HALLIBURTON

QUAD COMBO
HRI/BCS/SDL/DSN

2"=100

COMPANY NORTHWEST NATURAL GAS
WELL "NWN" 44-3-65
FIELD MIST
COUNTY COLUMBIA STATE OR

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API No. 36-009-00366
Location COORDINATES
1249.1' N 03 04' 39"E
1253.4' N 86 54' 47"W
X 373653.7 Y 129444.4
NAD 27.
Sect 3 Twp 6N Rge 5W

Other Services
EMIT-A

Permanent Datum G.L. Elev 1175.8'
Log measured from K.B. 14.0 above perm. datum
Drilling measured from K.B.

Elev. K.B. 1189.8
D.F.
G.L. 1175.8'

Date	MAR-12-2007			
Run No	ONE			
Depth – Driller	3672'			
Depth – Logger	3676'			
Bottom – Logged Interval	3668'			
Top – Logged Interval	790'			
Casing – Driller	13.375" @ 790'	@	@	@
Casing – Logger	790'			
Bit Size	8.750"			
Type Fluid in Hole	GEL			
Dens. | Visc.	9.2 | 69.0	|	|	|
Ph | Fluid Loss	8.0 | 8.2	|	|	|
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	2.000 @ 56 F	@	@	@
Rmf @ Meas. Temp.	2.320 @ 55 F	@	@	@
Rmc @ Meas. Temp.	2.780 @ 54 F	@	@	@
Source Rmf | Rmc	MEAS | MEAS	|	|	|
Rm @ BHT	1.123 @ 105 F	@	@	@
Time Since Circ.	1300 MAR-12			
Time on Bottom	2230 MAR-12			
Max. Rec. Temp.	105 F @ TD	@	@	@
Equip. | Location	49599 | WDLD	|	|	|
Recorded By	G. ROUSSEAU			
Witnessed By	J. MEYER	J. THUM	E. VADER	

Service Ticket No [illegible] API Serial No 36-009-00366 PSM Version [illegible]

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES

Date Sample No			
Depth – Driller			
Type Fluid in Hole			
Dens. | Visc.	|		|
Ph | Fluid Loss	|		|
Source of Sample			
Rm @ Meas. Temp	2.000	@ 56 F	@
Rmf @ Meas. Temp	2.320	@ 55 F	@
Rmc @ Meas. Temp	2.780	@ 54 F	@
Source Rmf | Rmc	MEAS	| MEAS	|
Rm @ BHT	1.123	@ 105 F	@
Rmf @ BHT	1.282	@ 105 F	@
Rmc @ BHT	1.512	@ 105 F	@

RESIST. WITH SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No	Tool Type & No	Pad Type	Tool Pos	Other
ONE	HRIT #2[illegible]_132	NA	1.50' SO	NA

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No	ONE	Run No	ONE	Run No	ONE
Serial No	A-180	Serial No	264	Serial No	I714M741	Serial No.	05
Model No	NGRT	Model No	BCSD	Model No	SDLT-DA	Model No	DSNT-X
Diameter	3.625"	No. of Cent	TWO	Diameter	5.500"	Diameter	3.635"
Detector Model No	432	Spacing	2 FEET	Log Type	GAM-GAM	Log Type	NEU=NEU
Type	SCINT.			Source Type	CS-137	Source Type	AM241BE
Length	4.00"	LSA [Y/N]	NO	Serial No	2694 GW	Serial No	DSN-307
Distance to Source	11.0'	FWDA [Y/N]	NO	Strength	1.5 Ci	Strength	15.0 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	3676	790	50	0	150	175	75	55.5	1.65	2.65	2.65	60	0	SAND
				API	API	USEC	USEC	USEC	GMCC	GMCC	GMCC	%	%	

Maximum Deviation	32.67	deg @	3625	KOP	803

Remarks

ANNULAR HOLE VOLUME CALCULATED USING 7.00" CASING.
HRID-BCSD-SDLT-DSNT-NGRT-RWCH RUN IN COMBINATION.
MAGNETIC DELINATION 19.1'.

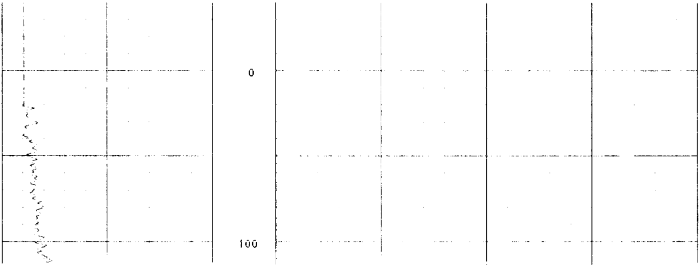
CREW: M. EMERSON, J. WILLIAMS.　　RIG: T.D. DRILLING NO. 101.

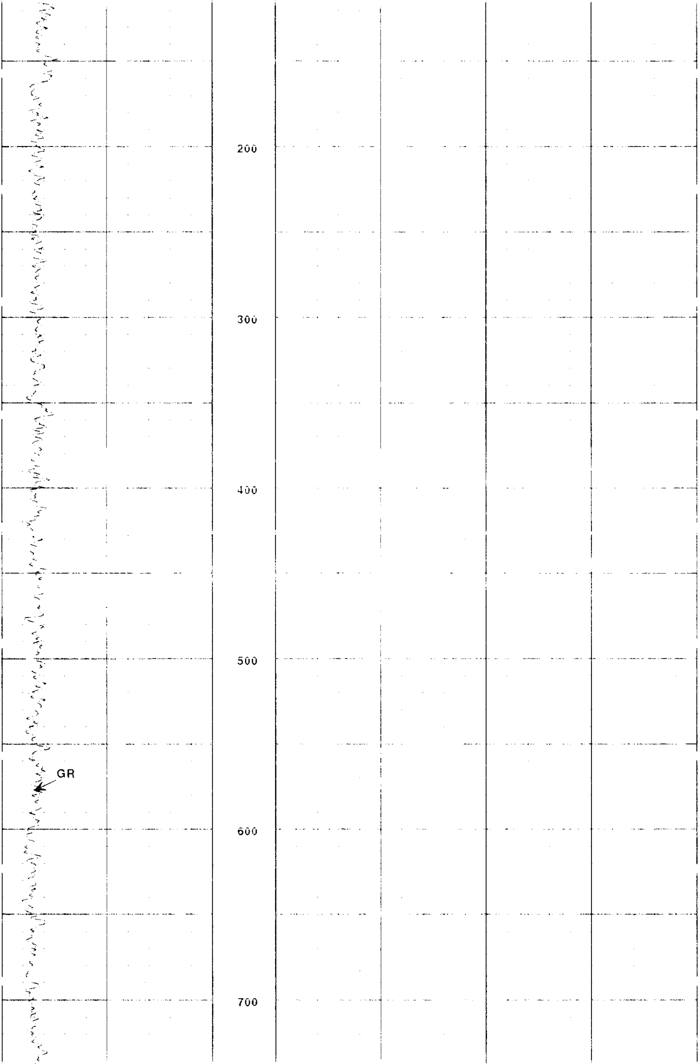
HALLIBURTON

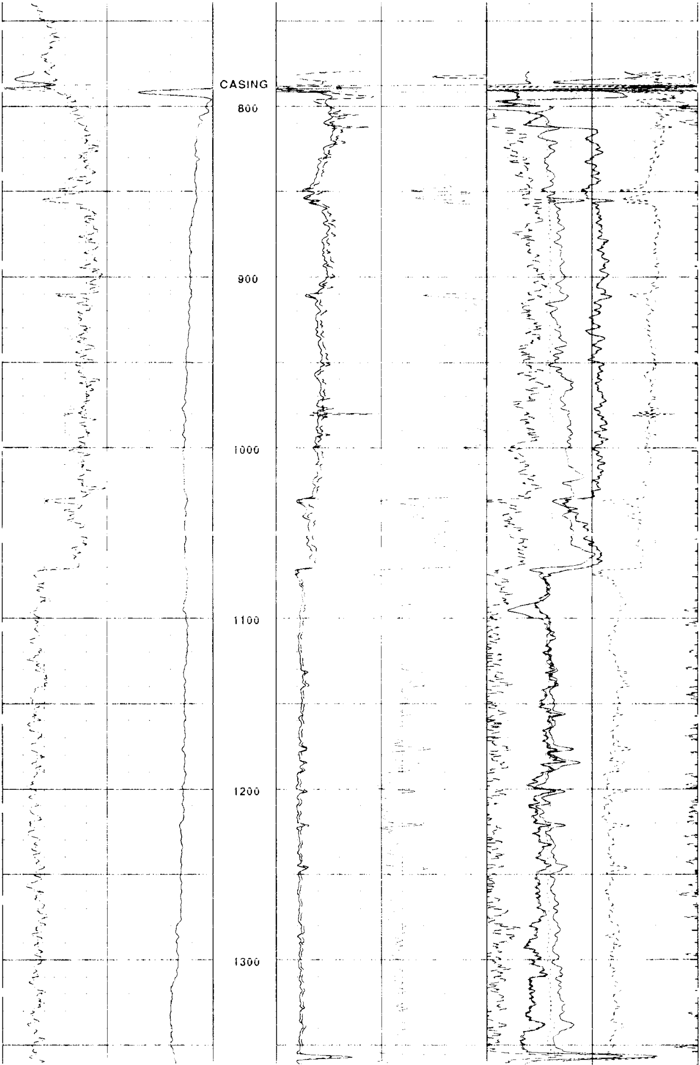
Version No: 5.7 | hc:3.0
Data File: nwng_44_3_65_qu.3.cls
Format File: plot_01_2.spc
Plot Time: 2007-03-12 23:41:35
Log Time: 2007-03-12 22:35:13

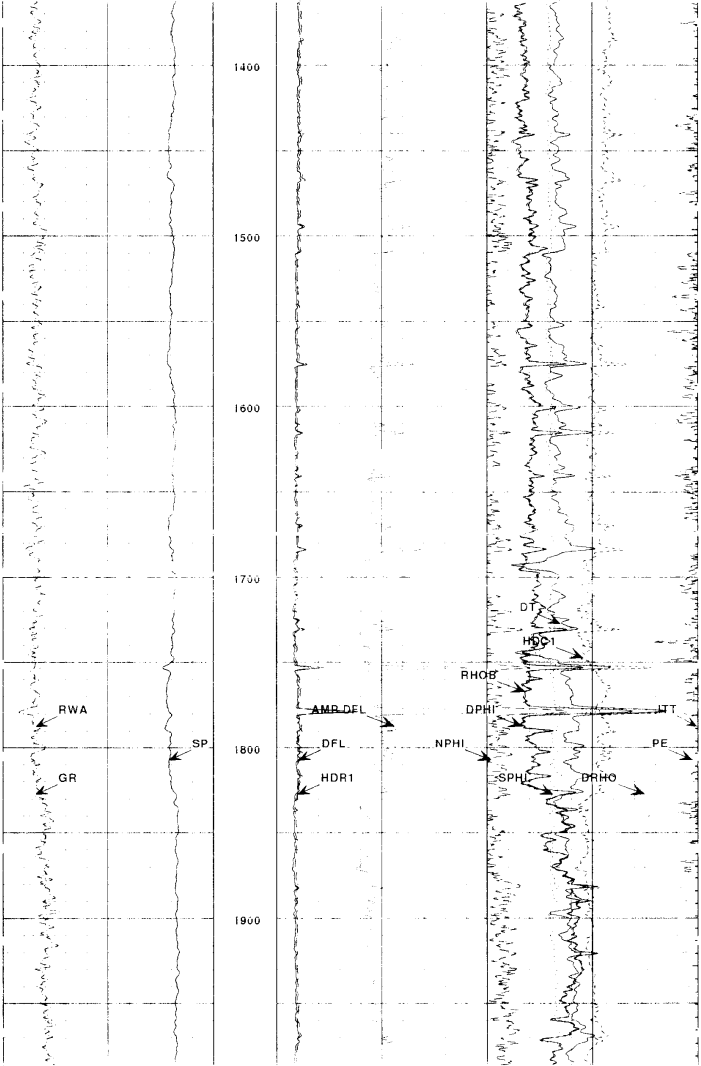
Top Depth: -41.00
Bottom Depth: 3703.75

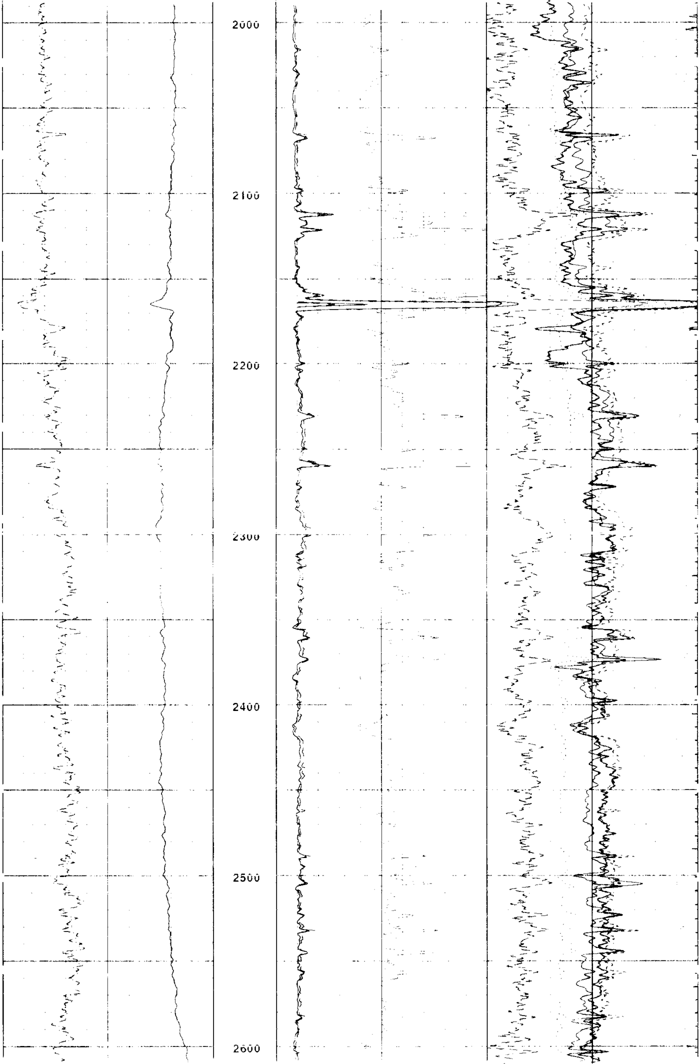
Curve	Unit	Left	Right
GR	API	0	150
SP	-]10[+		
RWA	OHMM	0	3
1:600 FT			
HDR1	OHMM	0	20
DFL	OHMM	0	20
AMP DFL	OHMM	0	4
SPHI	%	60	0
NPHI	%	60	0
DPHI	%	60	0
RHOB	G/CC	1.65	2.65
HDC1	MMHO	1000	0
DT	US/F	175	75
DRHO	G/CC	-0.5	0.5
PE		12	2
ITT			

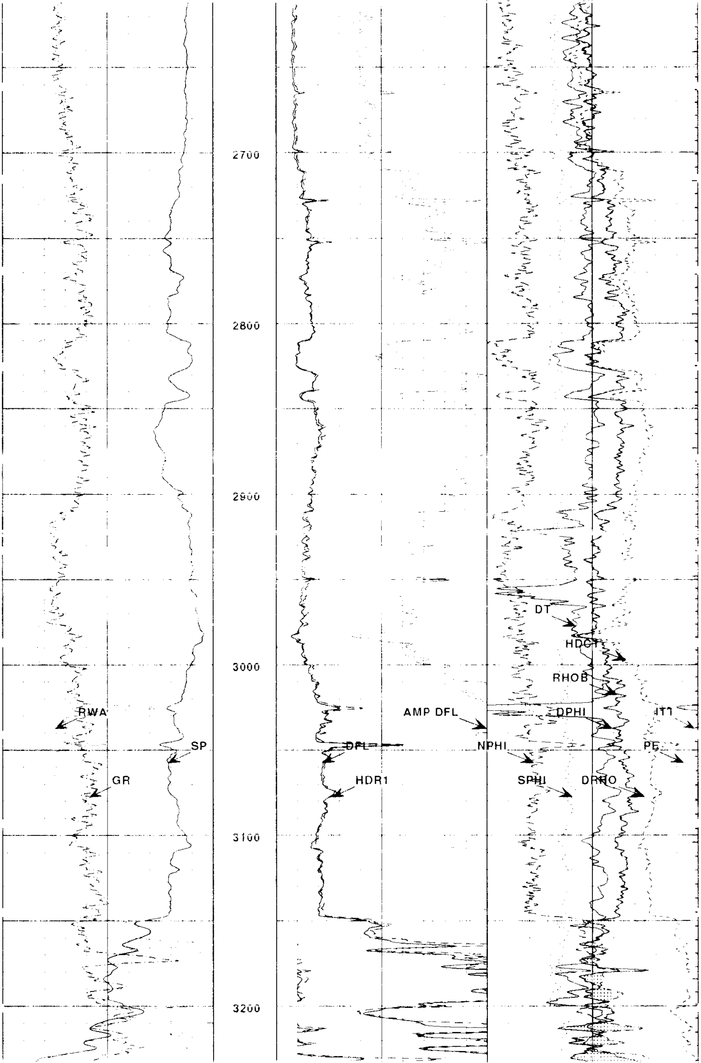


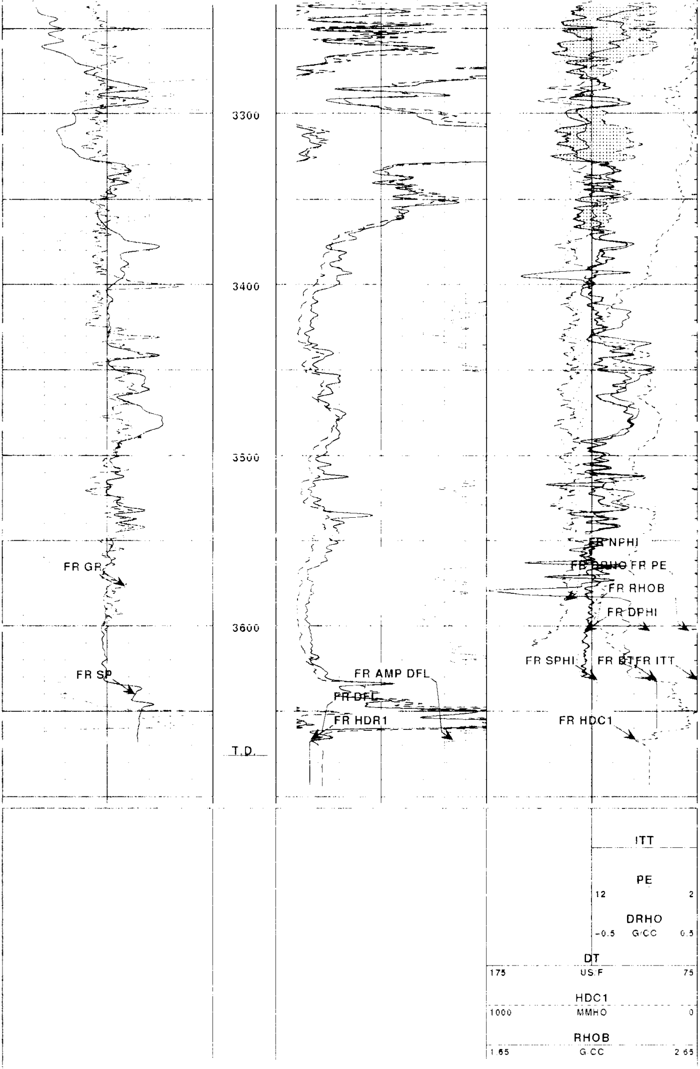












RWA
0 OHMM 3

SP
-]10[+

GR
0 API 150

1:600
FT.

AMP DFL
0 OHMM 4

DFL
0 OHMM 20

HDR1
0 OHMM 20

DPHI
60. % 0

NPHI
60. % 0

SPHI
60. % 0

HALLIBURTON

Version No: 5.7 | hc:3.0
Data File: nwng_44_3_65_qu 3.cls
Format File: plot_01_2 spc
Plot Time: 2007-03-12 22:57:12
Log Time: 2007-03-12 22:35:13

Top Depth: ------
Bottom Depth: 3703.75

REPEAT SECTION

HALLIBURTON

Version No: 5.7 | hc:3.0
Data File: nwng_44_3_65_qu.1 cls
Format File: plot_01_2.spc
Plot Time: 2007-03-12 22:14:36
Log Time: 2007-03-12 22:06:50

Top Depth: 723.25
Bottom Depth: 1113.25

GR
0 API 150

SP
-]10[+

RWA
0 OHMM 3

1:600
FT.

HDR1
0 OHMM 20

DFL
0 OHMM 20

AMP DFL
0 OHMM 4

SPHI
60. % 0

NPHI
60. % 0

DPHI
60. % 0

RHOB
1.65 G/CC 2.65

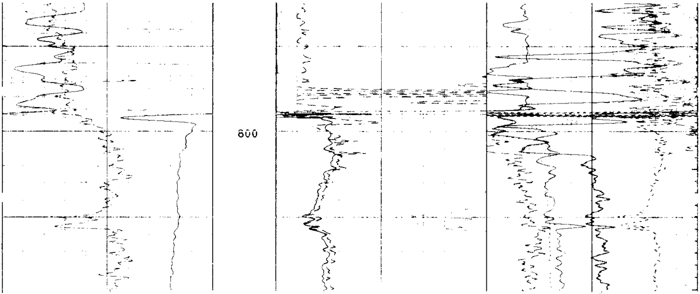
HDC1
1000 MMHO 0

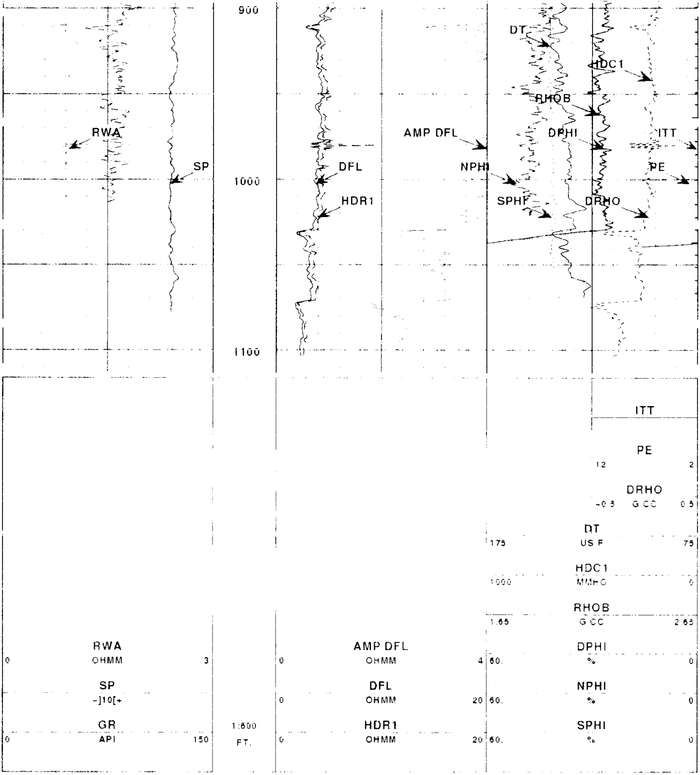
DT
175 US/F 75

DRHO
-0.5 G/CC 0.5

PE
12 2

ITT





HALLIBURTON

Version No: 5.7 | hc:3.0
Data File: nwng_44_3_65_qu.1.cls
Format File: plot_01_2.spc
Plot Time: 2007-03-12 22:07:02
Log Time: 2007-03-12 22:06:50

Top Depth ------
Bottom Depth: 1113.25

Current EXCELL-2000 Parameter Values
Depth: 848.333
Date: 12-Mar-2007 23:30:
Service Number: 2241
Software Version: 5.7

Mnemonic	Tool	Parameter Description	Value	Units
PERF	DITSHD	PERFORATED INTERVAL	NO	
TD	DITSHD	TOTAL DEPTH	3676.	FT
CS_ANT	DITSHD	CASING DEPTH (FOR ANNOTATION)	0.	FT
ANTSPA	DITSHD	ANNOTATION LABEL SPACING	500.	Ft
GR_OK	GAMMA	DO GAMMA CALCULATIONS?	YES	
CASED	SHARED	CASED HOLE?	NO	
CASEDP	SHARED	CASING [illegible]	[illegible]	[illegible]
MUDWT	SHARED	BOREHOLE FLUID WEIGHT	9.2	Pounds/Gal.
GRSO	GAMMA	GAMMA RAY STANDOFF	0.	Inches
BS	SHARED	BIT SIZE	8.75	Inches
DSN_OK	DSNT_X	DO DSNT_X CALCULATIONS?	YES	
DRILL	DSNT_X	TPL - NEUTRON IN SLEEVE?	NO	
BADHOL	DSNT_X	DSNT_X BAD HOLE CORRECTION	NO	
NLITH	DSNT_X	NEUTRON LITHOLOGY	SAND	
DSNSO	DSNT_X	DSNT_X STANDOFF	0.	Inches
DSNTMP	DSNT_X	DSNT_X TEMPERATURE CORRECTION	NONE	
DSNPRS	DSNT_X	DSNTX PRESSURE CORRECTION	NONE	
VLDTMP	DSNT_X	IS DSNT_X TEMPERATURE VALID?	YES	
SDL_OK	SDL_DA	DO SDL CALCULATIONS?	YES	
EVR_OK	SDL_DA	DO SDL EVR CALCULATIONS?	YES	
AIR	SDL_DA	AIR FILLED BOREHOLE?	NO	
LOGB	SDL_DA	LOGGING CAL BLOCKS?	NO	
SDLTC	SDL_DA	SDL TEMPERATURE CORRECTION?	YES	
MUDT	SDL_DA	MUD CORRECTION TYPE?	BARI	
RHOMAT	SHARED	MATRIX DENSITY	2.65	Grams/CC
RHOFLU	SHARED	FLUID DENSITY	1.	Grams/CC
CAL_OK	CAL_DA	DO CALIPER CALCULATIONS?	YES	
AHVOK	CAL_DA	DO ANNULAR VOLUME CALCULATION?	YES	
MLOGOK	MIC_SD	DO MICRO-LOG CALCULATIONS?	YES	
FWSTOK	BCS	DO FWST CALCULATIONS?	YES	
WYLIE	BCS	ACOUSTIC POROSITY EQUATION	HLSP	
DTSHA	BCS	DELTA T SHALE	100.	uSec/Ft.
DTMAT	BCS	DELTA T MATRIX	55.5	uSec/Ft.
DTFLU	BCS	DELTA T FLUID?	189.	uSec/Ft.
DTFT	BCS	USE 1 OR 2 FT DT FOR POROSITY	2	Feet
ARCHA	SHARED	ARCHIE A	0.81	
ARCHM	SHARED	ARCHIE M	2.	
FSEL	SHARED	POROSITY SELECTION FOR F	ACOU	
USEFIX	BCS	USE MINIMUM FIXED THRESHOLD.	NO	
USENOI	BCS	USE NOISE THRESHOLD FOR PICK.	NO	
TDU_OK	TDUF	USE TDU DISPLAY CONTROLS?	YES	
HRI_OK	HRIDE	DO HRI INDUCTION CALCULATION?	YES	
DFL_OK	HRIDE	DO DFL CALCULATIONS?	YES	
PYRITE	HRIDE	PYRITE SWITCH	NO	OHMM
CASING	HRIDE	CASING DEPTH	0.	Feet
HRIDSP	HRIDE	SPIKE REDUCTION FILTER TYPE?	DELT	
HRITC	HRIDE	HRI TEMPERATURE CORRECTION	NONE	
CTEM	HRIDE	CONST TEMPERATURE	75.	DegF
BHT	HRIDE	BOTTOM HOLE TEMPERATURE	110.	Degrees F.
TSURF	HRIDE	SURFACE TEMPERATURE	60.	Degrees F
BHD	HRIDE	BOTTOM HOLE DEPTH	3672.	Feet
SP	HRIDE	USE DIGITAL SP?	NO	
SP_OF	HRIDE	SPONTANEOUS POTENTIAL OFFSET	0.	
RMUD	HRIDE	MUD RESIST AT SURFACE (0=Air)	2.	OHMM
TRM	HRIDE	TEMPERATURE OF MUD	56.	DEGF
RRMIN	HRIDE	MINIMUM RESISTIVITY FOR MAP?	0.2	OHMM
RRMAX	HRIDE	MAXIMUM RESISTIVITY FOR MAP?	200.	OHMM
XPHLOC	XP_RAA	CROSSPLOT SELECTION FOR XPOR	XPLT	

Changed EXCELL-2000 Parameter Values at Depth: 780.000

Mnemonic	Tool	Parameter Description	Value	Units
DSN_OK	DSNT_X	DO DSNT_X CALCULATIONS?	NO	
SDL_OK	SDL_DA	DO SDL CALCULATIONS?	NO	
EVR_OK	SDL_DA	DO SDL EVR CALCULATIONS?	NO	
CAL_OK	CAL_DA	DO CALIPER CALCULATIONS?	NO	
AHVOK	CAL_DA	DO ANNULAR VOLUME CALCULATION?	NO	
MLOGOK	MIC_SD	DO MICRO-LOG CALCULATIONS?	NO	
FWSTOK	BCS	DO FWST CALCULATIONS?	NO	

COMPANY	NORTHWEST NATURAL GAS		
WELL	"NWN" 44-3-65		
FIELD	MIST		
COUNTY	COLUMBIA	STATE	OR

HALLIBURTON

QUAD COMBO
HRI/BCS/SDL/DSN

2"=100'