIT	DEPTH (F)	NAME	VALUE	UNIT	DEPTH (F)
MDEN	2.71000	G/C3	953.0				

BS (IN) 6.0000 – 16.000
GR (GAPI) 200.00 – 400.00
GR (GAPI) 0.0 – 200.00
DRHO(G/C3) -.3500 – .15000
CALI(IN) 6.0000 – 16.000
PEF 0.0 – 10.000
TENS(LBF) 10000. – 0.0
NPHI .70000 – .30000
NPHI .30000 – -.1000
DPHI .30000 – -.1000

CP 32.2 FILE 6 01-OCT-1989 11:03

CP 32.2 FILE 6 01-OCT-1989 10:38

BS (IN) 6.0000 – 16.000
GR (GAPI) 200.00 – 400.00
GR (GAPI) 0.0 – 200.00
DRHO(G/C3) -.3500 – .15000
CALI(IN) 6.0000 – 16.000
PEF 0.0 – 10.000
TENS(LBF) 10000. – 0.0
NPHI .70000 – .30000
NPHI .30000 – -.1000
DPHI .30000 – -.1000

SENSOR MEASURE POINT TO TOOL ZERO

CFTC	23.2	FEET	GR	32.3	FEET
LITH	2.6	FEET	CNTC	22.7	FEET
LS	2.6	FEET	LL	2.6	FEET
PARI	2.1	FEET	LU	2.6	FEET
SS2	2.1	FEET	SS1	2.1	FEET
FSS	2.1	FEET	FLS	2.1	FEET
TLS	2.1	FEET	SEQ	2.1	FEET
CALI	2.7	FEET	TSS	2.1	FEET
THRA	23.7	FEET	TENS	-.9	FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
WMUD	9.30000	LB/G	TD	3500.00	F
FCD	4.50000	IN	DHC	NONE	
BFM	LIQU		MDEN	2.65000	G/C3
FD	1.00000	G/C3	MATR	LIME	
HC	CALI		NPDC	0	
HSCO	YES		SDCO	NO	
MCCO	NO		BSCO	NO	
FSCO	NO		MWCO	NO	
PTCO	NO		SDAT	SDCN	
MCOR	NATU		SDCN	.500000	IN
FSAL	-50000.0	PPM	ANGL	0.0	DEG
GGRD	.0100000	DF/F	BHFL	WATE	
GTSE	TEMP		SHT	60.0000	DEGF
BHT	71.0000	DEGF	BS	7.87500	IN
BHS	OPEN				

Schlumberger REPEAT SECTION

CSU Field Log

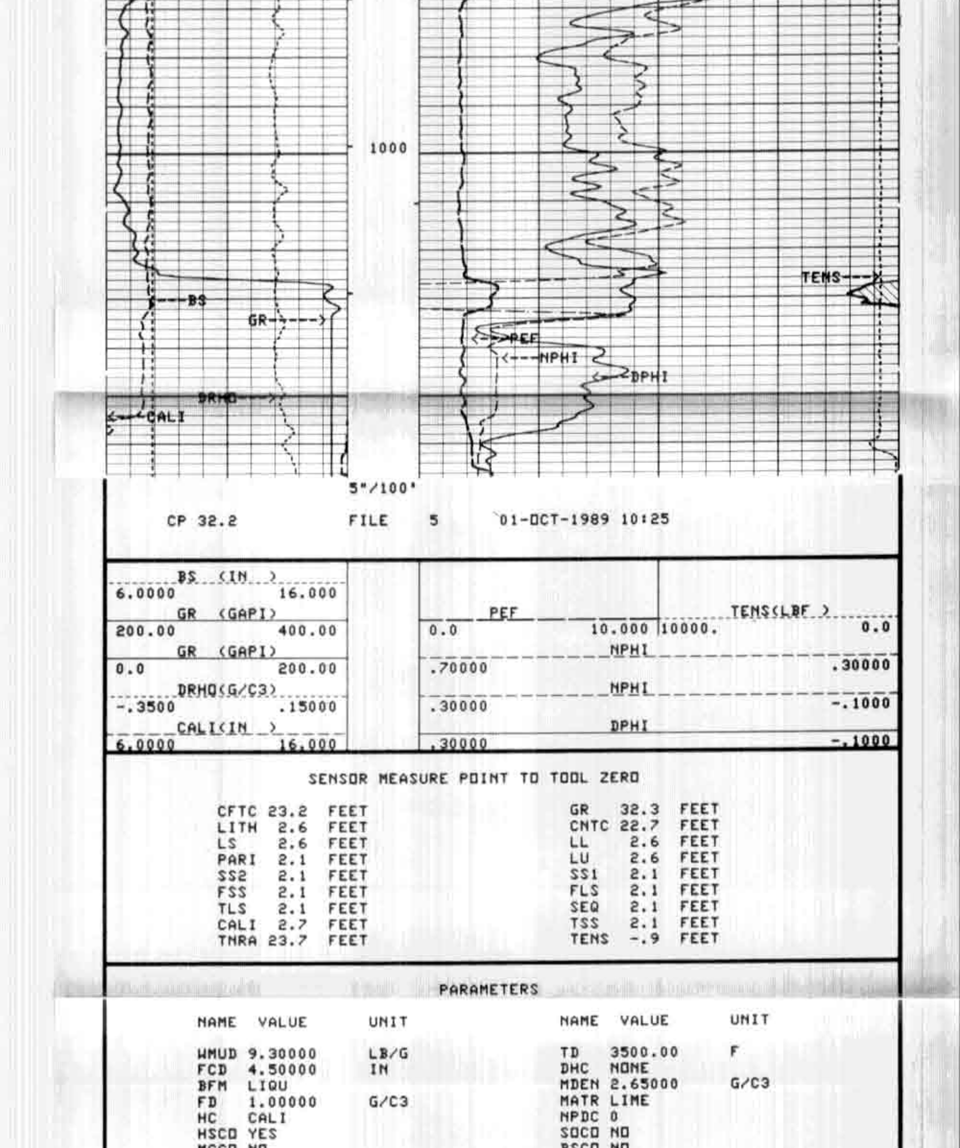
EVENT MARK SUMMARY:

OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
IHV	10.0000 F3	LEFT EDGE
ICV	10.0000 F3	RIGHT EDGE

CEMENT VOLUME = 49.9678 F3 (ASSUMING 4.50000 IN O.D. CASING)
HOLE VOLUME = 75.2600 F3
FROM 1066.0 TO 837.0 FEET

BS (IN) 6.0000 – 16.000
GR (GAPI) 200.00 – 400.00
GR (GAPI) 0.0 – 200.00
DRHO(G/C3) -.3500 – .15000
CALI(IN) 6.0000 – 16.000
PEF 0.0 – 10.000
TENS(LBF) 10000. – 0.0
NPHI .70000 – .30000
NPHI .30000 – -.1000
DPHI .30000 – -.1000

CP 32.2 FILE 5 01-OCT-1989 10:36



CP 32.2 FILE 5 01-OCT-1989 10:25

BS (IN) 6.0000 – 16.000
GR (GAPI) 200.00 – 400.00
GR (GAPI) 0.0 – 200.00
DRHO(G/C3) -.3500 – .15000
CALI(IN) 6.0000 – 16.000
PEF 0.0 – 10.000
TENS(LBF) 10000. – 0.0
NPHI .70000 – .30000
NPHI .30000 – -.1000
DPHI .30000 – -.1000

SENSOR MEASURE POINT TO TOOL ZERO

CFTC	23.2	FEET	GR	32.3	FEET
LITH	2.6	FEET	CNTC	22.7	FEET
LS	2.6	FEET	LL	2.6	FEET
PARI	2.1	FEET	LU	2.6	FEET
SS2	2.1	FEET	SS1	2.1	FEET
FSS	2.1	FEET	FLS	2.1	FEET
TLS	2.1	FEET	SEQ	2.1	FEET
CALI	2.7	FEET	TSS	2.1	FEET
THRA	23.7	FEET	TENS	-.9	FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
WMUD	9.30000	LB/G	TD	3500.00	F
FCD	4.50000	IN	DHC	NONE	
BFM	LIQU		MDEN	2.65000	G/C3
FD	1.00000	G/C3	MATR	LIME	
HC	CALI		NPDC	0	
HSCO	YES		SDCO	NO	
MCCO	NO		BSCO	NO	
FSCO	NO		MWCO	NO	
PTCO	NO		SDAT	SDCN	
MCOR	NATU		SDCN	.500000	IN
FSAL	-50000.0	PPM	ANGL	0.0	DEG
GGRD	.0100000	DF/F	BHFL	WATE	
GTSE	TEMP		SHT	60.0000	DEGF
BHT	71.0000	DEGF	BS	7.87500	IN
BHS	OPEN				

BEFORE SURVEY CALIBRATION SUMMARY

PERFORMED: 01-OCT-1989 10:19
PROGRAM FILE: GTS (VERSION 32.2 88/12/01 88/11/16)

SGTL DETECTOR CALIBRATION SUMMARY

	MEASURED BKGD	JIG	CALIBRATED	UNITS
GR	31	167	160	GAPI

BACK: 19-SEP-1989 16:41 JIG: 19-SEP-1989 16:47 COMP: 19-SEP-1989 16:48

CNTH DETECTOR CALIBRATION SUMMARY

NEUTRON COMPENSATED CARTRIDGE NUMBER: 244
NEUTRON SOURCE SERIAL NUMBER : 2421
THERMAL HOUSING NUMBER : 3220
THERMAL CALIBRATED NEUTRON BOX : 3178

INPUT	PLUS REFERENCE COUNTS	SHOP TANK COUNTS	SHOP JIG COUNTS	BEFORE JIG COUNTS	GAIN
CNTC	6031.00	6008.76	2935.28	2922.01	1.004
CFTC	2793.00	2547.19	1321.84	1317.68	1.097
RATIO	2.159	2.359	2.221	2.218	

BACK: 19-SEP-1989 16:41 JIG: 19-SEP-1989 16:47 COMP: 19-SEP-1989 16:29

LDTC DETECTOR CALIBRATION SUMMARY

DENSITY RESISTIVITY SONDE NUMBER : 2764
NUCLEAR SERVICE CARTRIDGE NUMBER : 937
POWERED DETECTOR HOUSING NUMBER : 2810
POWERED GAMMA-GAMMA DETECTOR NUMBER : 2813
LDT LOGGING SOURCE NUMBER : 7133
LDT CALIBRATION MODE : WATE

	MEASURED BKGD	SHOP AL+FE	SHOP VALUES AL	UNITS
LL	15.8	80.9	90.2	CPS
LU	61.4	127.6	141.9	CPS
LS	46.5	144.8	161.2	CPS
LITH	4.7	32.9	49.5	CPS
SS1	14.6	159.6	179.0	CPS
SS2	10.1	234.9	259.7	CPS

HV SETTINGS
HV LS: 1487.8 V
HV SS: 1516.7 V

BKGD: 19-SEP-1989 16:41

LDTC CALIPER CALIBRATION SUMMARY

	MEASURED SMALL	LARGE	CALIBRATED SMALL	LARGE	UNITS
CALI	8.50	12.6	8.00	12.0	IN

SMALL: 19-SEP-1989 16:34 LARGE: 19-SEP-1989 16:35 COMP: 19-SEP-1989 16:35

CP 32.2 FILE 4 01-OCT-1989 10:18

SHOP SUMMARY

PERFORMED: 28-AUG-1989 12:35
PROGRAM FILE: CCSHOP (VERSION 32.2 88/12/01 88/11/30)

LDTC DETECTOR CALIBRATION SUMMARY

DENSITY RESISTIVITY SONDE NUMBER : 2764
NUCLEAR SERVICE CARTRIDGE NUMBER : 937
POWERED DETECTOR HOUSING NUMBER : 2810
POWERED GAMMA-GAMMA DETECTOR NUMBER : 2813
LDT LOGGING SOURCE NUMBER : 7133
LDT CALIBRATION MODE : WATE

	MASTER CALIBRATED BKGD	AL+FE	AL	UNITS
LL	15.7	80.9	90.2	CPS
LU	62.0	127.6	141.9	CPS
LS	46.7	144.8	161.2	CPS
LITH	4.7	32.9	49.5	CPS
SS1	14.6	159.6	179.0	CPS
SS2	10.0	234.9	259.7	CPS

HV SETTINGS
HV LS: 1484.1 V
HV SS: 1508.4 V

SPECTRUM QUALITY RATIOS

	COMPUTED VALUE	NOMINAL VALUE	TOLERANCE
QRLS	.636	0.65	+/- 0.05
QRSS	.689	0.72	+/- 0.10
QRLI	.307	0.32	+/- 0.06
QLIR	1.350	1.35	+/- 0.06
QR	.993	1.00	+/- 0.02

BKGD: 28-AUG-1989 12:08 AL: 28-AUG-1989 12:30 AL+FE: 28-AUG-1989 12:19

CP 32.2 FILE 0 28-AUG-1989 12:34

SHOP SUMMARY

PERFORMED: 19-SEP-1989 16:17
PROGRAM FILE: CCSHOP (VERSION 32.2 88/12/01 88/11/30)

CNTH DETECTOR CALIBRATION SUMMARY

NEUTRON COMPENSATED CARTRIDGE NUMBER: 244
NEUTRON SOURCE SERIAL NUMBER : 2421
THERMAL HOUSING NUMBER : 3220
THERMAL CALIBRATED NEUTRON BOX : 3178

INPUT	PLUS REFERENCE COUNTS	SHOP TANK COUNTS	SHOP JIG COUNTS	GAIN
CNTC	6031.00	6008.76	2935.28	1.004
CFTC	2793.00	2547.19	1321.84	1.097
RATIO	2.159	2.359	2.221	

SHOP COUNTS TEMPERATURE AND HOUSING SIZE CORRECTED

BKGD: 19-SEP-1989 15:42 TANK: 19-SEP-1989 16:04 COMP: 19-SEP-1989 16:04