#504

Schlumberger

BHC SONIC LOG
GAMMA RAY

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

COMPANY NORTHWEST NATURAL GAS

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			**Other Services:** SONIC INDUCTION FMS DENSITY NEUTRON GAMMA RAY
API SERIAL NO. 36-009-00304 324	**SECT.** 22	**TWP.** T1	**RANGE** R6	

Permanent Datum	GROUND LEVEL	**Elev.**	580.5 F		**Elev.: K.B.** 596.5 F
Log Measured From	KELLY BUSHING	16.0 F	**above Perm. Datum**		**D.F.**
Drilling Measured From	KELLY BUSHING				**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 wilful 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:

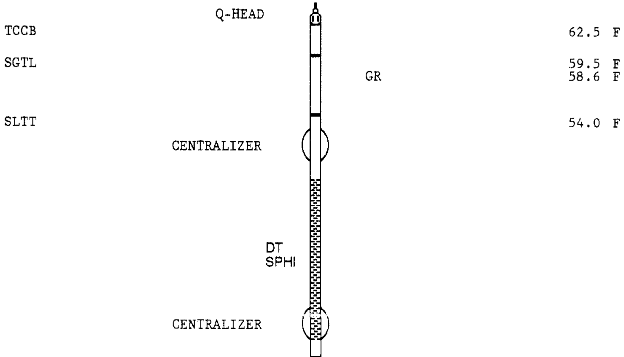
RAN INDUCTION AND SONIC IN COMBO.
CENTRALIZERS RAN ON INDUCTION TOOL AND
RAN REPEAT AT CASING DEPTH DUE TO PULLIN

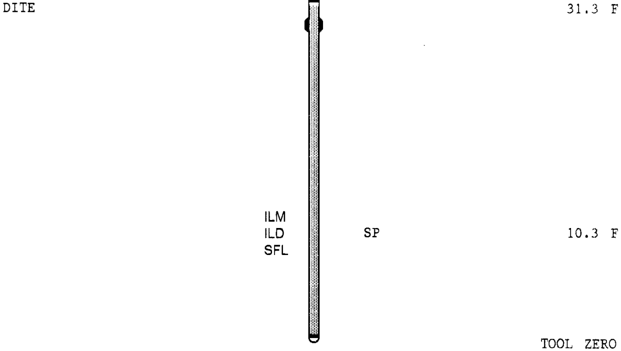
CREW: DAN LEE.
THANKS FOR USING SCHLUMBERGER!!!!!!!

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!!!!!!!

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

EVENT MARK SUMMARY:

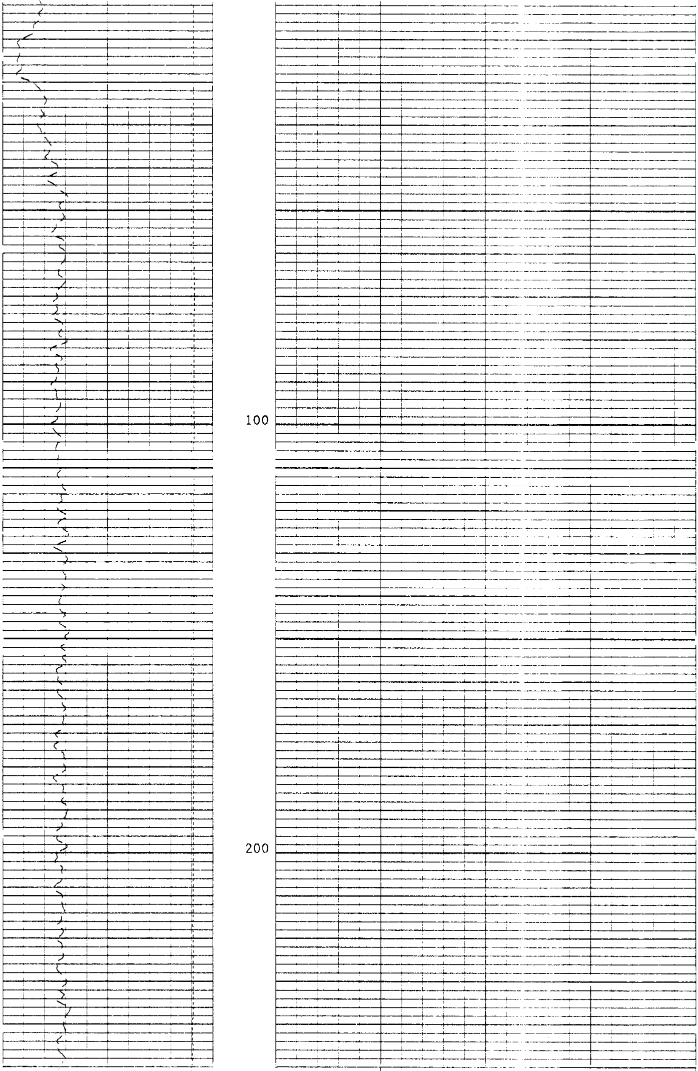
OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
Integrated Transit Time	.00100000 S	RIGHT EDGE

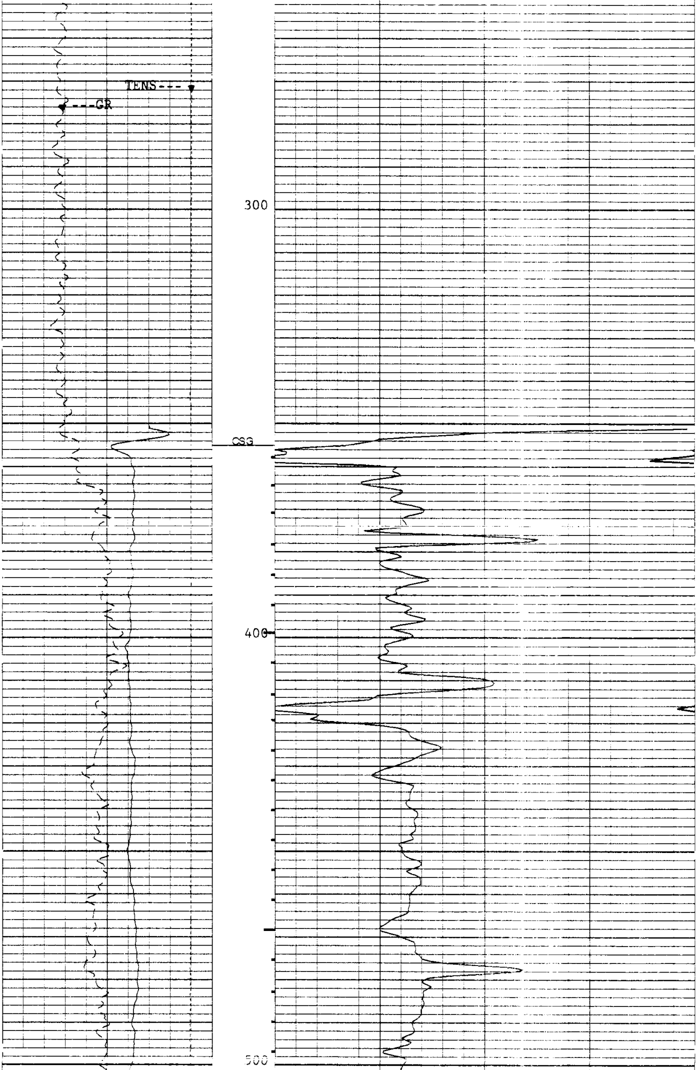
TENS(LBF)
10000. 0.0
GR(GAPI)
0.0 150.00

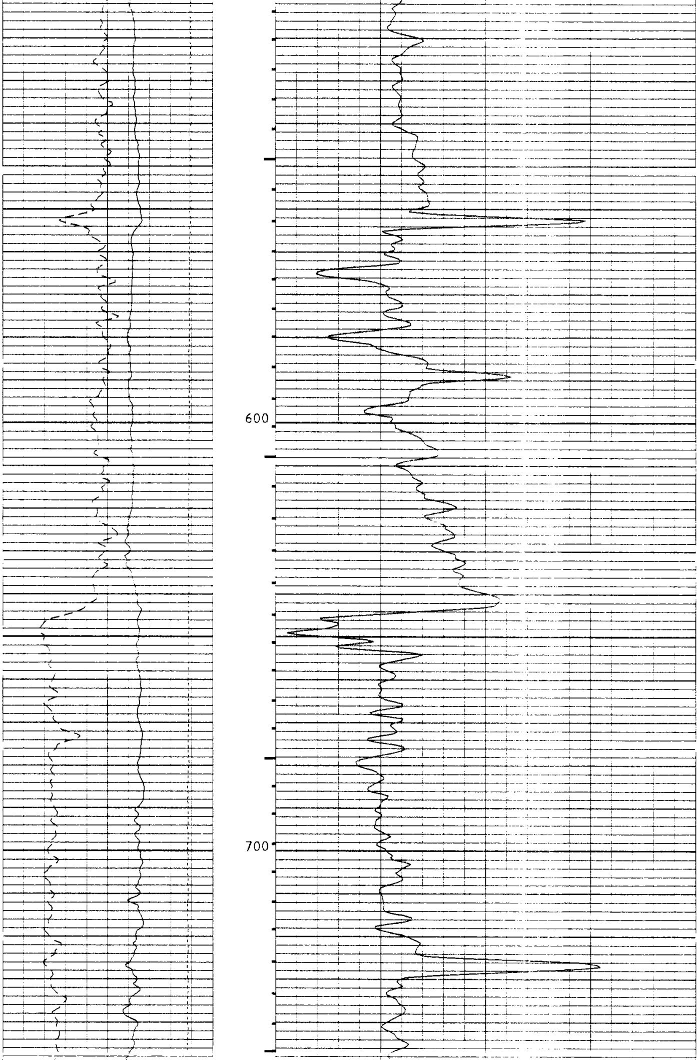
CP 44.2 FILE 59 04-OCT-1997 10:59

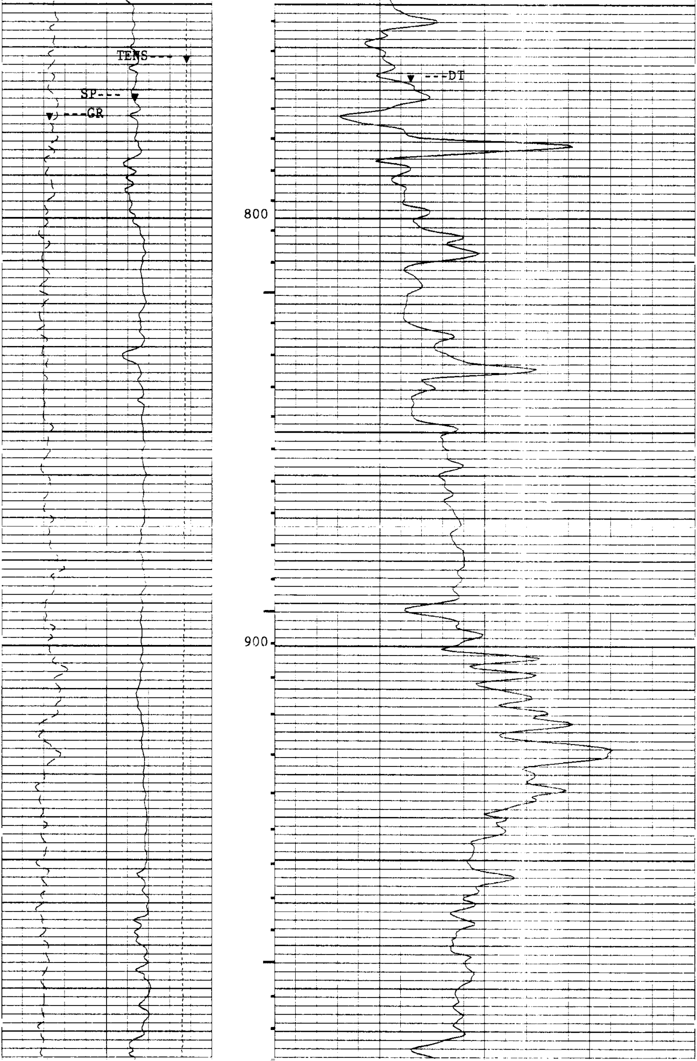
INPUT FILE(S) CREATION DATE
58 04-OCT-1997 10:21

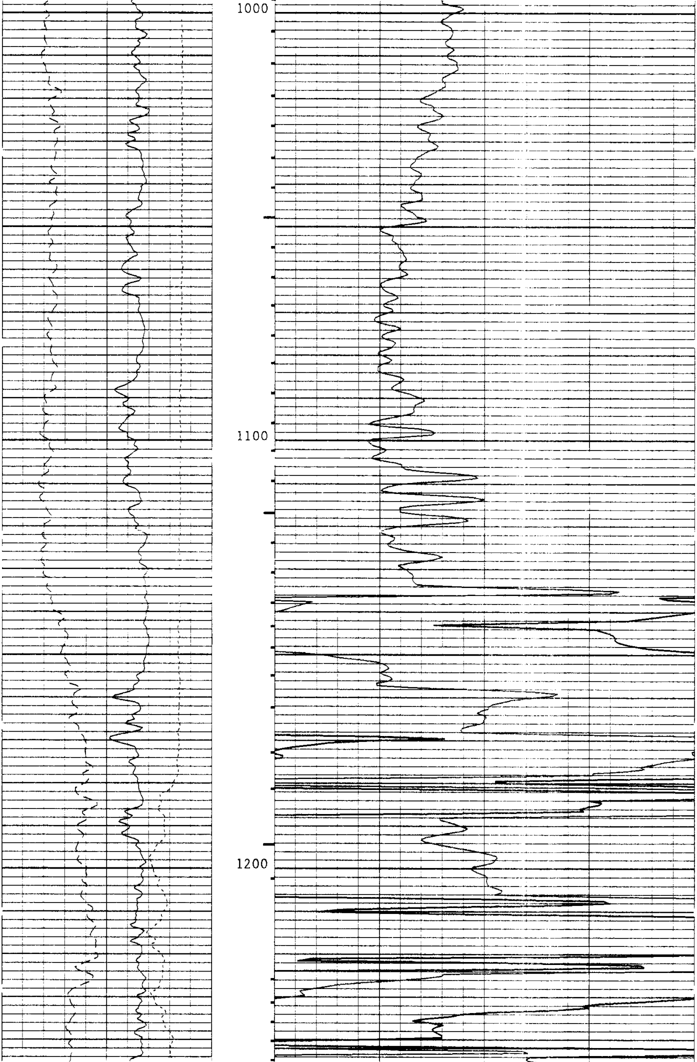
5"/100'

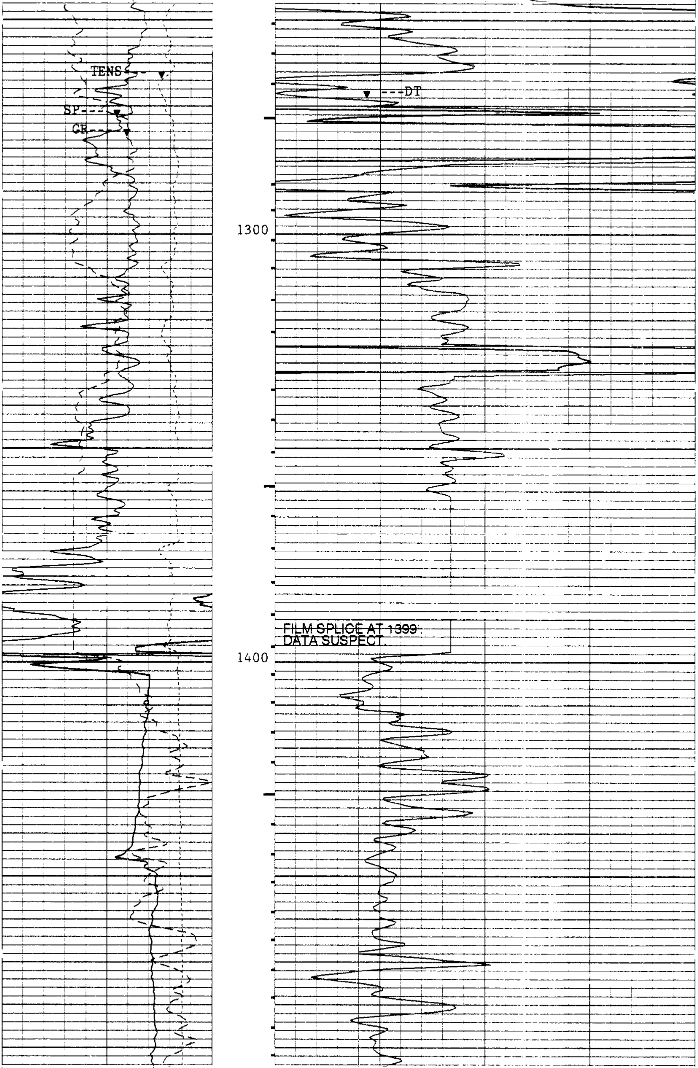




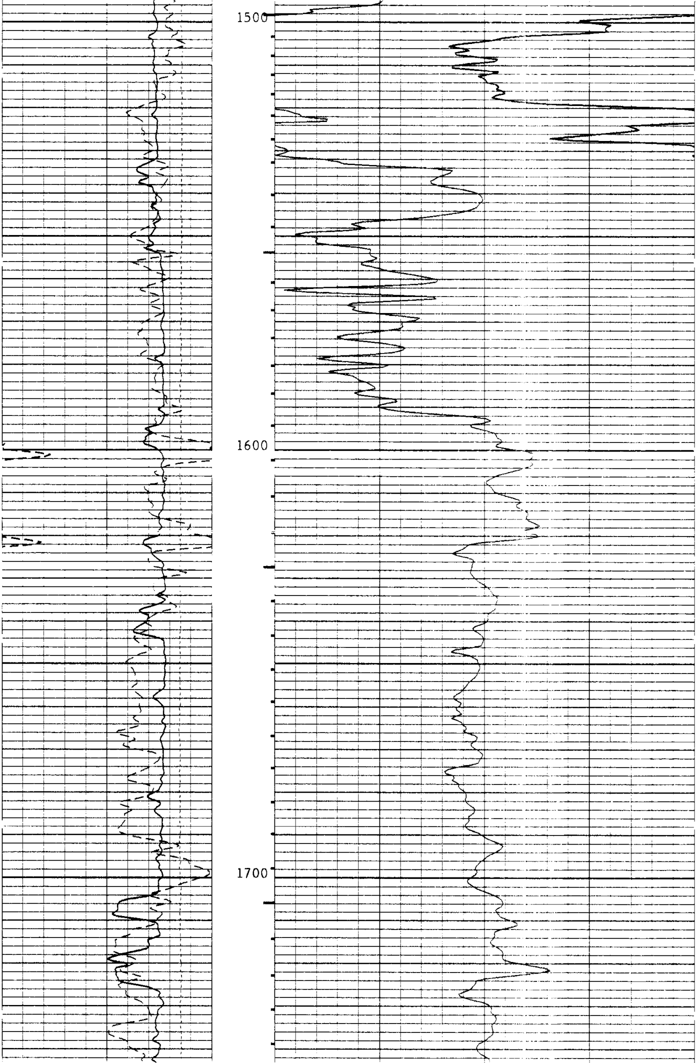


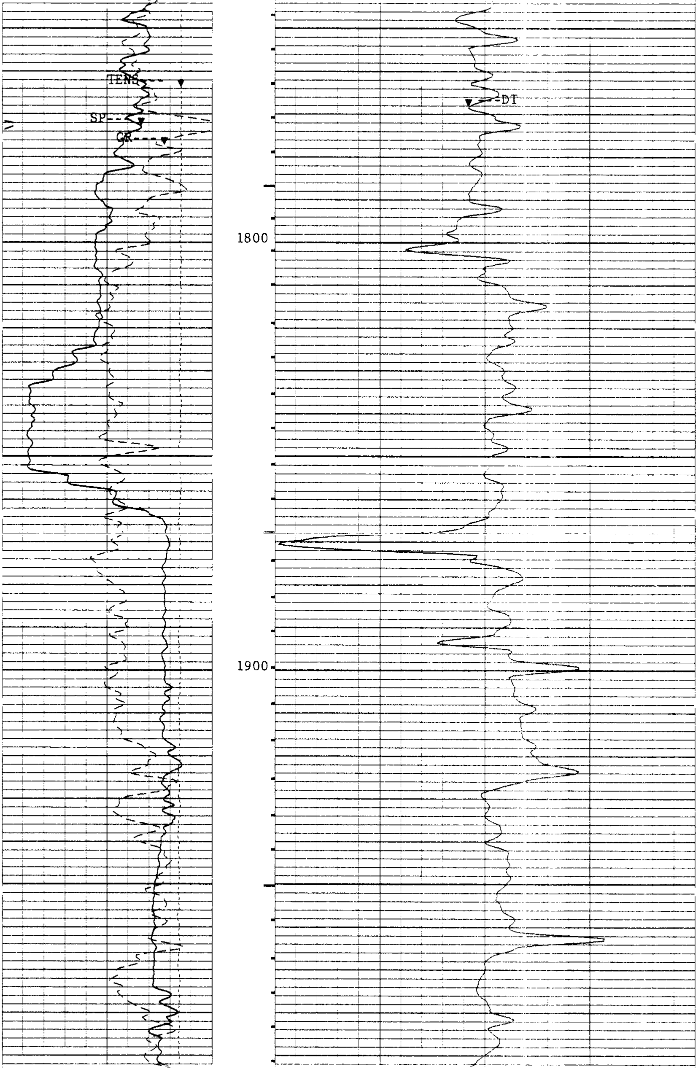


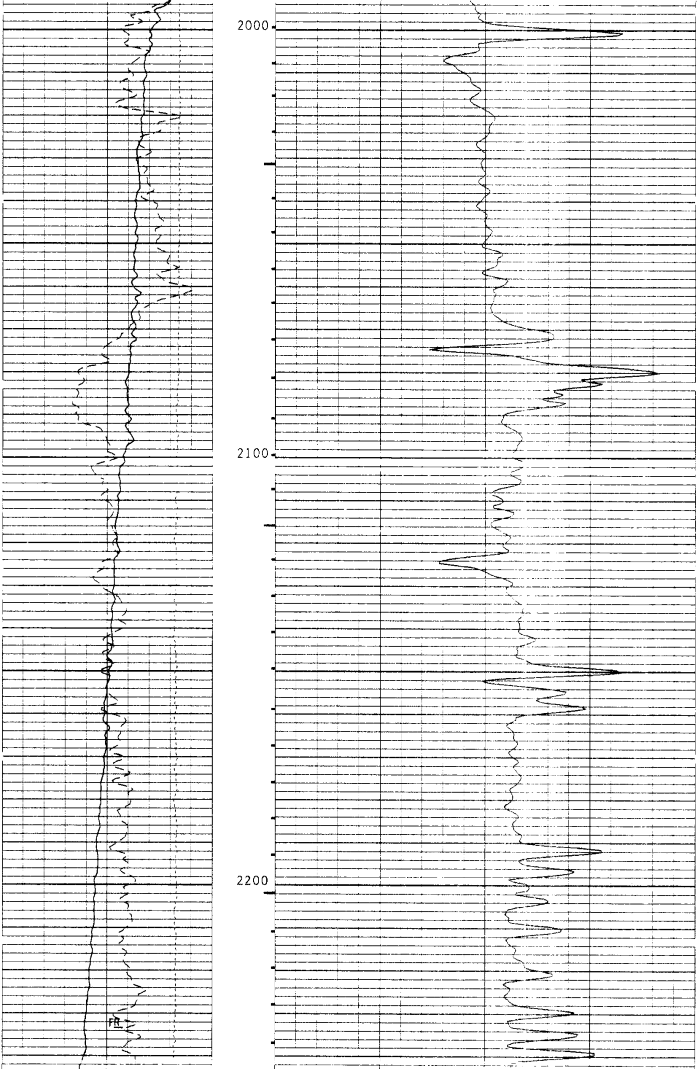


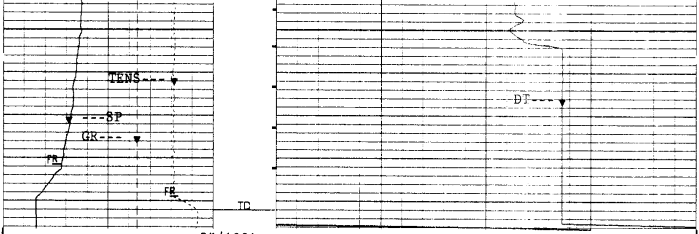


FILM SPLICE AT 1399'.
DATA SUSPECT.









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)
10000.   0.0
SP(MV)
-20.00   80.000
GR(GAPI)
0.0   150.00

DT(US/F)
175.00   75.000

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
TO	39.6	FEET	TT4	34.8	FEET
TISL	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

EVENT MARK SUMMARY:

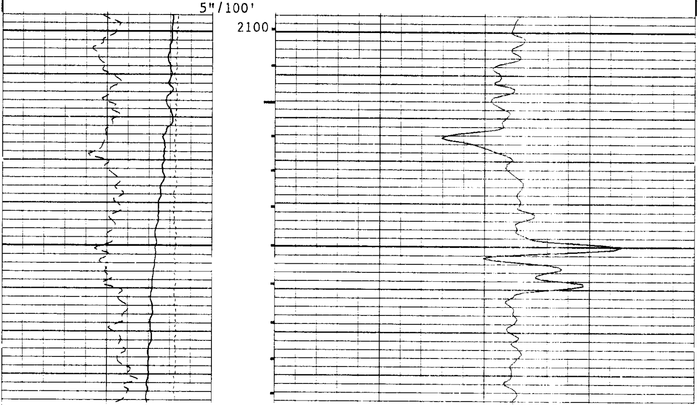
OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
Integrated Transit Time	.00100000 S	RIGHT EDGE

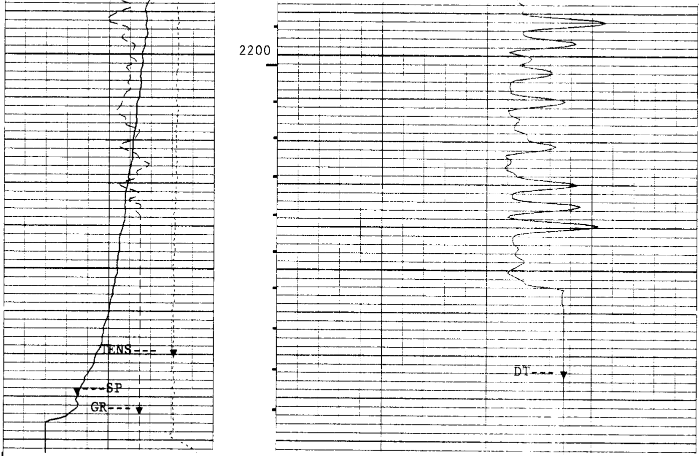
CHANGED PARAMETERS

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
DT(US/F)	175.00	75.000

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





5"/100'

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

TENS(LBF)
10000 0.0
SP(VV)
-50.00 50.000
GR(GAPI)
0.0 150.00
DT(US/F)
175.00 75.000

SENSOR MEASURE POINT TO TOOL ZERO

DITE	10.3	FEET	SGTL	58.6	FEET
CALY	65.3	FEET	DTT	3.0	FEET
SLTT	39.6	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
FIELD	MIST GAS STORAGE			Elev:	KB	596.5 F
					DF	
COUNTY	COLUMBIA	**STATE**	OREGON		GL	580.5 F

Schlumberger

BHC SONIC LOG

GAMMA RAY