#504

Schlumberger

DUAL INDUCTION
GAMMA RAY / SP

COUNTY COLUMBIA
FIELD MIST GAS STORAGE
LOCATION N 03-03-15 E 2280.65 & S 86-56-45 E
WELL IW 23a-22-65
COMPANY NORTHWEST NATURAL GAS

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WELL IW 23a-22-65
FIELD MIST GAS STORAGE
COUNTY COLUMBIA **STATE** OREGON

LOCATION N 03-03-15 E 2280.65' & S 86-56-45 E
1923.76' FROM THE SW COR. OF SEC 22

API SERIAL NO.	**SECT.**	**TWP.**	**RANGE**
36-009-003~~24~~ 324	22	~~T1~~ 6N	~~R6~~ 5W

Other Services:
SONIC
INDUCTION
FMS
DENSITY
NEUTRON
GAMMA RAY

Permanent Datum GROUND LEVEL **Elev.** 580.5 F
Log Measured From KELLY BUSHING 16.0 F **above Perm. Datum**
Drilling Measured From KELLY BUSHING

Elev.: K.B. 596.5 F
D.F.
G.L. 580.5 F

Date		27-SEPT-1997		03-OCT-1997	
Run No.		ONE		TWO	
Depth Driller		1402.0 F		2299.0 F	
Depth Logger (Schl.)		1399.0 F		2292.0 F	
Btm. Log Interval		1389.0 F		2282.0 F	
Top Log Interval		0.0 F		1350.0 F	
Casing-Driller		13 3/8" @ 359.0 F	@		@
Casing-Logger		355.0 F			
Bit Size		@	@		@
Type Fluid in Hole		GEL/CYPAN		KCL/XCD	
Dens.	**Visc.**	9.50 LB/G	60.0 S	8.60 LB/G	36.0 S
pH	**Fld. Loss**	8.0		9.0	
Source of Sample		FLOWLINE		FLOWLINE	
Rm @ Meas. Temp.		2.310 OHMM @ 69.0 DEGF		.328 OHMM @ 72.0 DEGF	
Rmf @ Meas. Temp.		3.720 OHMM @ 66.0 DEGF		.382 OHMM @ 69.0 DEGF	
Rmc @ Meas. Temp.		3.550 OHMM @ 66.0 DEGF		.662 OHMM @ 69.0 DEGF	
Source: Rmf	**Rmc**	CELL	CELL	CELL	CELL
Rm @ BHT		1.611 OHMM @ 102. DEGF		.247 OHMM @ 98.0 DEGF	
TIME	**Circulation Ended**	08:30 9-27-97		19:30 10-3-97	
TIME	**Logger on Bottom**	SEE LOG		SEE LOG	
Max. Rec. Temp.		102. DEGF		98.0 DEGF	
Equip.	**Location**	8303	BAKERSFIELD	8303	BAKERSFIELD
Recorded By		GREG PERRY		GREG PERRY	
Witnessed By		MR. MEYER / MR. THOMAS		MR. MEYER / MR. THOMAS	

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 willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations 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.	ONE	TWO
Service Order No.		
Drilling Fluid Level	0.0 F	0.0 F
Salinity		
Rmf @ BHT	2.491 OHMM @ 102. DEGF	.276 OHMM @ 98.0 DEGF
Rmc @ BHT	2.378 OHMM @ 102. DEGF	.479 OHMM @ 98.0 DEGF
Logging Speed	1800.0 F/HR	1800.0 F/HR
EQUIPMENT DATA		
Tool Number 1	DIS 151	DIS 151
Tool Number 2	DIC 159	DIC 159
Tool Number 3	SLS WA	SLS WA
Tool Number 4	SLC UA	SLC UA
Tool Number 5	SGCSA 483	SGCSA 483
Tool Number 6	TCCB 1289	TCCB 1289
Tool Number 7		
Tool Number 8		
Tool Number 9		
Tool Number 10		
Tool Number 11		
Tool Number 12		

REMARKS:

RAN INDUCTION AND SONIC IN COMBO.
CENTRALIZERS RAN ON INDUCTION TOOL AND SONIC TOOL.
RAN REPEAT AT CASING DEPTH DUE TO PULLING TIGHT AT BOTTOM.

CREW: DAN LEE.
THANKS FOR USING SCHLUMBERGER!!!!!!

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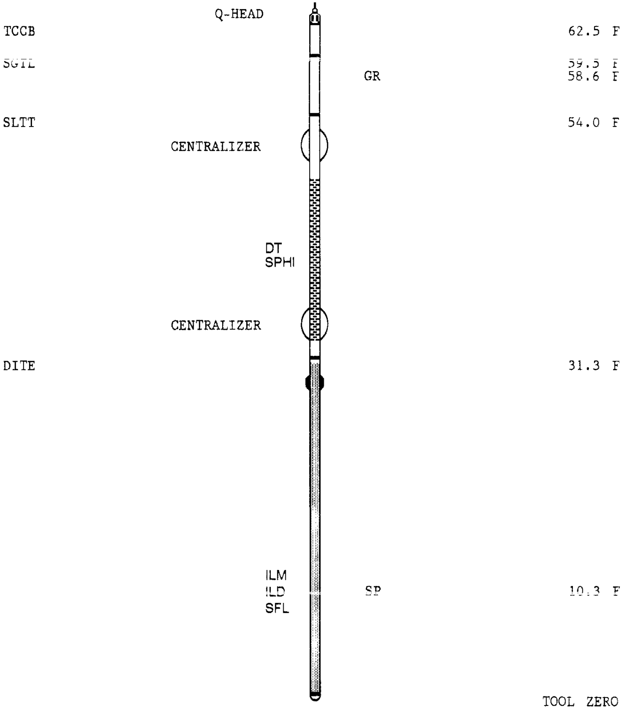
LOGGING TOOL STRING SKETCH



TOTAL TOOL STRING LENGTH IS 64.7 F.
TOTAL TOOL STRING WEIGHT IS 1032. LB IN AIR.

MAIN PASS

ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Transit Time: .256533 S FROM 2292.00 F TO 355.000 F

TENS(LBF)

10000. 0.0

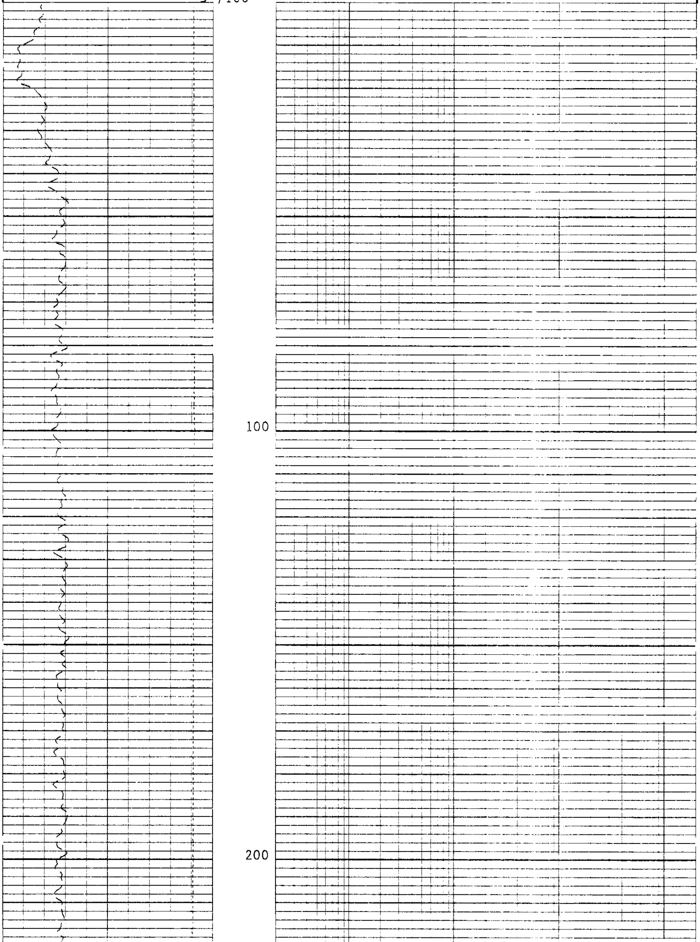
GR(GAPI)

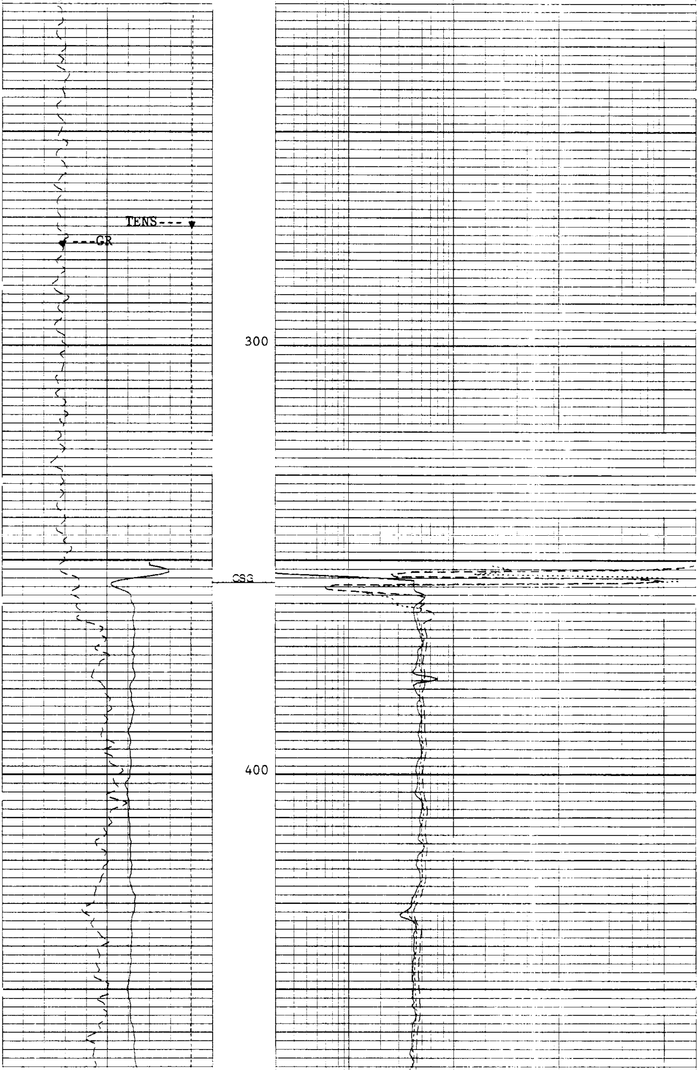
0.0 150.00

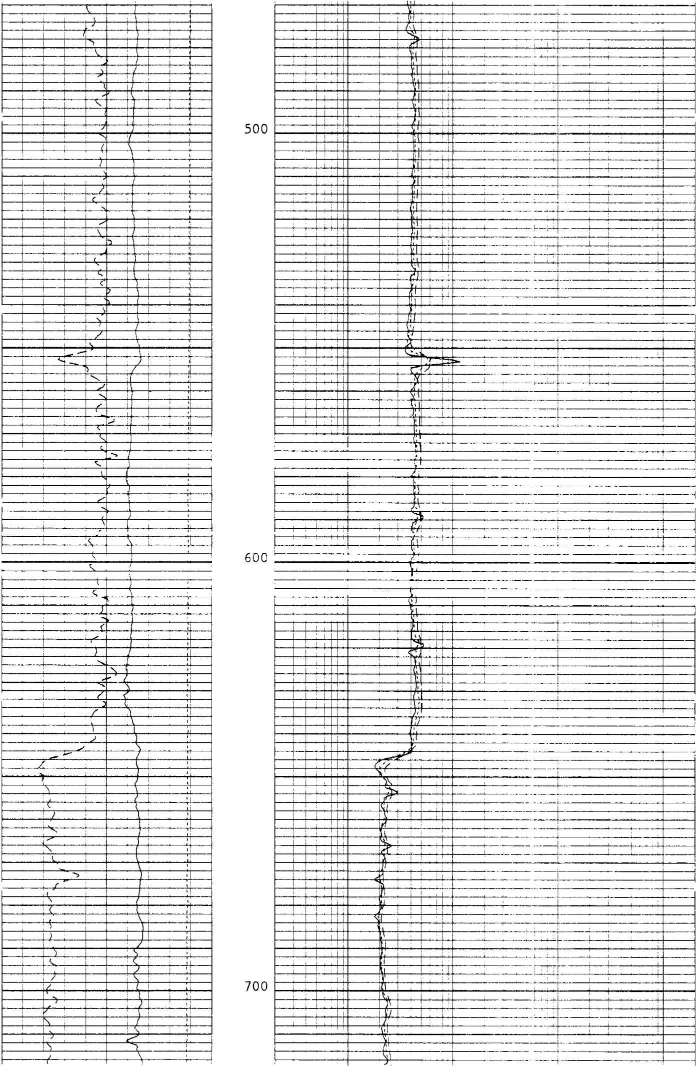
CP 44.2 FILE 59 04-OCT-1997 10:59

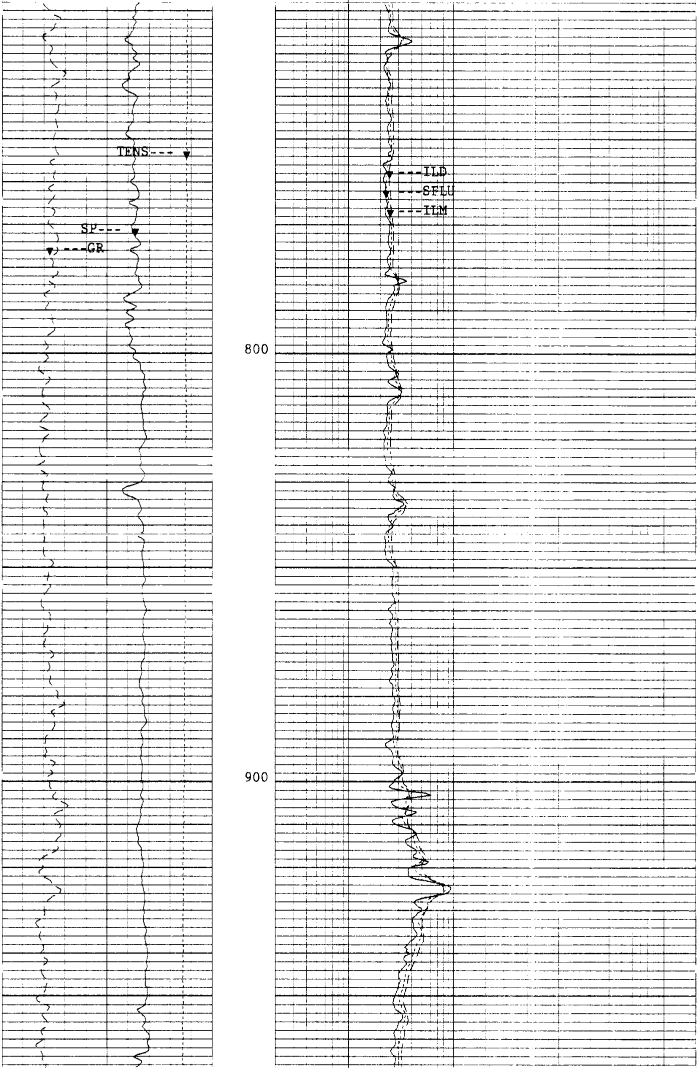
INPUT FILE(S) CREATION DATE
58 04-OCT-1997 10:21

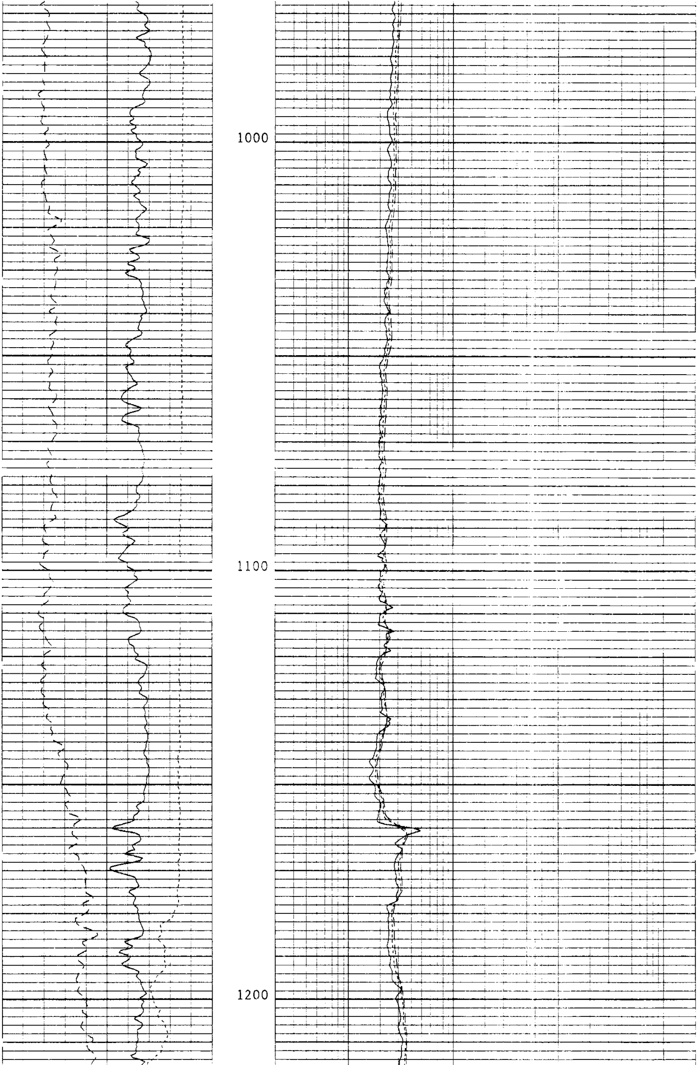
5"/100'

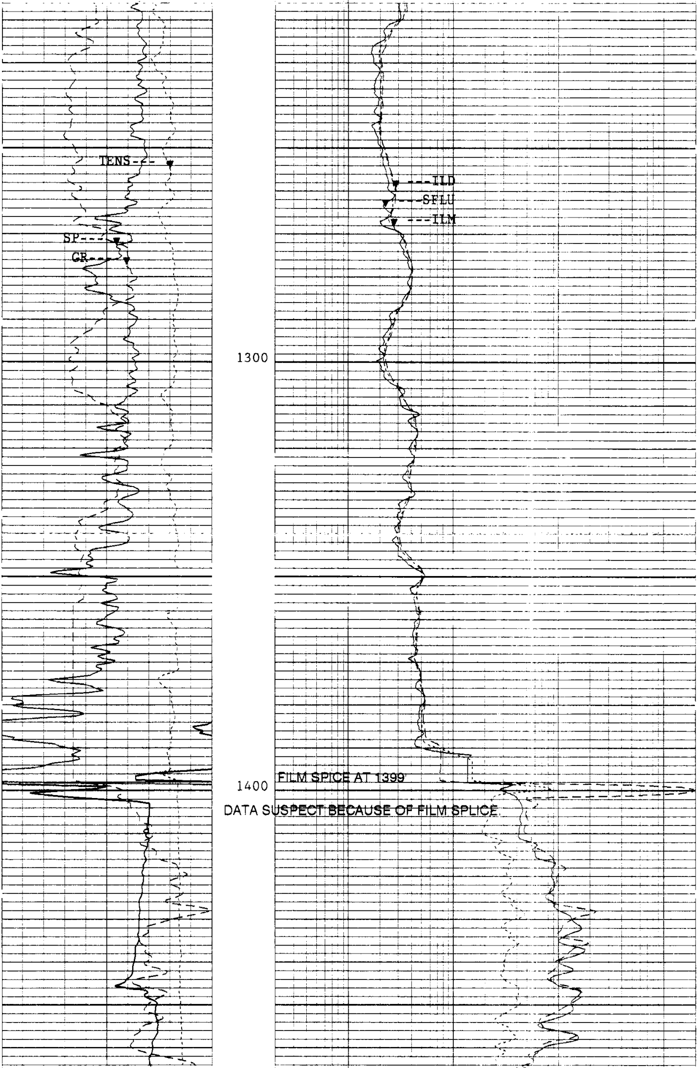






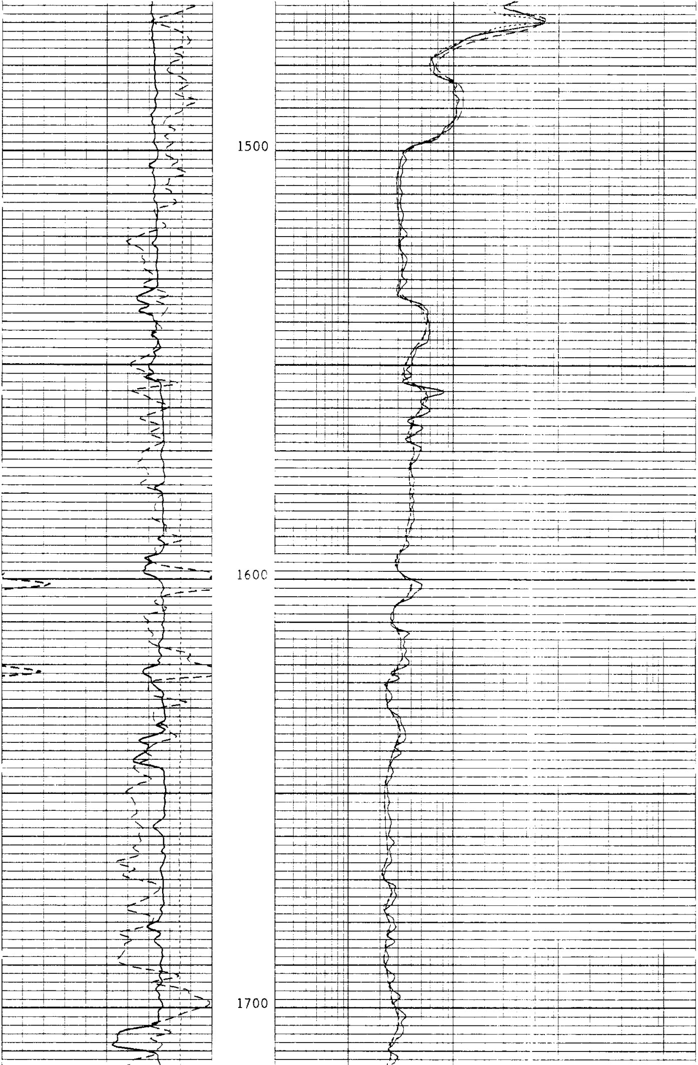


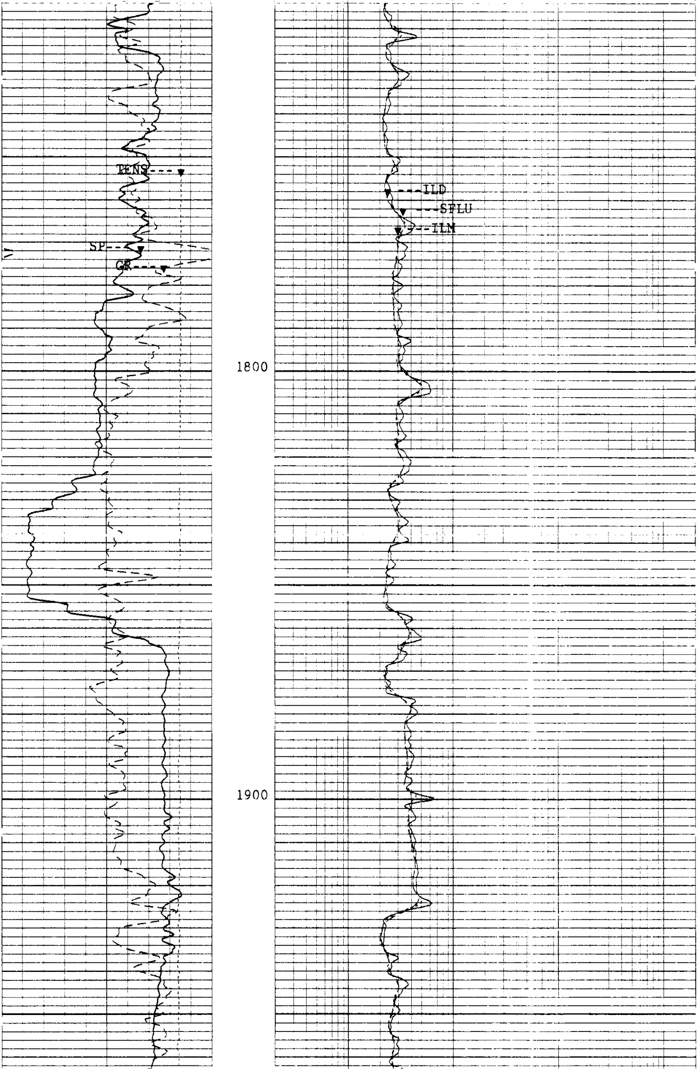


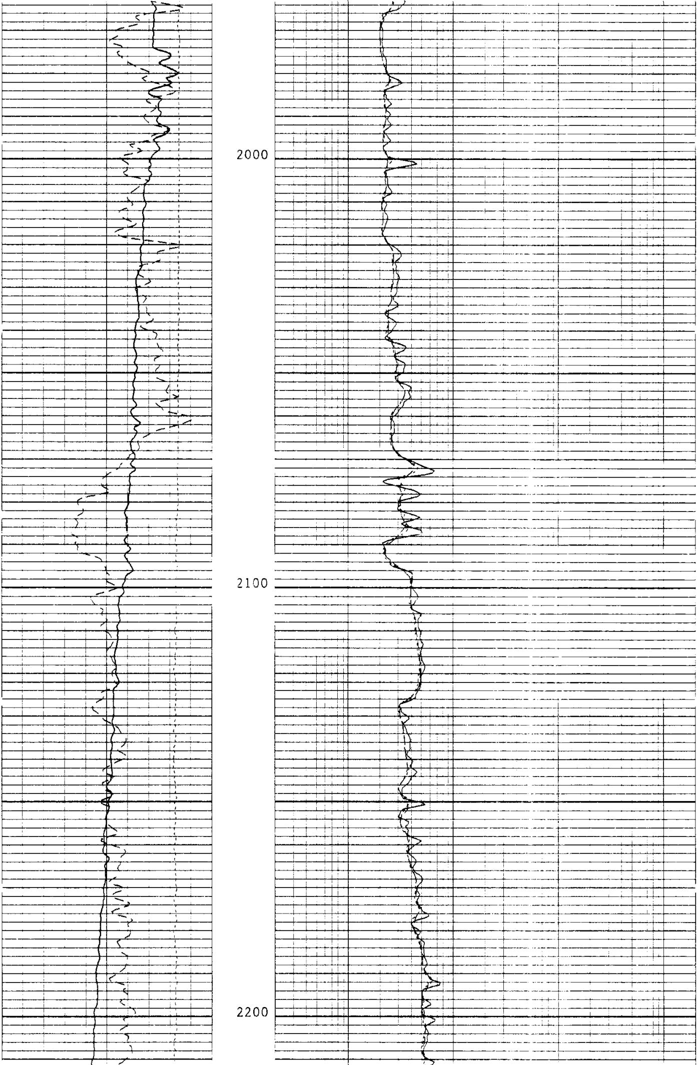


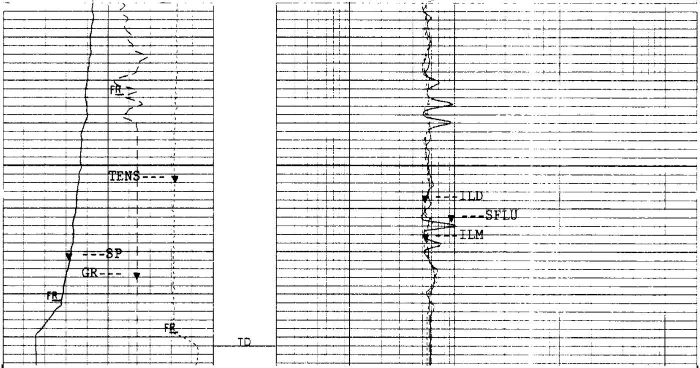
FILM SPICE AT 1399

DATA SUSPECT BECAUSE OF FILM SPLICE









5"/100'

CP 44.2   FILE   59   04-OCT-1997 10:52

INPUT FILE(S)   CREATION DATE
58   04-OCT-1997 10:21

TENS(LBF)		ILD(OHMM)	
10000.	0.0	.20000	2000.0
SP(MV)		SFLU(OHMM)	
-20.00	80.000	.20000	2000.0
GR(GAPI)		ILM(OHMM)	
0.0	150.00	.20000	2000.0

SENSOR MEASURE POINT TO TOOL ZERO

GR	58.6	FEET	SP	10.3	FEET
SRAT	37.1	FEET	AMPL	39.6	FEET
TT1	38.6	FEET	CBL	39.6	FEET
TT3	35.8	FEET	TT2	39.6	FEET
T0	39.6	FEET	TT4	34.8	FEET
TTSL	39.6	FEET	TT	39.6	FEET
IXM	6.0	FEET	CBSL	39.6	FEET
IXD	9.5	FEET	IRM	6.0	FEET
SPA	10.3	FEET	ITEM	6.5	FEET
SFC	6.5	FEET	SFB	6.5	FEET
IRD	9.5	FEET	SFV	6.5	FEET
CCL	65.3	FEET	TENS	3.0	FEET
NOIS	3.0	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
SMB	DISA		VDLR	2IN	
TOCA	DISA		RATE	15	HZ
DG	AUTO		DETE	E2	
NMSG	180	US	CBLG	35	US
AMPL	2		CBL	2	
WFM	1		SS	FAST	
TOD	DISA		SLC	UA	
DTF	189.000	US/F	DTM	56.0000	US/F
CDTS	100.000		SPFS	R-H	
PP	NORM		DO	0.0	F
WMUD	8.60000	LB/G	TD	2292.00	F

IFRS	20	KHZ	SBR	1.00000	OHMM
MXE2	30.2658	MM/M	DXE2	121.315	MM/M
MRE2	17.4291	MM/M	DRE2	13.9156	MM/M
MPH2	-.893001	DEG	DPH2	.0599204	DEG
MGF2	1.02163		DGF2	.993476	
DESP	DISA		SFLE	ALLO	
DCAS	-50000.0	F	ITEN	ALLO	
DEVI	32.0000	DEG	DSES	H412	
IPRO	STAN		IPHA	NORM	
DWCO	512		DSIN	5	US
DDEL	200	US	NCJT	GSRY	
GTSE	TEMP		SHT	75.0000	DEGF
BHT	98.0000	DEGF	SPAE	DISA	
BS	7.87500	IN	BHS	OPEN	

REPEAT SECTION

ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Transit Time: .0225089 S FROM 2292.00 F TO 2095.50 F

CHANGED PARAMETERS

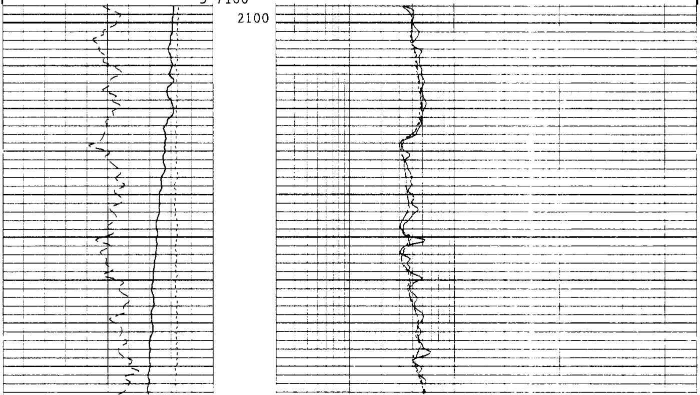
NAME	VALUE	UNIT	DEPTH (F)	NAME	VALUE	UNIT	DEPTH (F)
WMUD	8.60000	LB/G	2290.5	TD	2292.00	F	2229.5

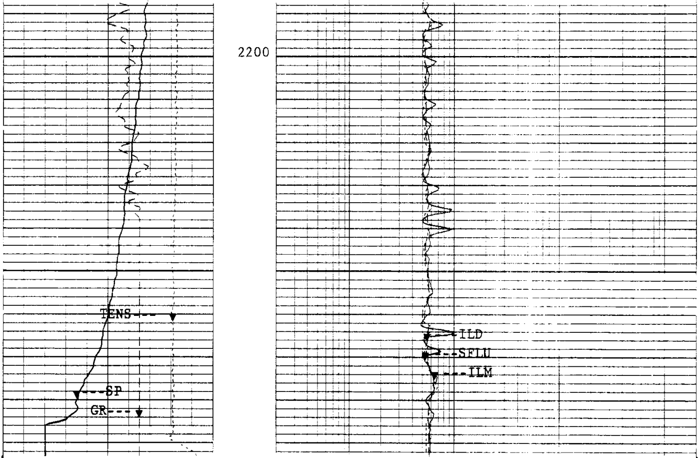
TENS(LBF)
10000. 0.0
SP(MV)
-50.00 50.000
GR(GAPI)
0.0 150.00

ILD(OHMM)
20000 2000.0
SFLU(OHMM)
20000 2000.0
ILM(OHMM)
20000 2000.0

CP 44.2 FILE 49 03-OCT-1997 21:58 (UP)

5"/100'





5"/100'

CP 44.2 FILE 49 03-OCT-1997 21:53 (UP)

TENS(LBF)	10000	0.0	ILD(OHMM)	20000	2000.0
SP(MV)	-50.00	50.000	SFLU(OHMM)	20000	2000.0
GR(GAPI)	0.0	150.00	ILM(OHMM)	.20000	2000.0

SENSOR MEASURE POINT TO TOOL ZERO

DITE 10.3 FEET
CALY 65.3 FEET
SLTT 39.6 FEET
SGTL 58.6 FEET
DTT 3.0 FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
SMB	DISA		VDLR	2IN	
TOCA	DISA		RATE	15	HZ
DG	AUTO		DETE	E2	
NMSG	180	US	CBLG	35	US
AMPL	2		CBL	2	
WFM	1		SS	FAST	
TOD	DISA		SLC	UA	
DTF	189.000	US/F	DTM	56.0000	US/F
CDTS	100.000		SPFS	R-H	
WMUD	9.50000	LB/G	TD	32768.0	F
IFRS	20	KHZ	SBR	1.00000	OHMM
MXE2	30.2658	MM/M	DXE2	121.315	MM/M
MRE2	17.4291	MM/M	DRE2	13.9156	MM/M
MPH2	-.893001	DEG	DPH2	.0599204	DEG
MGF2	1.02163		DGF2	.993476	
DESP	DISA		SFLE	ALLO	
DCAS	-50000.0	F	ITEN	ALLO	
DEVI	32.0000	DEG	DSES	H412	
IPRO	STAN		IPHA	NORM	
DWCO	512		DSIN	5	US
DDEL	200	US	NCJT	GSRY	
GTSE	TEMP		SHT	75.0000	DEGF
BHT	102.000	DEGF	SPAE	DISA	
BS	7.87500	IN	BHS	OPEN	

CALIBRATIONS

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                BEFORE SURVEY CALIBRATION Summary


   Performed:    03-OCT-1997 21:49
   Program File: TOH    (Version    44.2    95/07/25  95/07/25)


 SGTL            Detector Calibration Summary

             MEASURED
           BKGD     JIG          CALIBRATED          UNITS
    GR      35      192             165              GAPI

 Back: 29-AUG-1997 10:04   Jig: 29-AUG-1997 10:08  Comp: 29-AUG-1997 10:08


 DITE            Electronics Calibration Summary

 Sonde SN#: 151
 Cartridge SN#: 159
 Induction Freq: 20  KHz

 Induction Electronics:

       Offset   Valid Range     Gain  Valid Range     Phase   Valid Range
       (MM/M )    (MM/M )       (--)      (---)       (DEG.)    (DEG.)

   IRD    7.9 -125. => 125.     .988  0.0   => 0.0
   IXD   20.4 -125. => 125.     .996  0.0   => 0.0      8.44 -15.00 => 15.00
   IRM   25.9 -225. => 225.     .999  0.0   => 0.0
   IXM     .2 -225. => 225.     .959  0.0   => 0.0      7.96 -15.00 => 15.00

 SFL Electronics:

         Offset  Valid Range    Units      Gain   Valid Range

   SFV     .4   -15.0 => 15.0    MV         .98   0.0   => 0.0
   SFC    -.0     -.6 =>   .6    MA         .98   0.0   => 0.0

 Plus Measurement performed at: 03-OCT-1997 21:48

 Shop cals used were performed: 29-AUG-1997 11:39

    CP 44.2           FILE     0       03-OCT-1997 21:49
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COMPANY	NORTHWEST NATURAL GAS			**SCHL.**	**FR**	1389.0 F
				SCHL.	**TD**	1399.0 F
WELL	IW 23a-22-65			**DRLR.**	**TD**	1402.0 F
				Elev:	**KB**	596.5 F
FIELD	MIST GAS STORAGE				**DF**	
COUNTY	COLUMBIA	**STATE**	OREGON		**GL**	580.5 F

Schlumberger

DUAL INDUCTION
GAMMA RAY / SP