COMPANY: NORTHWEST NATURAL GAS RUN2

WELL: IW 14dH-23-65

FIELD: CALVIN CREEK-REICHHOLD POOL

COUNTY: COLUMBIA STATE: OREGON

Field: CALVIN CREEK-REICHHOLD PO
Location: SHL: 976.5' NORTH & 1256.3' E
Well: IW 14dH-23-65
Company: NORTHWEST NATURAL GAS

Schlumberger

ULTRA SONIC IMAGING TOOL
COMPENSATED NEUTRON
GAMMA RAY / COLLAR LOG

LOCATION

SHL: 976.5' NORTH & 1256.3' EAST
FROM THE SW CORNER
OF SEC 23

Elev.: K.B. 923 ft
G.L. 905 ft
D.F. 921.5 ft

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

API Serial No.	SECTION	TOWNSHIP	RANGE
36-009-00353	23	6N	5W

Logging Date	28-Oct-2001			
Run Number	TWO			
Depth Driller	2144 ft			
Schlumberger Depth	2140 ft			
Bottom Log Interval	2140 ft			
Top Log Interval	1400 ft			
Casing Driller Size @ Depth	8.625 in	@		@
Casing Schlumberger				
Bit Size	12.250 in			
Type Fluid In Hole	WATER BASED			
Density / Viscosity	8.9 lbm/gal			
Fluid Loss / PH				
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	28-Oct-2001	18:45		
Unit Number / Location	3152	SACRAMENTO		
Recorded By	Z.AHMED			
Witnessed By	ED VEDDER			

Run 1

MUD

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		
Density / Viscosity		
Fluid Loss / PH		
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 2

@

Run 3

@ @ @ @ @

@

Run 4

DISCLAIMER
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: CBL/VDL	OS1:
OS2: OH SERVICES	OS2:
OS3: ON TLC	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
CORRELATED TO LOG RAN BY SCHLUMBERGER ON 21-OCT-2001	
USIT/NEUTRON WAS PUSHED ON TLC, AS WIRELINE DID NOT PASS	
1580FT. A 150FT SECTION OVER LAP WAS DONE WITH RUN 1	
AND RUN 2(THIS RUN)	
TWO KNUCKLE JOINTS USED ON TOOL STRING	
GEMCO USED ON USIT CARTRIDGE	
CREW:ROCKY BECK, BRAD TOMM	

RUN 1		RUN 2	
SERVICE ORDER #:		SERVICE ORDER #:	
PROGRAM VERSION:	9C2-303	PROGRAM VERSION	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

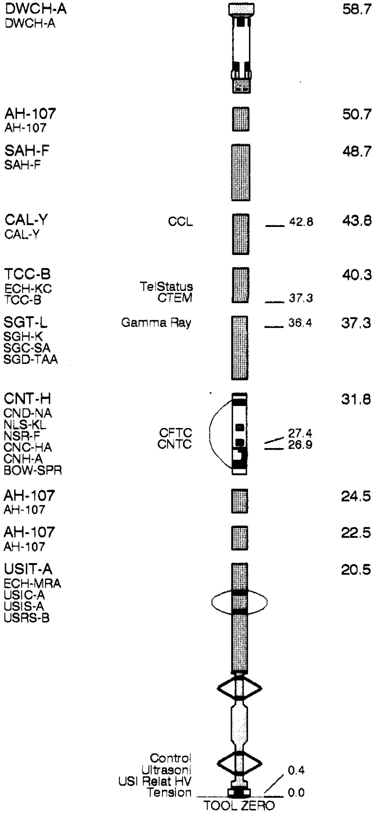
RUN 1	RUN 2

SURFACE EQUIPMENT

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

DOWNHOLE EQUIPMENT

AH-CSES AH-CSES	63.7
AH-X-OVER	59.7



MAXIMUM STRING DIAMETER 7.50 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

5" MAIN PASS

MAXIS 500 Field Log

Output DLIS Files

DEFAULT	USI_CNL_087LUP	FN:82	PRODUCER	28-Oct-2001 18:39	2143.5 FT	1421.5 FT

Indexed to Speed Corrected Depth in real-time

Speed Corrected Depth Log

OP System Version: 9C2-303

MCM

USIT-A	9C2-303	CNT-H	9C2-303
SGT-L	9C2-303	TCC-B	9C2-303
CAL-Y	9C2-303		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Accoustic impedance (ZMUD)
2140.00	187.51	1.91
2100.00	187.51	1.91
2000.00	188.53	1.91
1900.00	188.55	1.91
1800.00	188.02	1.92
1700.00	188.02	1.90
1600.00	188.57	1.91
1500.00	189.10	1.93
1430.00	188.14	1.92

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
EMXV	15 V	20 V	2139.0 18:43:55
	10 V	15 V	2130.4 18:44:21
	25 V	10 V	2119.9 18:44:51
	35 V	25 V	2115.0 18:45:04
	5 V	35 V	1889.4 19:06:24
	45 V	5 V	1889.4 19:06:28
	55 V	45 V	1514.4 19:38:34
TDL	2140.00 FT	1580.00 FT	2020.0 18:54:08

Image rotation (UCAZ) (DEG)
0 360

Azimuth of eccent. (AZEC) (DEG)
0 360

Tool/Tot. Drag From D4T to STIA

Cable Drag From D4T to STIT

Stuck Stretch (STIT)
0 (F) 50

CCL (CCLU) (----)
-20 20

Cable Speed (CS) (F/HR)
0 2000

-600.0000
-6.0000
-5.6000
-5.2000
-4.8000
-4.4000
-4.0000
-3.6000
-3.2000
-2.8000
-2.4000
-2.0000
-1.6000
-1.2000
-0.8000
-0.4000
0.0000

Amplitude of echo minus Max (AWBK) (----)

Min of Internal radius (IRMN) (IN)
4.5 3.5

Min of Internal radius (IRMN) (IN)
3.5 4.5

Micro-debonding

Rev. speed (RSAV) (RPS)
-8 -6

Maximum of Amplitude (AWMX)
0 (DB) 75

Internal radius Maximum (IRMX) (IN)
3.7 2.7

Internal radius Maximum (IRMX) (IN)
3.5 4.5

Maximum of Thickness (THMX) (IN)
0.1 0.6

Liquid

Rev. speed (RSAV)
6 (RPS) 8

Average of Amplitude (AWAV)
0 (DB) 75

Internal radius Average (IRAV) (IN)
4.5 3.5

Internal radius Average (IRAV) (IN)
3.5 4.5

Average of Thickness (THAV) (IN)
0.1 0.6

Gas or Dry MicroA

Eccent. (ECCE)
0 (IN) 0.5

0.5000
1.5000
2.5000
3.5000
8.5000

Process. flags (UFLG) (----)

Min. of Amplitude (AWMN)
0 (DB) 75

External radius Average (ERAV) (IN)
4.8 3.8

External radius Average (ERAV) (IN)
3.8 4.8

-600.0000
-0.0760
-0.0680
-0.0600
-0.0520
-0.0440
-0.0360
-0.0280
-0.0200
-0.0120
-0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

Internal radii minus Ave (IRBK) (----)

Min of Thickness (THMN) (IN)
0.1 0.6

-600.0000
-0.0760
-0.0680
-0.0600
-0.0520
-0.0440
-0.0360
-0.0280
-0.0200
-0.0120
-0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

Thickness minus Ave (THBK) (----)

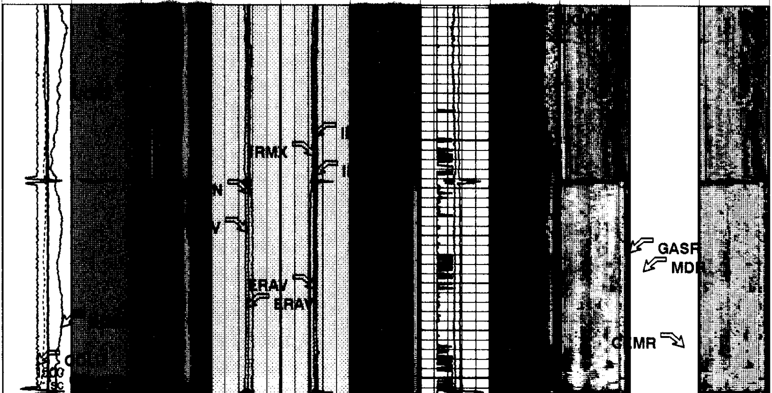
-500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

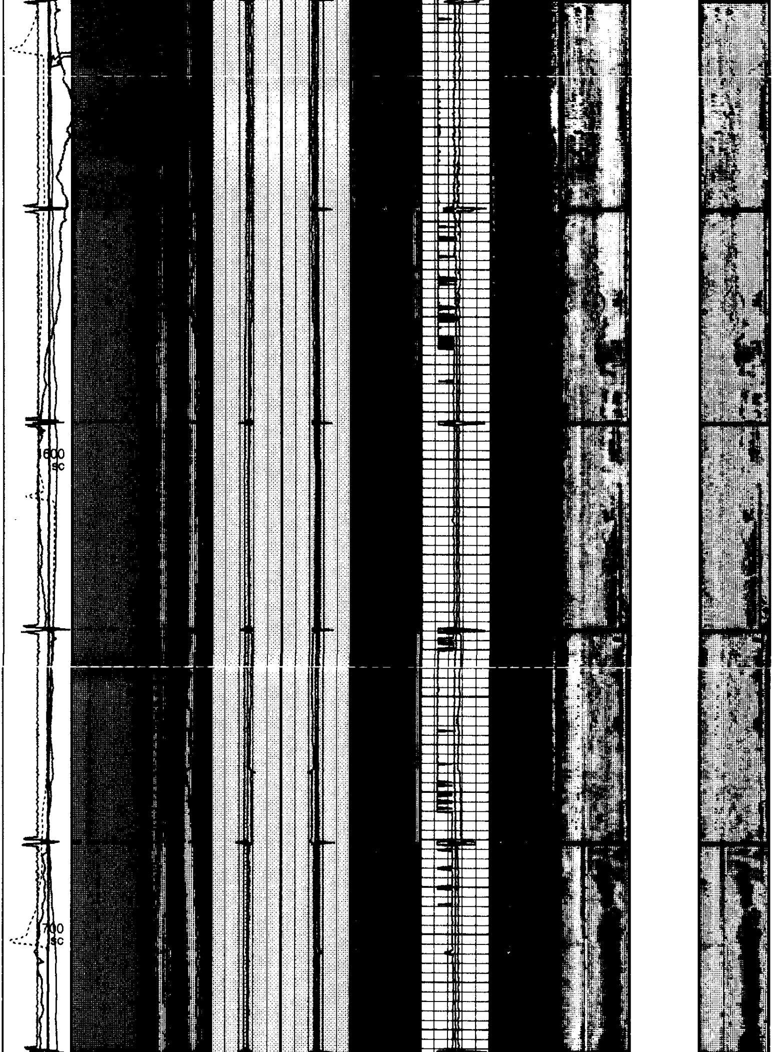
Raw Acoustic Imped. (AIBK) (----)

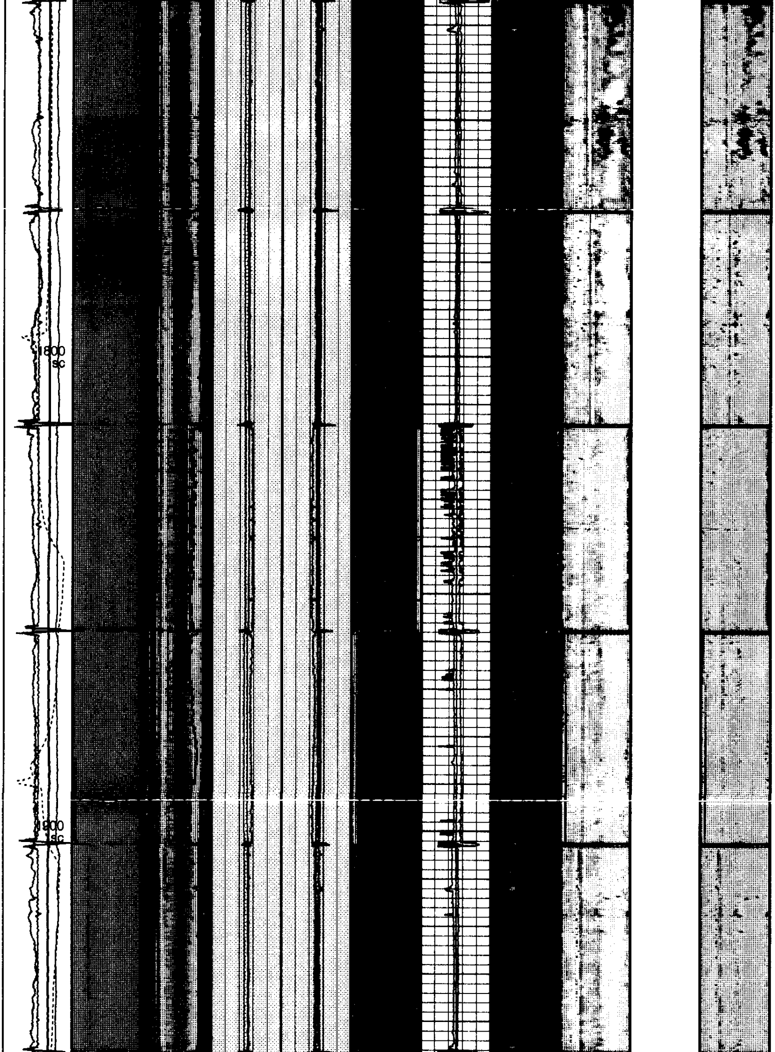
Bonded

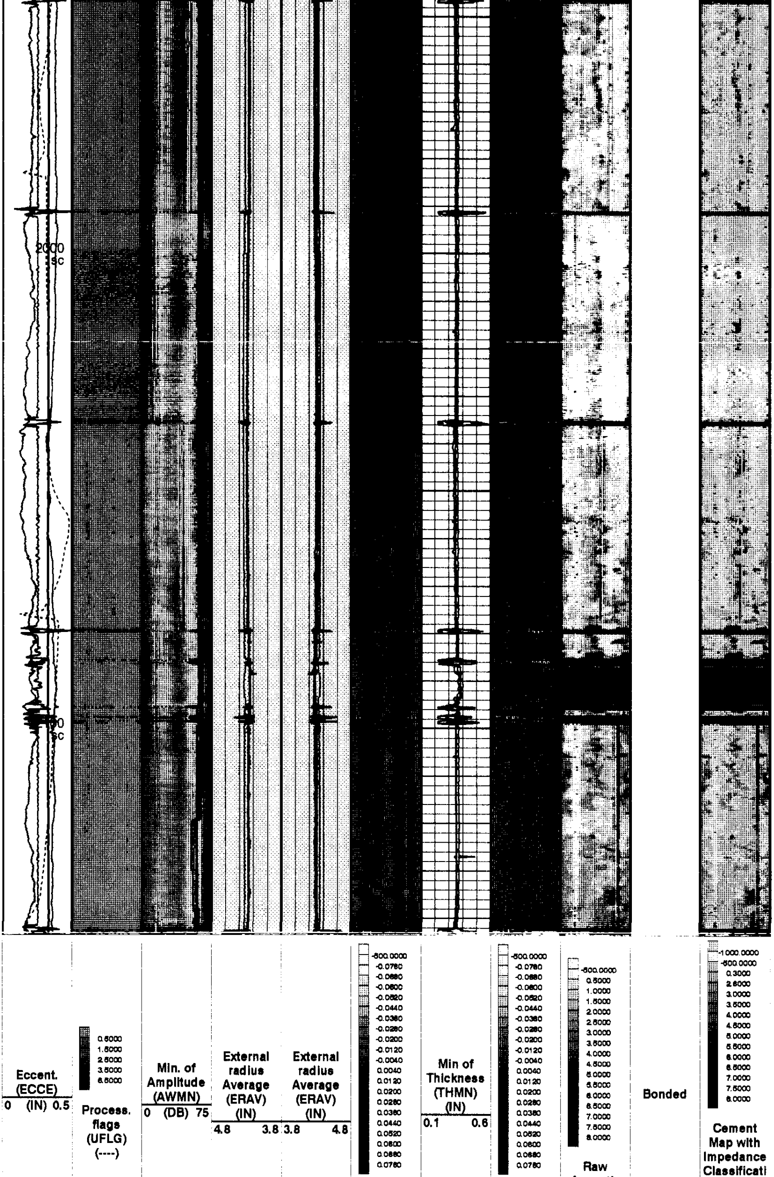
-1000.0000
-500.0000
0.3000
2.6000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

Cement Map with Impedance Classification (AI_MICRO_DEBONDING_IMAGE) (----)









				Internal radii minus Ave (IRBK) (----)		Thickness minus Ave (THBK) (----)	Acoustic Imped. (AIBK) (----)		on (AI_ MICRO_ DEBONDING_IMAGE) (----)
Rev. speed (RSAV) 6 (RPS) 8	Average of Amplitude (AWAV) 0 (DB) 75	Internal radius Average (IRAV) (IN) 4.5 3.5	Internal radius Average (IRAV) (IN) 3.5 4.5		Average of Thickness (THAV) (IN) 0.1 0.6			Gas or Dry MicroA	
Rev. speed (RSAV) (RPS) -8 -6	Maximum of Amplitude (AWMX) 0 (DB) 75	Internal radius Maximum (IRMX) (IN) 3.7 2.7	Internal radius Maximum (IRMX) (IN) 3.5 4.5		Maximum of Thickness (THMX) (IN) 0.1 0.6			Liquid	
Cable Speed (CS) (F/HR) 0 2000	-500.0000 -6.0000 -5.6000 -5.2000 -4.8000 -4.4000 -4.0000 -3.6000 -3.2000 -2.8000 -2.4000 -2.0000 -1.6000 -1.2000 -0.8000 -0.4000 0.6000	Min of Internal radius (IRMN) (IN) 4.5 3.5	Min of Internal radius (IRMN) (IN) 3.5 4.5					Micro-debonding	
	Amplitude of echo minus Max (AWBK) (----)								
CCL (CCLU) (----) -20 20									
Stuck Stretch (STIT) 0 (F) 50									
Cable Drag From D4T to STIT									
Tool/Tot. Drag From D4T to STIA									
Azimuth of eccent. (AZEC) (DEG) 0 360									
Image rotation (UCAZ) (DEG) 0 360									

Format: USI_Composite Vertical Scale: 5" per 100' Graphics File Created: 28-Oct-2001 18:39

OP System Version: 9C2-303

MCM

USIT-A	9C2-303	CNT-H	9C2-303
SGT-L	9C2-303	TCC-B	9C2-303
CAL-Y	9C2-303		

COMPUTATION FLAGS LABELLING

(0 - 1.5)	UFLG 1	UTIM error
(1.5 - 2.5)	UFLG 2	Pulse origin not detected
(2.5 - 3.5)	UFLG 3	WINLEN error
(3.5 - 6.5)	UFLG 4 UFLG 5 UFLG 6	CASING THICKNESS error
(6.5 - 10)	UFLG 7 UFLG 8 UFLG 9	LOOP PROCESSING error

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Parameters

DLIS Name	Description	Value	
AGMN	Minimum gain of cartridge	-4	DB
AGMX	Maximum gain of cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing outer diameter	8.625	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing internal diameter	7.921	IN
CWEI	Casing Weight	32.00	LB/F
DFVL	Default fluid velocity	190	US/F
DOT	Diameter of Transducer sensor	2.874	IN
EMXV	Value for EMEX voltage	20	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	OFF	
LBFR	Trigger for MAXIS First Reading Label	STI	
MW	Mud weight	8.9	LB/G
RCOD	Reference calibrator Outer diameter	7	IN
RCSO	Reference calibrator standoff	1.1811	IN
RCTH	Reference calibrator thickness	0.2952	IN
SDNV	Acoustic Impedance Std Deviation Vertical Range	5	
SDTHOR	Acoustic Impedance Std Deviation Horizontal Threshold	0.5	
SDTVER	Acoustic Impedance Std Deviation Vertical Threshold	0.3	
STKT	STI Stuck Threshold	2.5	FT
TCUB	T^3 Processing level	Vax_Loop	
TDD	Total Depth - Driller	2144.00	FT
TDL	Total Depth - Logger	1580.00	FT
THDH	Maximum search thickness (percentage of nominal)	140	
THDL	Minimum search thickness (percentage of nominal)	60	
THNO	Nominal thickness of casing	0.352	IN
UMAO	USIT Measurement Angular Offset	-10	DEG
USTO	Ultrasonic Time Offset	-2	US
USUB	USIT Sub identifier	Sub_7_inch	
UWKM	Current working mode	10DEG_1_5IN_LF	
VCAS	Velocity of sound in casing	51.4	US/F
WLEN	T^3 processing length	21.1081	US
ZCAS	Acoustical Impedance of casing	46.2537	MRAY
ZINI	Initial z value	-1	MRAY
ZMUD	Acoustical Impedance of mud	1.9	MRAY
ZTCM	Acoustical Impedance threshold for Cement	2.6	MRAY
ZTGS	Acoustical Impedance threshold for Gas	0.3	MRAY

Speed Corrected Depth Log

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT	USI_CNL_087LUP	FN:82	PRODUCER	28-Oct-2001 18:39

Schlumberger

CORRELATION PASS

MAXIS 500 Field Log

Output DLIS Files

DEFAULT USI_CNL_087LUP FN:82 PRODUCER 28-Oct-2001 18:39 2143.5 FT 1421.5 FT

Indexed to Speed Corrected Depth in real-time

Speed Corrected Depth Log

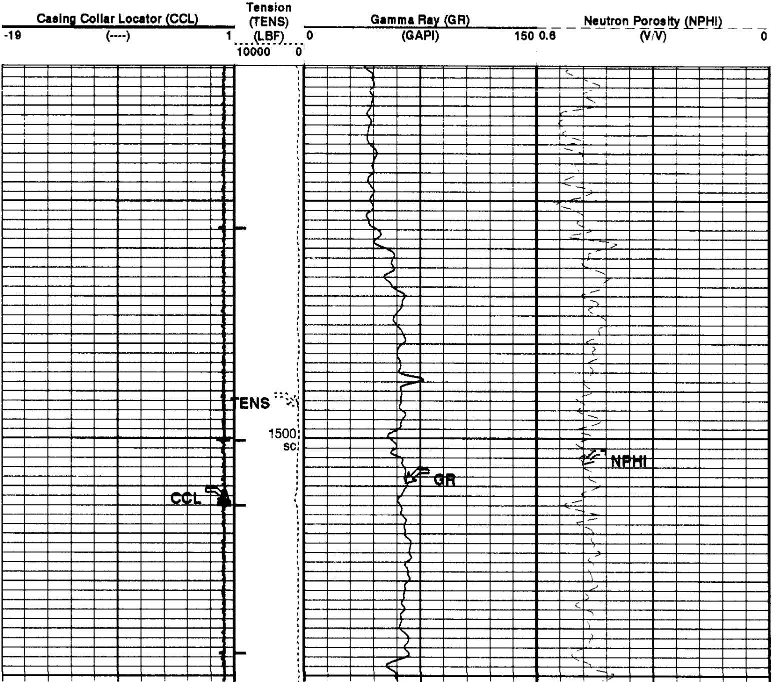
OP System Version: 9C2-303

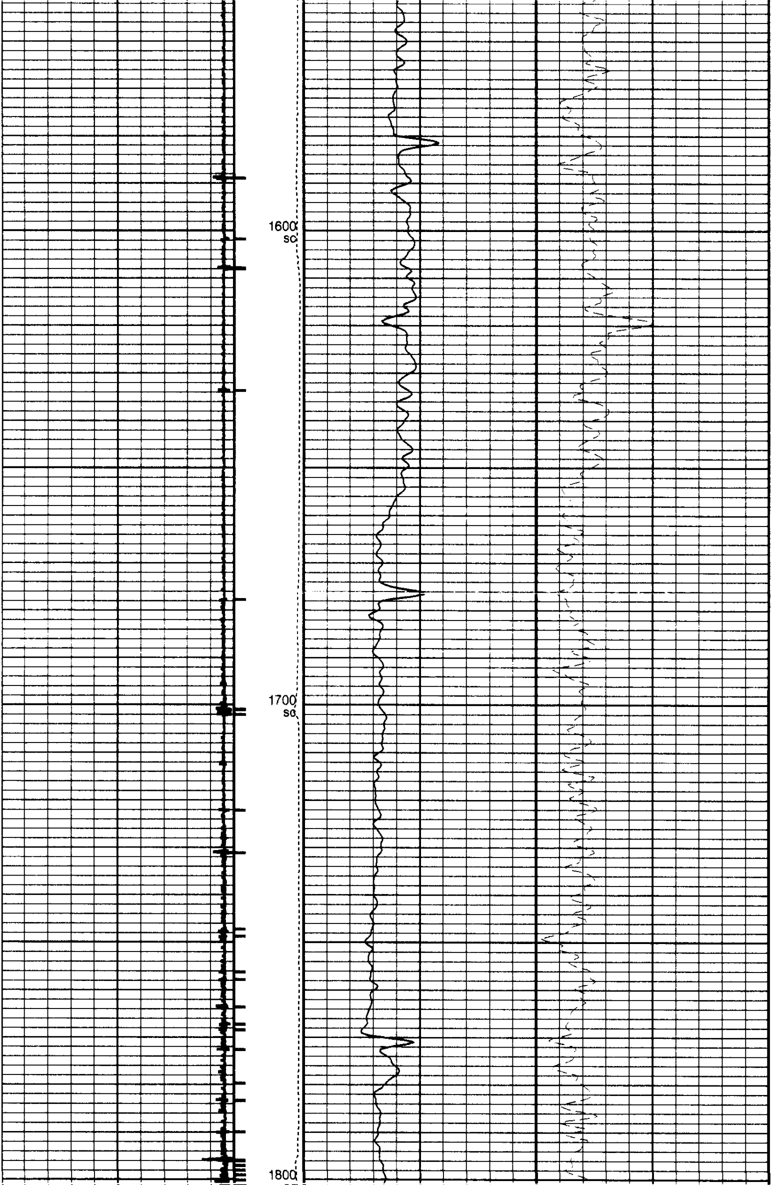
MCM

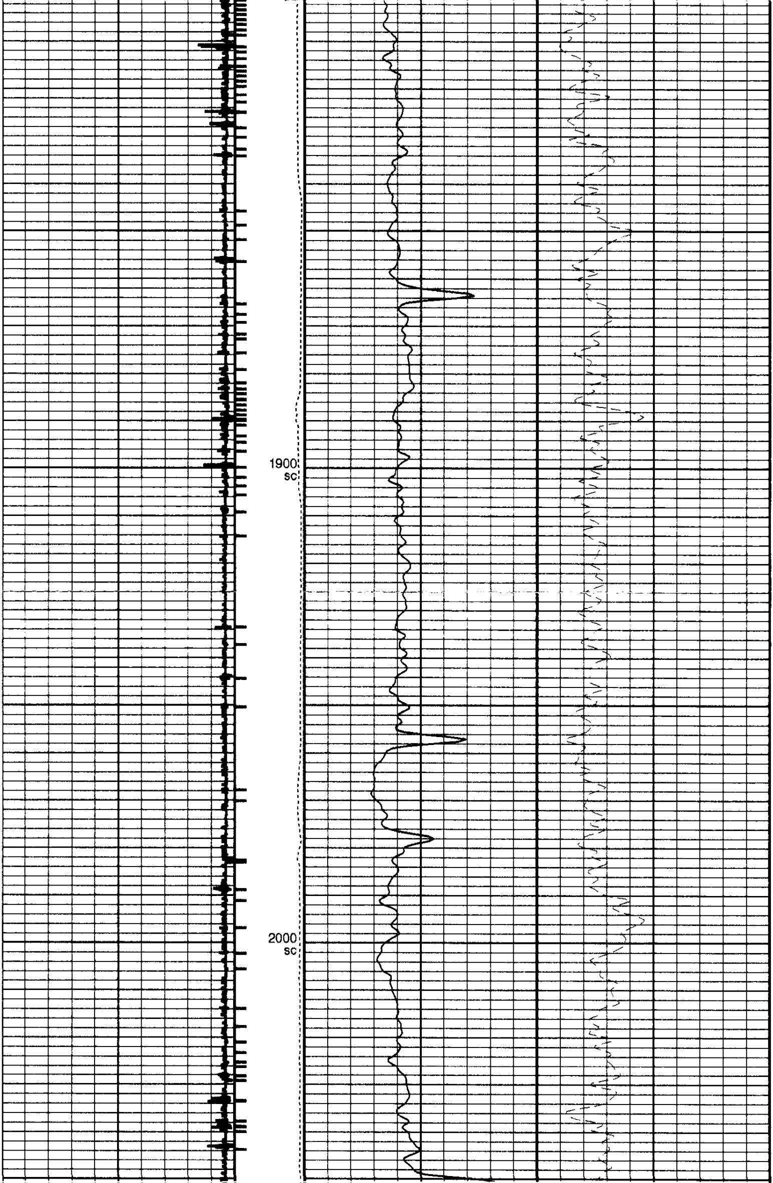
USIT-A	9C2-303	CNT-H	9C2-303
SGT-L	9C2-303	TCC-B	9C2-303
CAL-Y	9C2-303		

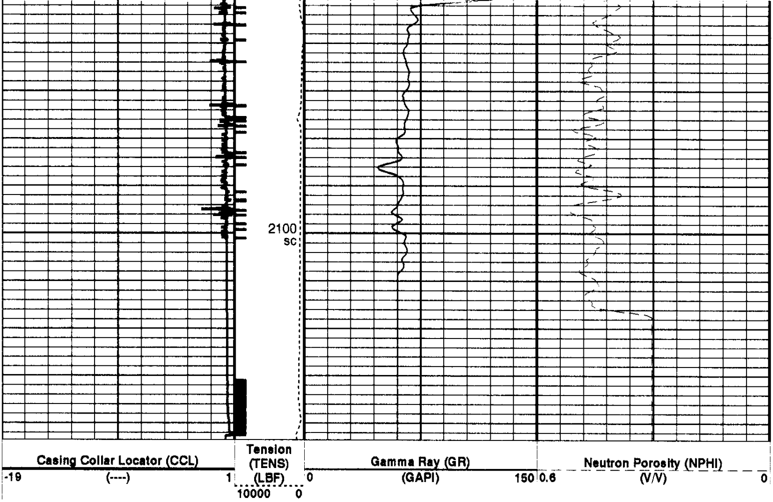
PIP SUMMARY

⊢ Casing Collars









PIP SUMMARY

⊢ Casing Collars

Parameters

DLIS Name	Description	Value	
BHS	Borehole Status	CASED	
BS	Bit Size	12.250	IN
CCLD	CCL reset delay	12	IN
CCLT	CCL Detection Level	0.3	V
GCSE	Generalized Caliper Selection	BS	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	

Format: CORRELATION Vertical Scale: 5" per 100' Graphics File Created: 28-Oct-2001 18:39

OP System Version: 9C2-303

MCM

USIT-A	9C2-303	CNT-H	9C2-303
SGT-L	9C2-303	TCC-B	9C2-303
CAL-Y	9C2-303		

Speed Corrected Depth Log

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT USI_CNL_087LUP FN:82 PRODUCER 28-Oct-2001 18:39

COMPANY:	NORTHWEST NATURAL GAS RUN2	BOTTOM LOG INTERVAL	2140 ft
		SCHLUMBERGER DEPTH	2140 ft
WELL:	IW 14dH-23-65	DEPTH DRILLER	2144 ft
FIELD:	CALVIN CREEK-REICHHOLD POOL	KELLY BUSHING	923 ft
COUNTY:	COLUMBIA	DRILL FLOOR	921.5 ft
STATE:	OREGON	GROUND LEVEL	905 ft

Schlumberger

**ULTRA SONIC IMAGING TOOL
COMPENSATED NEUTRON
GAMMA RAY / COLLAR LOG**