COMPANY: **NORTHWEST NATURAL GAS**

WELL: **IW-24BH-23-65**

FIELD: **MIST**

COUNTY: **COLUMBIA** **STATE:** **OREGON**

COUNTY: COLUMBIA
Field: MIST
Location: 976.5' NORTH, 1256.3' EAST
Well: IW-24BH-23-65
Company: NORTHWEST NATURAL GAS

Schlumberger

PLATFORM EXPRESS
BHC SONIC / GR
SCALE: 5" = 100'

LOCATION

976.5' NORTH, 1256.3' EAST
FROM THE SW SECTION CORNOR

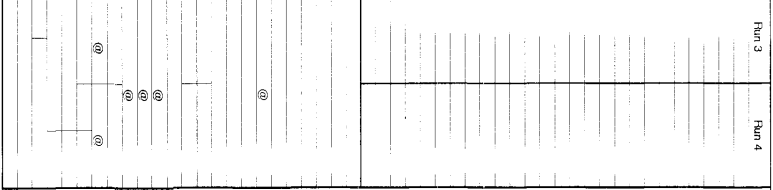
Elev.:	K.B.	923 ft	
	G.L.	905 ft	
	D.F.	923 ft	

Permanent Datum:	GROUND LEVEL	Elev.:	905 ft
Log Measured From:	KB	18.0 ft	above Perm. Datum
Drilling Measured From:	KB		

API Serial No.	SECTION	TOWNSHIP	RANGE
36-009-00351	23	6N	5W

Logging Date		20-JUN-2000			
Run Number		2			
Depth Driller		2770 ft			
Schlumberger Depth		2762ft			
Bottom Log Interval		2746 ft			
Top Log Interval		1870 ft			
Casing Driller Size @ Depth		8.625 in	@ 1870 ft	@	
Casing Schlumberger		1870 ft			
Bit Size		7.875 in			
Type Fluid In Hole		XCD/KCL			
MUD Density	Viscosity	8.6 lbm/gal	38 s		
MUD Fluid Loss	PH	6.4 cm3	8		
MUD Source Of Sample		FLOWLINE			
RM @ Measured Temperature		0.266 ohm.m	@ 58 degF	@	
RMF @ Measured Temperature		0.281 ohm.m	@ 19 degF	@	
RMC @ Measured Temperature		0.145 ohm.m	@ 18 degF	@	
Source RMF	RMC	PRESS	PRESS		
RM @ MRT	RMF @ MRT	0.230 @ 68	0.097 @ 68	@	@
Maximum Recorded Temperatures		68 degF	68	68	
Circulation Stopped	Time	19-JUN-2000	21:30		
Logger On Bottom	Time	20-JUN-2000	6:45		
Unit Number	Location	3152	SACRAMENTO		
Recorded By		M.KHAN			
Witnessed By		CLAYTON ROTH			

		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			



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OTHER SERVICES1	OTHER SERVICES2
OS1: PEX-AITH-BHC	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
MAXIMUM HOLE DEVIATION: 92 DEG	
LOGGED WITH TLC EQUIPMENT	

RUN 1		RUN 2	
SERVICE ORDER #	6266009	SERVICE ORDER #:	
PROGRAM VERSION	9C1-303	PROGRAM VERSION:	
FLUID LEVEL	0 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

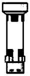
RUN 1	RUN 2

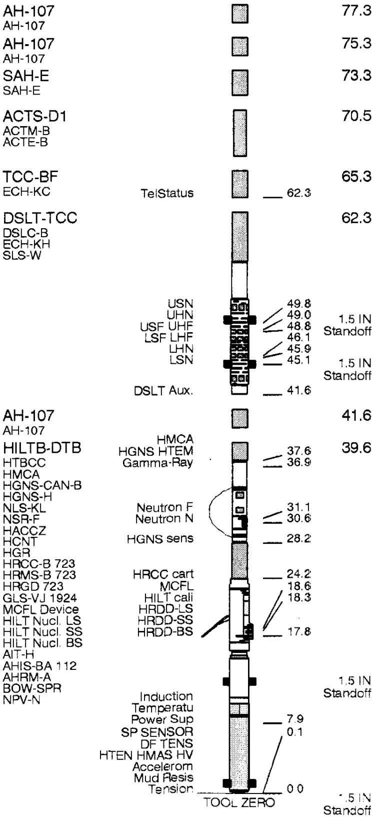
SURFACE EQUIPMENT

GSR-U/Y WITM (CTS)-A
NCT-B
CNB-AB
NCS-VB

DOWNHOLE EQUIPMENT

DWCH-A 85.3
DWCH-A





MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

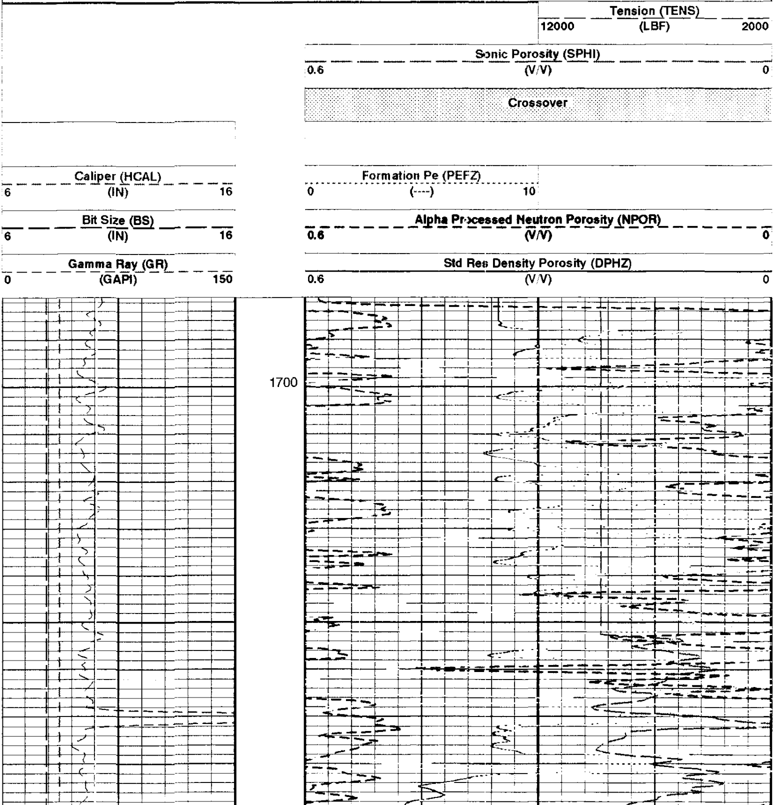
Input DLIS Files

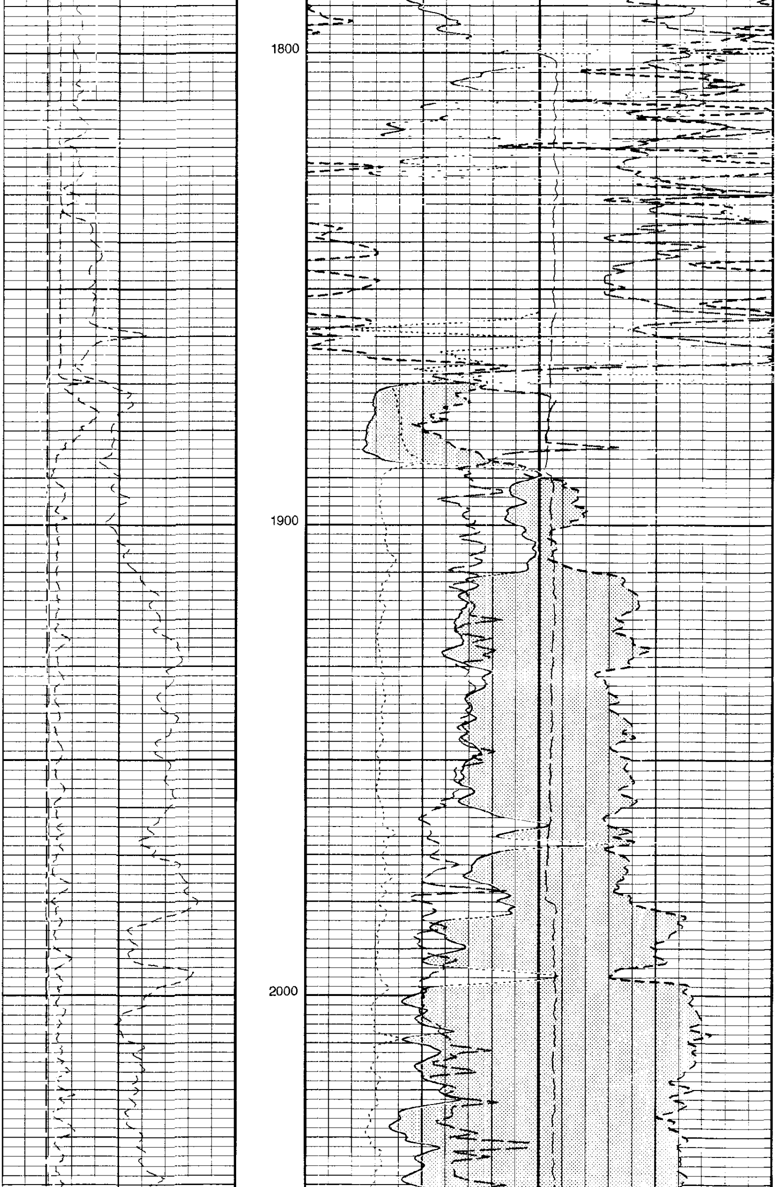
DEFAULT	HILTB .004	FN:3	PRODUCER	20-Jun-2000 23:15	2746.0 FT	1680.5 FT
DEFAULT	HILTB .016	FN:15	PRODUCER	20-Jun-2000 20:04	2076.0 FT	1612.5 FT

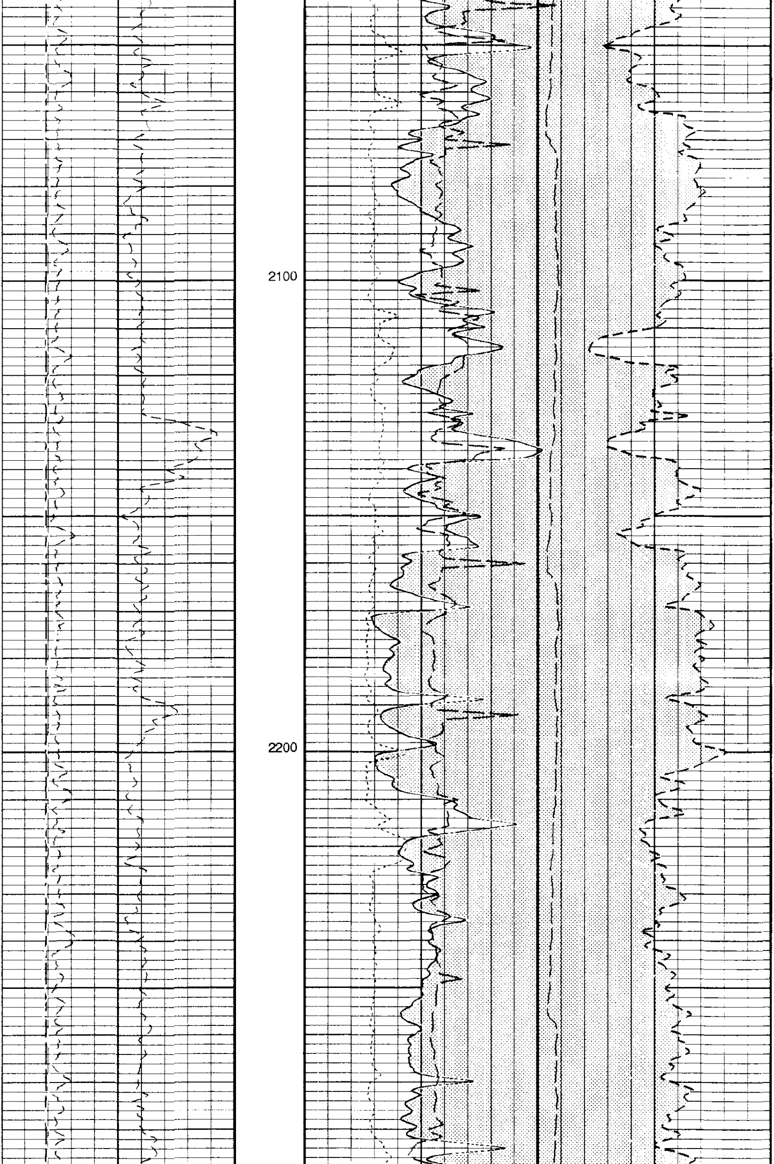
OP System Version: 9C1-303

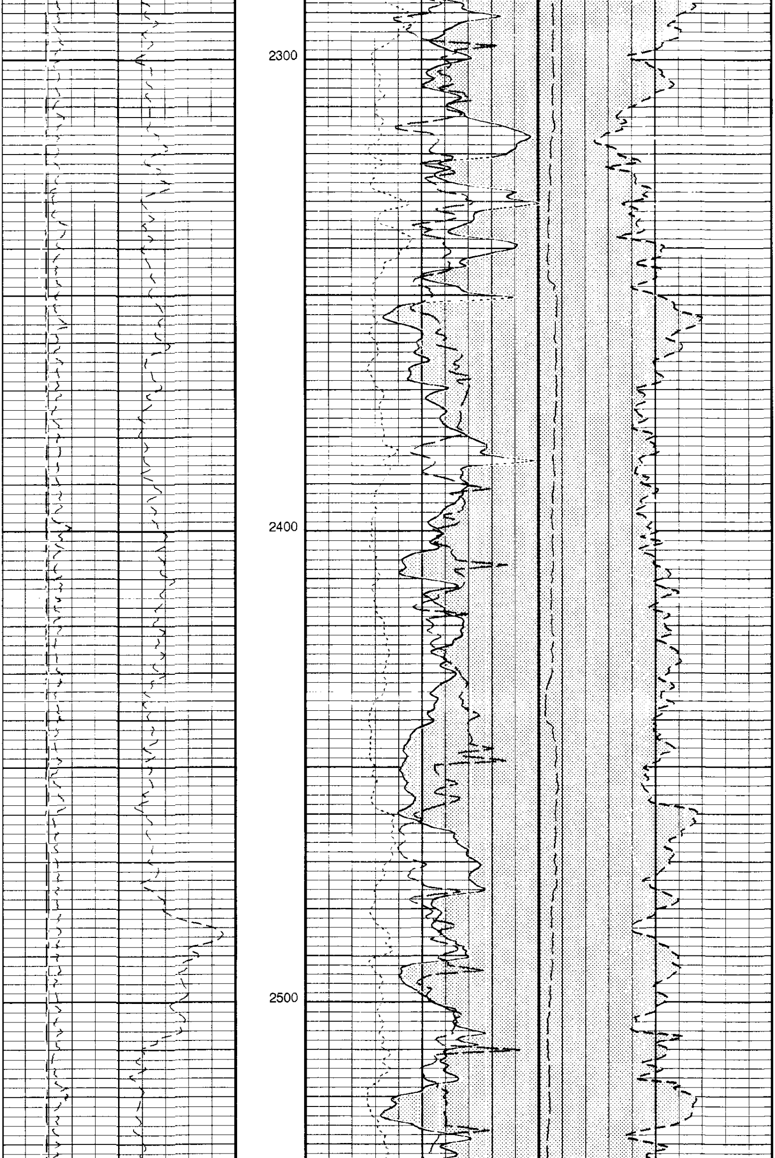
MCM

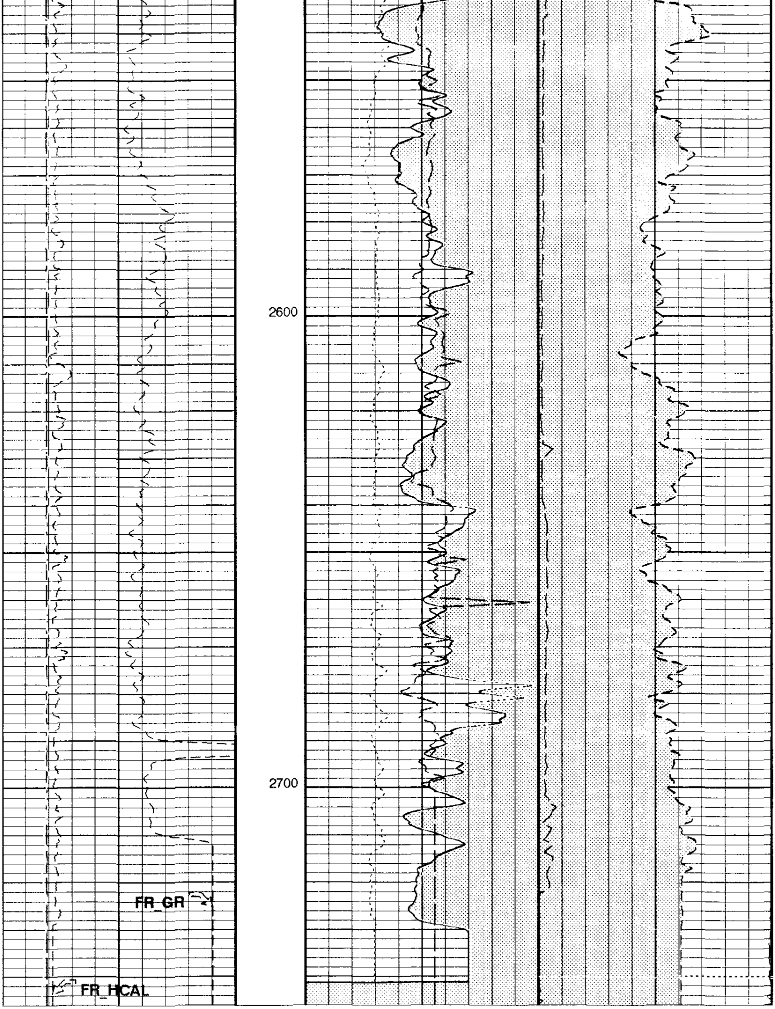
HILTB	OP91-KP1a	DSLT-BA	OP91-KP1a
TCCBF	OP91-KP1a	ACTS1	OP91-KP1a











Gamma Ray (GR)
0 (GAPI) 150

Bit Size (BS)
6 (IN) 16

Caliper (HCAL)
6 (IN) 16

Std Res Density Porosity (DPHZ)
0.6 (V/V) 0

Alpha Processed Neutron Porosity (NPOR)
0.6 (V/V) 0

Formation Pe (PEFZ)
0 (----) 10

Crossover

Sonic Porosity (SPHI)
0.6 (V V) 0

Tension (TENS)
12000 (LBF) 2000

Parameters

DLIS Name	Description	Value	
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BS	Bit Size	7.875	in
BSAL	Borehole Salinity	15000.0	ppm
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CDTS	C-Delta-T Shale	100.0	us/ft
DHC	Density Hole Correction	BS	
DTF	Delta-T Fluid	189.0	us/ft
DTM	Delta-T Matrix	56.000	us/ft
FD	Fluid Density	1.000	g/cm3
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
HSCM	HILT Speed Correction Mode	NO_SC	
HSCO	Hole Size Correction Option	YES	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SAND	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.650	g/cm3
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	STDRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68.000	degF
SOCN	Standoff Distance	0.125	in
SOCO	Standoff Correction Option	NO	
SPDR	SP Drift	0.000	mV/ft
SPFS	Sonic Porosity Formula	R-H	
SPNV	SP Next Value	0.000	mV
SPSO	Sonic Porosity Source	DT	
TDL	Total Depth - Logger	2762.0	ft

Format: PORO Vertical Scale: 5" per 100' Graphics File Created: 20-Jun-2000 23:47

OP System Version: 9C1-303

MCM

HILTB	OP91-KP1a	DSLT-BA	OP91-KP1a
TCCBF	OP91-KP1a	ACTS1	OP91-KP1a

Input DLIS Files

DEFAULT	HILTB .004	FN:3	PRODUCER	20-Jun-2000 23:15	2746.0 FT	1680.5 FT
DEFAULT	HILTB .016	FN:15	PRODUCER	20-Jun-2000 20:04	2076.0 FT	1612.5 FT

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REPEAT SECTION

MAXIS 500 Field Log

Input DLIS Files

DEFAULT	HILTB .016	FN:15 PRODUCER	20-Jun-2000 20:04	2076.0 FT	1612.5 FT
DEFAULT	HILTB .016	FN:15 PRODUCER	20-Jun-2000 20:04	2076.0 FT	1612.5 FT

OP System Version: 9C1-303

MCM

HILTB	OP91-KP1a	DSLT-BA	OP91-KP1a
TCCBF	OP91-KP1a	ACTS1	OP91-KP1a

Tension (TENS)
12000 (LBF) 2000

REPEAT SECTION

Sonic Porosity (SPHI)
0.6 (V/V) 0

Crossover

Caliper (HCAL)
6 (IN) 16

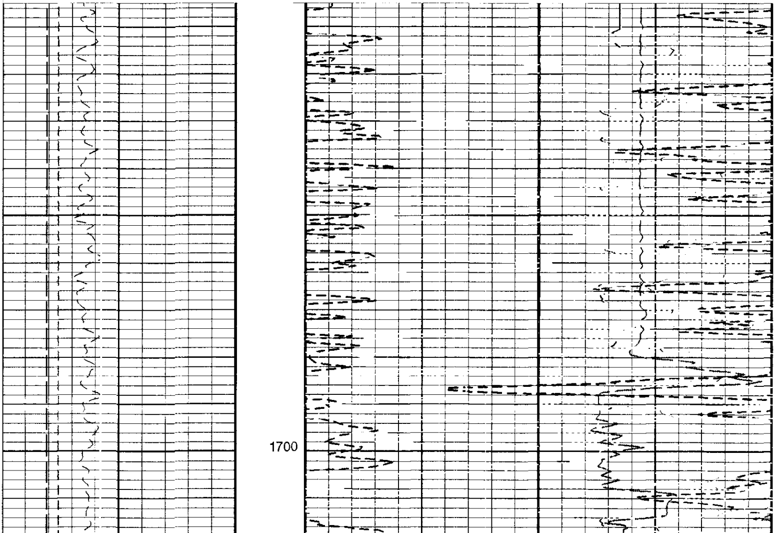
Formation Pe (PEFZ)
0 (----) 10

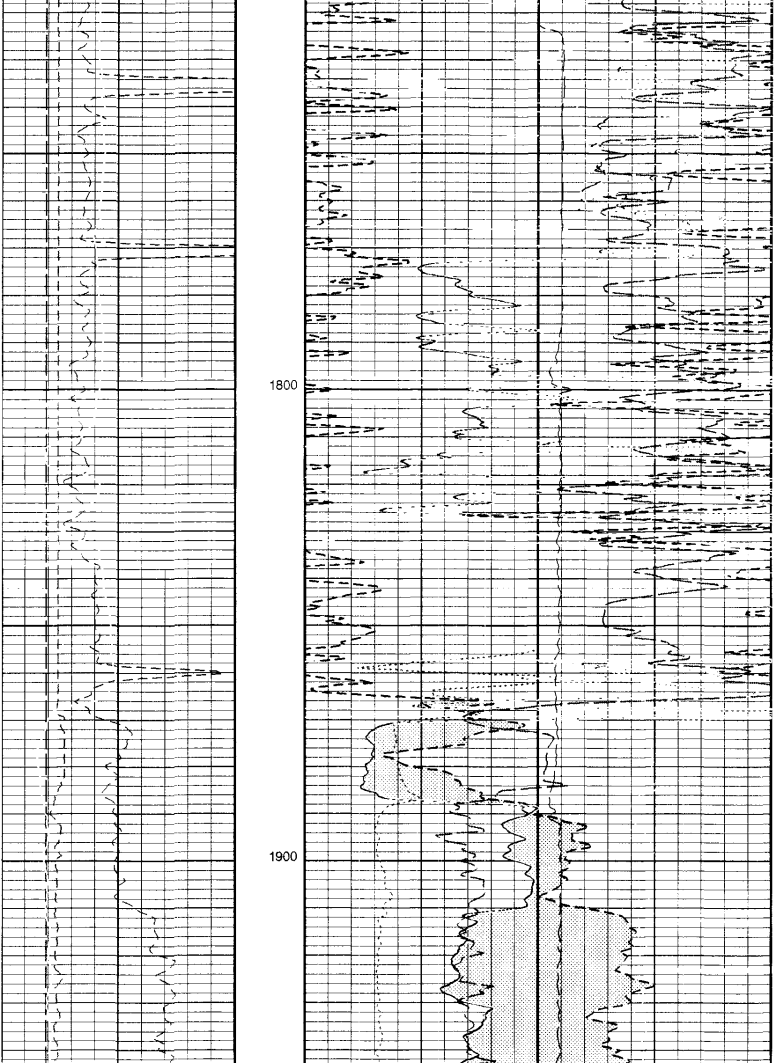
Bit Size (BS)
6 (IN) 16

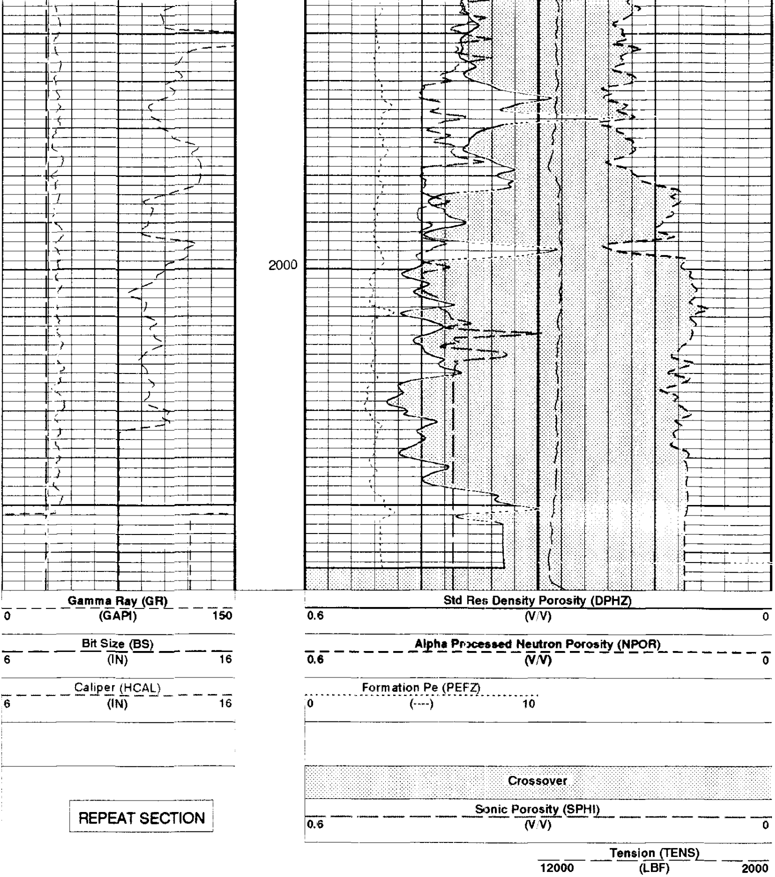
Alpha Processed Neutron Porosity (NPOR)
0.6 (V/V) 0

Gamma Ray (GR)
0 (GAPI) 150

Std Res Density Porosity (DPHZ)
0.6 (V/V) 0







Parameters

DLIS Name	Description	Value

BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BS	Bit Size	7.875	in
BSAL	Borehole Salinity	15000.0	ppm
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CDTS	C-Delta-T Shale	100.0	us/ft
DHC	Density Hole Correction	BS	
DO	Depth Offset	-8.0	ft
DORL	Depth Offset Repeat Analysis	-8.0	ft
DTF	Delta-T Fluid	189.0	us/ft
DTM	Delta-T Matrix	56.000	us/ft
FD	Fluid Density	1.000	g/cm3
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
HSCM	HILT Speed Correction Mode	NO_SC	
HSCO	Hole Size Correction Option	YES	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SAND	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.650	g/cm3
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	STDRES	
NSAR	HRDD Depth Sampling Rate	1.000	in
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68.000	degF
SOCN	Standoff Distance	0.125	in
SOCO	Standoff Correction Option	NO	
SPDR	SP Drift	0.000	mV/ft
SPFS	Sonic Porosity Formula	R-H	
SPNV	SP Next Value	0.000	mV
SPSO	Sonic Porosity Source	DT	
TDL	Total Depth - Logger	2762.0	ft

Format: PORO **Vertical Scale: 5" per 100'** **Graphics File Created: 20-Jun-2000 23:51**

OP System Version: 9C1-303

MCM

HILTB	OP91-KP1a	DSLT-BA	OP91-KP1a
TCCBF	OP91-KP1a	ACTS1	OP91-KP1a

Input DLIS Files

DEFAULT	HILTB .016	FN:15	PRODUCER	20-Jun-2000 20:04	2076.0 FT	1612.5 FT
DEFAULT	HILTB .016	FN:15	PRODUCER	20-Jun-2000 20:04	2076.0 FT	1612.5 FT

Schlumberger

CALIBRATIONS

MAXIS 500 Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase

Master: Calibration out of date 20-JAN-2000 9:39 Before: 20-JUN-2000 14:42

Thru Cal Magnitude - 0	0	0.6214	0.6374	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.274	1.307	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.6329	0.6492	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.7152	0.7338	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.335	1.369	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.943	1.993	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.947	1.997	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.371	1.409	N/A	N/A	N/A	V
Phase - 0	0	64.91	65.88	N/A	N/A	N/A	DEG
Phase - 1	0	63.80	64.77	N/A	N/A	N/A	DEG
Phase - 2	0	60.03	61.01	N/A	N/A	N/A	DEG
Phase - 3	0	59.25	60.23	N/A	N/A	N/A	DEG
Phase - 4	0	52.91	53.92	N/A	N/A	N/A	DEG
Phase - 5	0	50.96	51.99	N/A	N/A	N/A	DEG
Phase - 6	0	50.92	51.95	N/A	N/A	N/A	DEG
Phase - 7	0	47.08	48.25	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Auxilliary

Master: Calibration out of date 20-JAN-2000 9:39 Before: 20-JUN-2000 14:42

Array Induction SPA Plus	990.5	989.8	990.5	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.1083	0.1162	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9150	0.9169	0.9175	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0001095	0.00009983	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Test Loop Gain Correction

Master: Calibration out of date 20-JAN-2000 9:39

Test Loop Gain Magnitude - 0	0	1.042	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	1.010	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	0.9940	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	0.9835	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	0.9934	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	0.9945	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.3672	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	-0.6191	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	-0.01578	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	0.1871	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	0.1325	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.1680	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.2889	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.2642	N/A	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Sonde Error Correction

Master: Calibration out of date 20-JAN-2000 9:39

R Sonde Error Correction - 0	0	-121.4	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	149.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	113.9	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	58.40	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	24.16	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	11.87	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	7.431	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-3.605	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	34.14	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	-240.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	67.33	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	81.72	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	-1.172	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	-10.09	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	10.78	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	0.3313	N/A	N/A	N/A	N/A	MM/M

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Mud Gain Correction

Master: Calibration out of date 20-JAN-2000 9:39

Coarse - Mag, Real, Imag - 0	0	1.013	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	1.013	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	1.013	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	1.011	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	1.011	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	1.011	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary

Before 20-JUN-2000 14:46

BS Window Ratio	1.033	N/A	1.031	N/A	N/A	N/A	
BS Window Sum	14310	N/A	14310	N/A	N/A	N/A	CPS
SS Window Ratio	0.5004	N/A	0.5044	N/A	N/A	N/A	
SS Window Sum	11490	N/A	11410	N/A	N/A	N/A	CPS
LS Window Ratio	0.2862	N/A	0.2873	N/A	N/A	N/A	
LS Window Sum	1163	N/A	1159	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations

Before 20-JUN-2000 14:46

BS PM High Voltage (Command	1614	N/A	1655	N/A	N/A	N/A	V
SS PM High Voltage (Command	1916	N/A	1957	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1966	N/A	1955	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: 20-JUN-2000 14:46

BS Crystal Resolution	12.26	N/A	12.34	N/A	N/A	N/A	%
SS Crystal Resolution	11.63	N/A	12.08	N/A	N/A	N/A	%
LS Crystal Resolution	10.59	N/A	10.85	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration
Before: 14-JUN-2000 3:55

Raw B0 Resistivity	3875	N/A	3844	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3809	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3822	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration
Before: 14-JUN-2000 3:45

HILT Caliper Zero Measurement	8.000	N/A	7.212	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	16.00	N/A	15.93	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration
Before: Calibration not done

Gamma Ray Background	30.00	N/A	N/A	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	N/A	N/A	N/A	N/A	N/A	N/A	GAPI
Gamma Ray (Calibrated)	165.0	N/A	N/A	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement
Master: 6-APR-2000 4:31 Before: 20-JUN-2000 14:44

CNTC Background	27.31	27.31	26.34	N/A	N/A	4.096	CPS
CFTC Background	28.31	28.31	26.95	N/A	N/A	4.247	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration
Before: 20-JUN-2000 14:43

Z-Axis Acceleration	32.19	N/A	32.15	N/A	N/A	N/A	F/S2

The GLS-VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature	90.0	DEGF.
Thermal Housing Size	3.375	IN.

High resolution Integrated Logging Tool-CTS / Equipment Identification

Primary Equipment:

Array Induction Tool - H	AIT - H	
Rm/SP Bottom Nose	AHRM - A	
Array Induction Sonde	AHIS - BA	112
HILT high-Resolution Mechanical Sonde	HRMS - B	723
HILT Rxo Gamma-ray Device	HRGD -	723
HILT Nuclear Back-Scatter Detector	HILT -	
HILT Nuclear Short-Spacing Detector	HILT -	
HILT Nuclear Long-Spacing Detector	HILT -	

Auxiliary Equipment:

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6214		0.6050	64.91		71.00
	Before	0.6374			65.88		
1	Master	1.274		1.270	63.80		70.00
	Before	1.307			64.77		
2	Master	0.6329		0.6230	60.03		66.00
	Before	0.6492			61.01		
3	Master	0.7152		0.7040	59.25		65.00
	Before	0.7338			60.23		
4	Master	1.335		1.337	52.91		59.00
	Before	1.369			53.92		
5	Master	1.943		1.955	50.96		57.00
	Before	1.993			51.99		
6	Master	1.947		1.955	50.92		57.00
	Before	1.997			51.95		
7	Master	1.371		1.415	47.08		53.00
	Before	1.409			48.25		

60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: Calibration out of date 20-JAN-2000 9:39 Before: 20-JUN-2000 14:42

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Auxilliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		989.8	Master		0.1083
Before		990.5	Before		0.1162
	941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)			-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	
Phase	Array Induction Temperature Plus V	Value	Phase	Array Induction Temperature Zero V	Value
Master		0.9169	Master		0.0001095
Before		0.9175	Before		9.983E-00
	0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)			-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: Calibration out of date 20-JAN-2000 9:39 Before: 20-JUN-2000 14:42

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.042		0.3672	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.011		-0.6191	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.012		-0.01578	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.010		0.1871	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9940		0.1325	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9835		-0.1680	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	0.9934		0.2889	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	0.9945		-0.2642	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: Calibration out of date 20-JAN-2000 9:39

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	-121.4		34.14	
		-231.0 (Minimum) -56.00 (Nominal) 119.0 (Maximum)		-2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	149.7		-240.4	
		114.0 (Minimum) 159.0 (Nominal) 204.0 (Maximum)		-625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	113.9		67.33	
		66.00 (Minimum) 111.0 (Nominal) 156.0 (Maximum)		-350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)
3	58.40		81.72	
		39.00 (Minimum) 64.00 (Nominal) 89.00 (Maximum)		-250.0 (Minimum) 0 (Nominal) 250.0 (Maximum)
4	24.16		-1.172	
		15.00 (Minimum) 25.00 (Nominal) 35.00 (Maximum)		-63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	11.87		-10.09	
		4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)		-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)
6	7.431		10.78	
		5.000 (Minimum) 10.00 (Nominal) 15.00 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)
7	-3.605		0.3313	
		-5.000 (Minimum) 0 (Nominal) 5.000 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)

Master: Calibration out of date 20-JAN-2000 9:39

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag			Value	Fine - Mag, Real, Imag		
		(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)
0	1.013	0.8000	1.000	1.200	1.011	0.8000	1.000	1.200
1	1.013	0.8000	1.000	1.200	1.011	0.8000	1.000	1.200
2	1.013	0.8000	1.000	1.200	1.011	0.8000	1.000	1.200

Master: Calibration out of date 20-JAN-2000 9:39

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	0.9818	1.033	1.085	1.031	Before	0.4754	0.5004	0.5255	0.5044	Before	0.2719	0.2862	0.3005	0.2873

Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value	Phase	LS Window Sum CPS			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	13590	14310	15020	14310	Before	10920	11490	12070	11410	Before	1105	1163	1221	1159

Before: 20-JUN-2000 14:46

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Photo-multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V			Value	Phase	SS PM High Voltage (Command) V			Value	Phase	LS PM High Voltage (Command) V			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	1514	1614	1714	1655	Before	1816	1916	2016	1957	Before	1866	1966	2066	1955

Before: 20-JUN-2000 14:46

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %			Value	Phase	SS Crystal Resolution %			Value	Phase	LS Crystal Resolution %			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	11.26	12.26	13.26	12.34	Before	10.63	11.63	12.63	12.06	Before	9.591	10.59	11.59	10.85

Before: 20-JUN-2000 14:46

High resolution Integrated Logging Tool-CTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM			Value	Phase	Raw B1 Resistivity OHMM			Value	Phase	Raw B2 Resistivity OHMM			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	3565	3875	4185	3844	Before	3524	3830	4136	3809	Before	3524	3830	4136	3822

Before: 14-JUN-2000 3:55

High resolution Integrated Logging Tool-CTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN			Value	Phase	HILT Caliper Plus Measurement N			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	6.000	8.000	10.00	7.212	Before	12.00	16.00	20.00	15.93

Before: 14-JUN-2000 3:45

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Jig - Bkg) GAPI			Value	Phase	Gamma Ray (Calibrated) GAPI			Value
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)	
Before	0	30.00 NOT DONE	120.0	N/A	Before	N/A	N/A NOT DONE	N/A	N/A	Before	150.0	165.0 NOT DONE	180.0	N/A

Before: Calibration not done

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.31	Master		28.31
Before		26.34	Before		26.95
	5.000 (Minimum) 27.31 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 28.31 (Nominal) 40.00 (Maximum)	

Master: 6-APR-2000 4:31 Before: 20-JUN-2000 14:44

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Accelerometer Calibration

Phase	Z-Axis Acceleration F/S2	Value
Before		32.15
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 20-JUN-2000 14:43

COMPANY:	**NORTHWEST NATURAL GAS**
WELL:	**IW-24BH-23-65**
FIELD:	**MIST**
COUNTY:	**COLUMBIA**
STATE:	**OREGON**

BOTTOM LOG INTERVAL	2740 ft
SCHLUMBERGER DEPTH	2762 ft
DEPTH DRILLER	2770 ft
KELLY BUSHING	923 ft
DRILL FLOOR	923 ft
GROUND LEVEL	905 ft

Schlumberger

PLATFORM EXPRESS
BHC SONIC / GR / SP
SCALE: 5" = 100'