#504

Schlumberger

FORMATION MICROSCANNER 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

API SERIAL NO.	SECT.	TWP.	RANGE
36-009-00304	22	T1	R6

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	8 5/8" @ 1395.0 F	@	
Casing-Logger	355.0 F	1394.0 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			
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		
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			
Max. Rec. Temp.	102. DEGF		98.0 DEGF	
Equip. | Location	8303	BAKERSFIELD		
Recorded By	GREG PERRY			
Witnessed By	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.

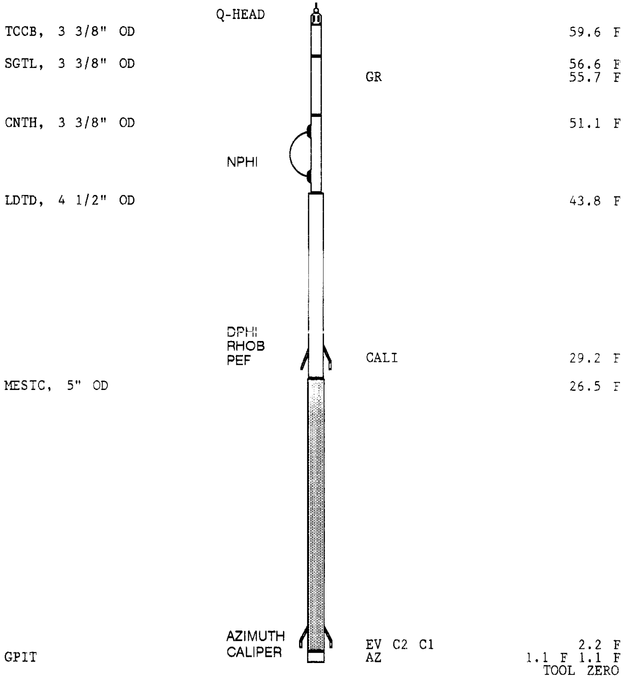
Run No.	ONE	TWO
Service Order No.		
Drilling Fluid Level	0.0 F	
Salinity		
Rmf @ BHT	2.491 OHMM @ 102. DEGF	.276 OHMM @ 98.0 DEGF
Rmc @ BHT	2.378 OHMM @ 102. DEGF	.479 OHMM @ 98.0 DEGF
Logging Speed	1800.0 F/HR	
EQUIPMENT DATA		
Tool Number 1	DIS 151	
Tool Number 2	DIC 159	
Tool Number 3	SLS WA	
Tool Number 4	SLC UA	
Tool Number 5	SGCSA 483	
Tool Number 6	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. RAN FMS LDT CNL IN COMBO.
CENTRALIZERS RAN ON INDUCTION TOOL AND SONIC TOOL.
RAN REPEAT AT CASING DEPTH DUE TO PULLING TIGHT AT BOTTOM. RAN REPEAT AT CLIENTS REQUEST.

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

LOGGING TOOL STRING SKETCH



TOTAL TOOL STRING LENGTH IS 61.6 F.
TOTAL TOOL STRING WEIGHT IS 1115. LB IN AIR.

MAIN PASS

FILES SPLICED	SPLICE DEPTH
55 TO 46	1398.0 F

AZIM PRESENTATION DISALLOWED WHEN DEVI IS LESS THAN .500000 DEG

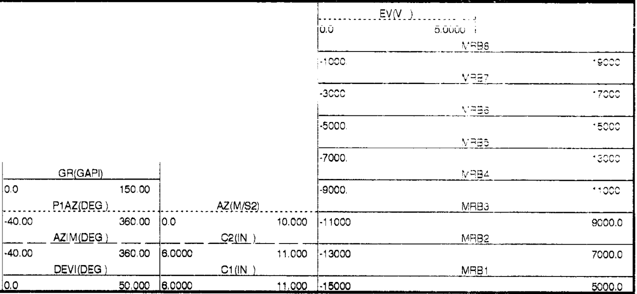
SPEED CORRECTION NOT APPLIED

ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume: 322.273 F3 FROM 2292.00 F TO 355.000 F
Integrated Cement Volume: 174.361 F3 FROM 2292.00 F TO 355.000 F
(ASSUMING 5.50000 IN O.D. CASING)

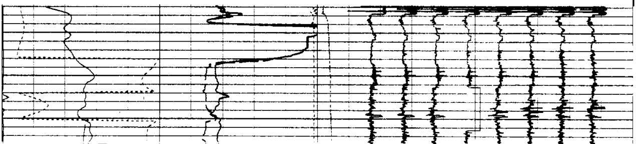
EVENT MARK SUMMARY:

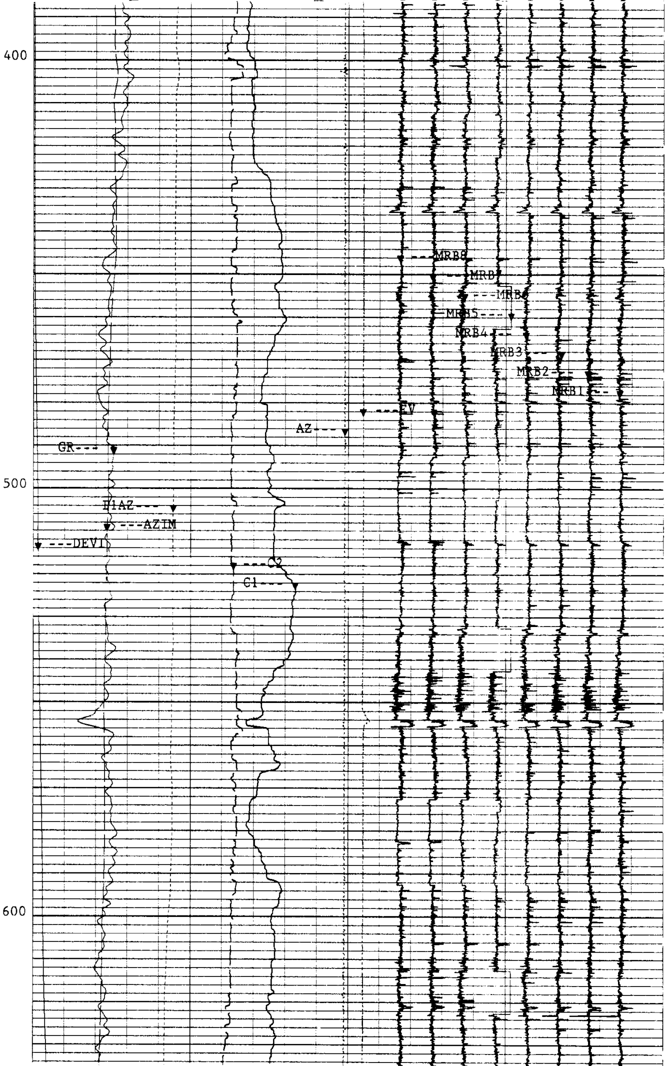
OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
Integrated Hole Volume	10.0000 F3	LEFT EDGE
Integrated Cement Volume	10.0000 F3	RIGHT EDGE

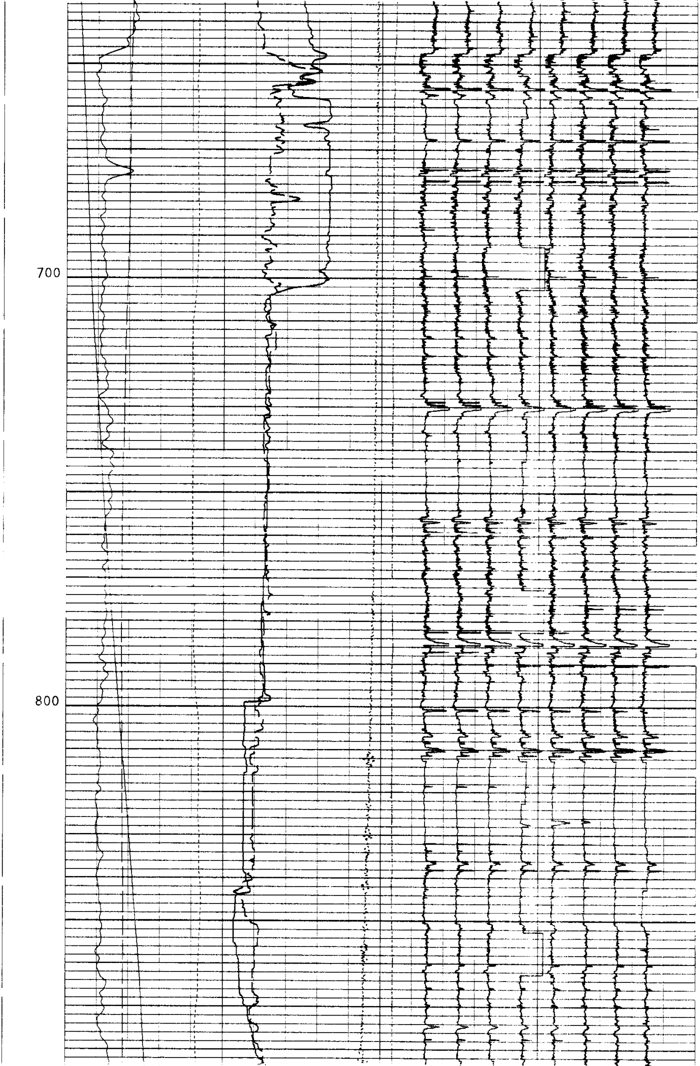


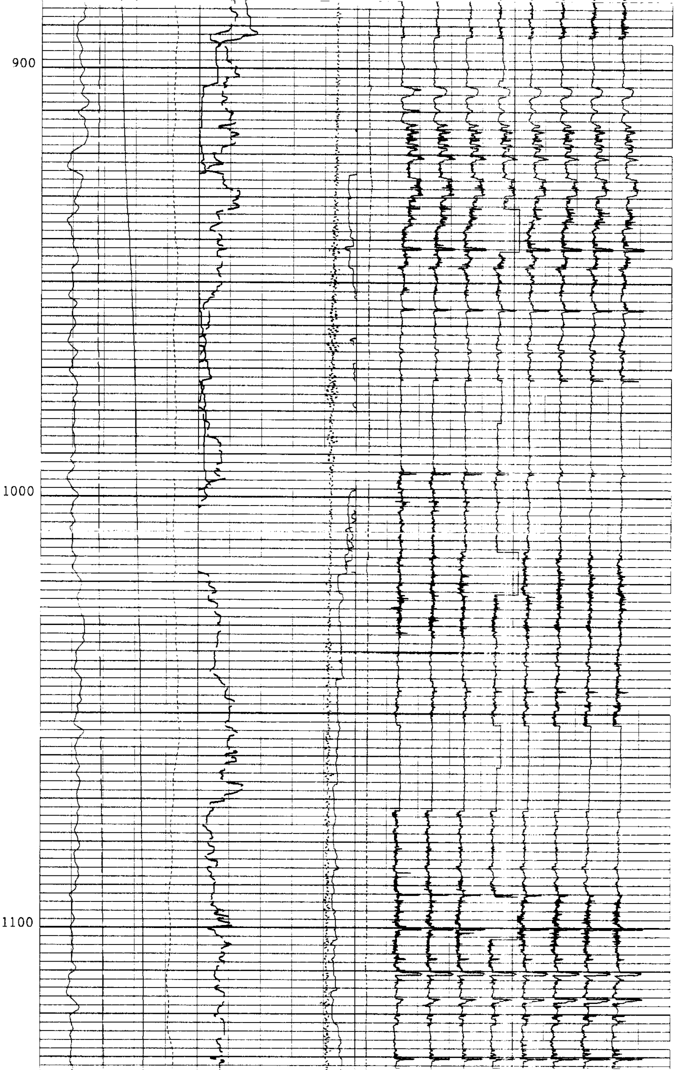
CP 44.2	FILE 65	05-OCT-1997 10:33
	INPUT FILE(S)	CREATION DATE
	46	27-SEP-1997 16:48

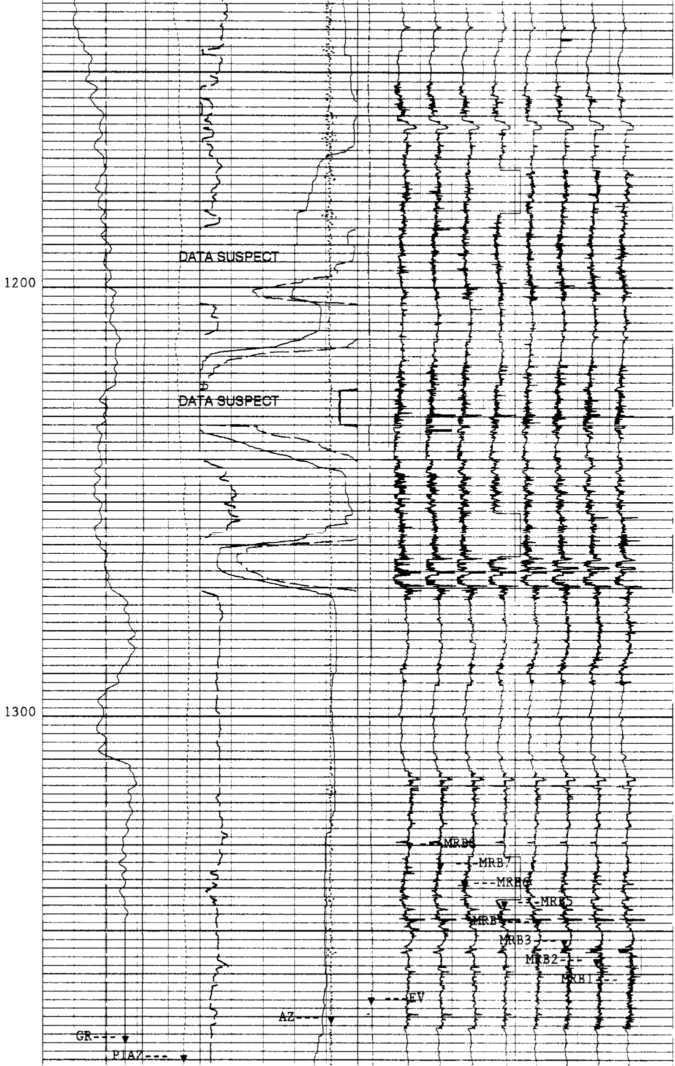
5"/100'

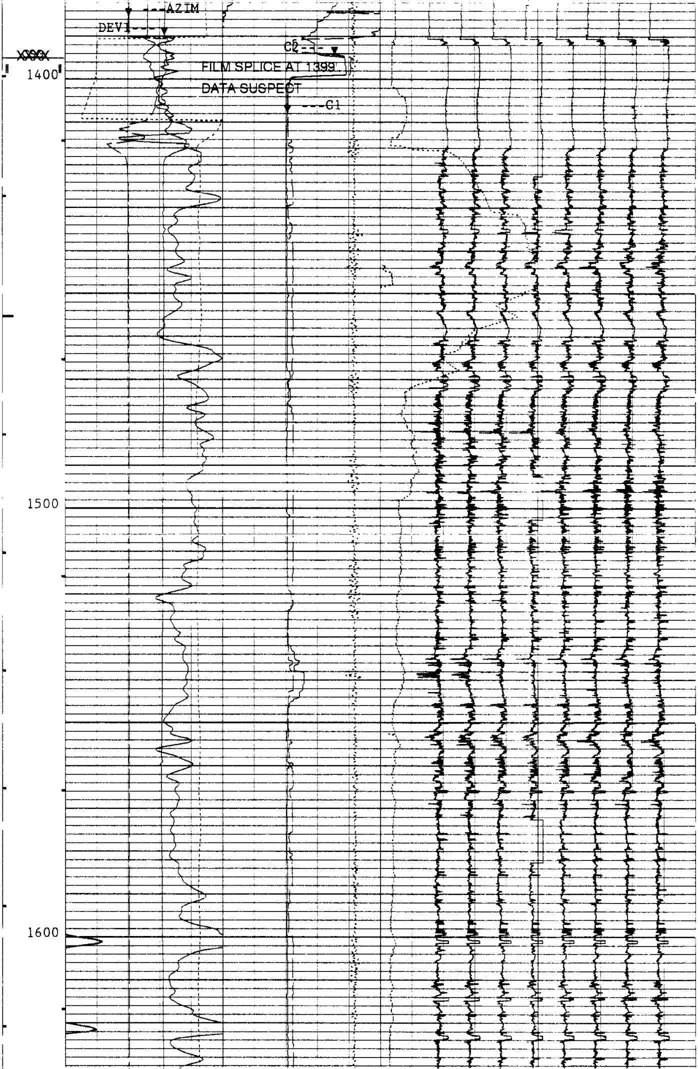




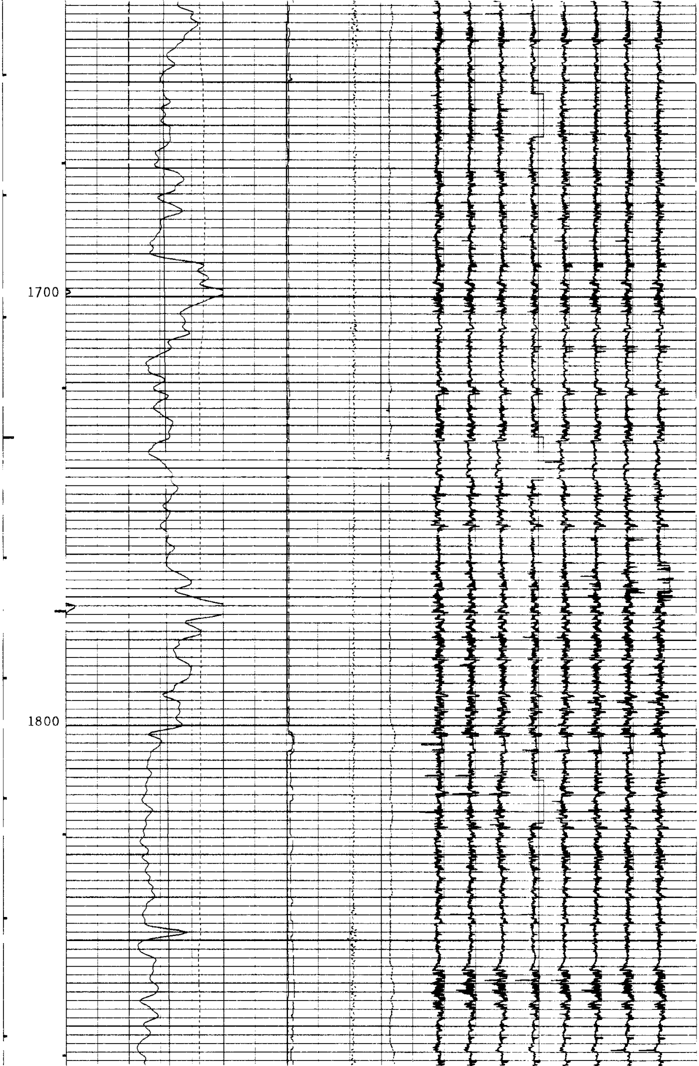


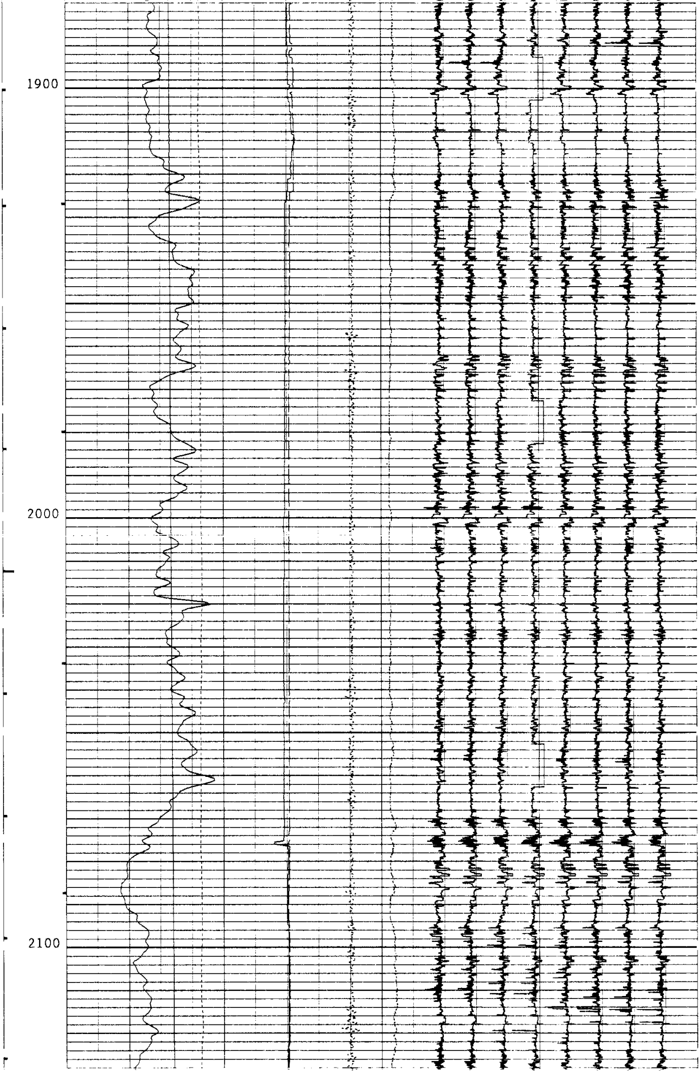


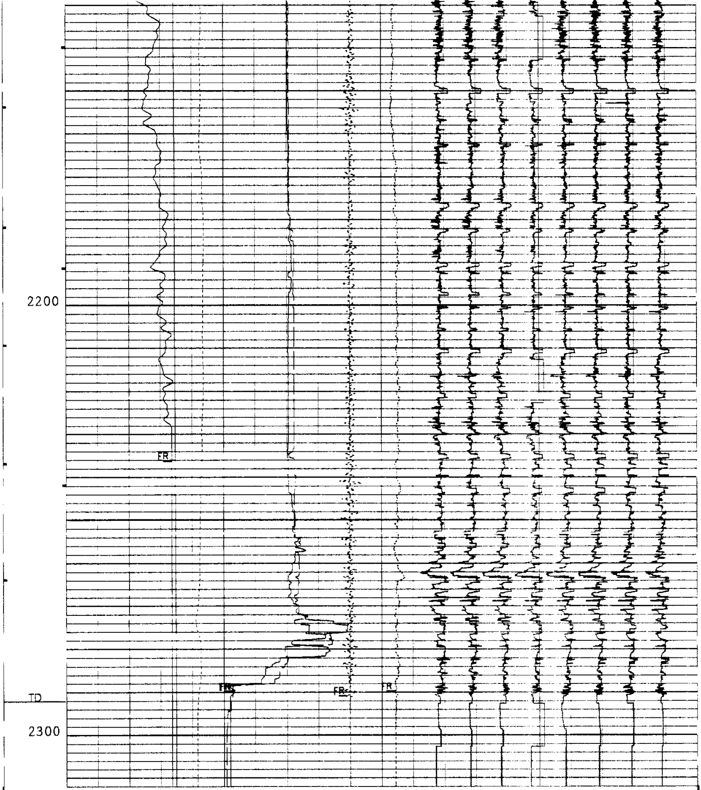




FILM SPLICE AT 1399
DATA SUSPECT







5"/100'

CP 44.2 FILE 65 05-OCT-1997 08:43

INPUT FILE(S) 55

CREATION DATE 04-OCT-1997 09:05

EV(V)
0.0 5.0000

MRB8
-1000. 19000.

MRB7
-3000. 17000.

MRB6
-5000. 15000.

						MRB5	-7000.	13000
GR(GAPI)	0.0	150.00				MRB4	-9000.	11000.
P1AZ(DEG)	-40.00	360.00	AZ(M/S2)	0.0	10.000	MRB3	-11000	9000.0
AZIM(DEG)	-40.00	360.00	C2(IN)	6.0000	11.000	MRB2	-13000	7000.0
DEVI(DEG)	0.0	50.000	C1(IN)	6.0000	11.000	MRB1	-15000	5000.0

SENSOR MEASURE POINT TO TOOL ZERO

LDTD 29.2 FEET
MESTC 2.2 FEET
CNTH 47.2 FEET

SGTL 55.7 FEET
DTT -2.9 FEET
GPIT 1.1 FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PADT	.500000	DEG	PP	NORM	
DO	1.00000	F	WMUD	8.60000	LB/G
NCJT	GSRY		DHC	BS	
BFM	LIQU		NPDC	0	
HSCO	YES		SOCO	NO	
MCCO	NO		BSCO	NO	
FSCO	NO		MWCO	NO	
PTCO	NO		CCCO	NO	
SDAT	SOCN		MCOR	NATU	
SOCN	.500000	IN	FSAL	-50000.0	FPM
ANGL	0.0	DEG	GGRD	.0100000	DF/F
BHFL	WATE		MDEN	2.65000	G/C3
FD	1.00000	G/C3	FCSR	0.1"	
AFMO	HAMM		ICMO	AUTO	
MDEC	19.5000	DEG	GLM	DIPM	
ICSD	-50000.0	F	RBS	AUTO	
PTYP	MEC		MLM	1800	
SOFF	-1.00000	IN	CSR	.6"	
ODFO	LIS		XMOD	AUTO	
XGAI	2		XOFF	0	
DPPM	STAN		MATR	SAND	
HC	CALI		FCD	5.50000	IN
SPCR	DISA		DSCA	40	DEG
SBUI	8		INT	4.00000	F
STEP	2.00000	F	SPAN	4	
SANG	35.0000		DPAD	AUTO	
DMAX	90	DEG	ELRA	.500000	IN
SDFA	.900000		HQUA	14	
LQUA	6		STDI	0.0	DEG
STDA	0.0	DEG	CSBL	2	
TDL	1399.00	F	MRT	102.000	DEGF
DFD	9.50000	LB/G	RMFS	3.72000	OHMM
RMS	2.31000	OHMM	MST	69.0000	DEGF
MFST	66.0000	DEGF	BS	7.87500	IN
BHS	OPEN				

REPEAT SECTION

SPEED CORRECTION NOT APPLIED

ACCUMULATED INTEGRATION VALUES SUMMARY:

Integrated Hole Volume: 110.316 F3 FROM 1704.00 F TO 1395.00 F
Integrated Cement Volume: 59.4997 F3 FROM 1704.00 F TO 1395.00 F
(ASSUMING 5.50000 IN O.D. CASING)

EVENT MARK SUMMARY:

OUTPUT	INTERVAL BETWEEN PIPS	DEPTH TRACK EDGE
Integrated Hole Volume	10.0000 F3	LEFT EDGE
Integrated Cement Volume	10.0000 F3	RIGHT EDGE

EV(V)
0.0 5.0000

MRB8
-1000. 19000.

MRB7
-3000. 17000.

MRB6
-5000. 15000.

MRB5
-7000. 13000.

MRB4
-9000. 11000.

MRB3
-11000 9000.0

MRB2
-13000 7000.0

MRB1
-15000 5000.0

GR(GAPI)
0.0 150.00

P1AZ(DEG.)
-40.00 360.00

AZIM(DEG.)
-40.00 360.00

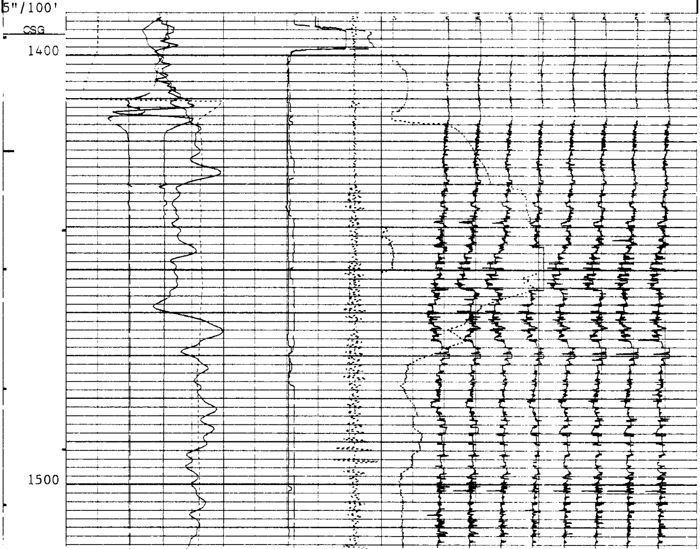
DEVI(DEG.)
0.0 50.000

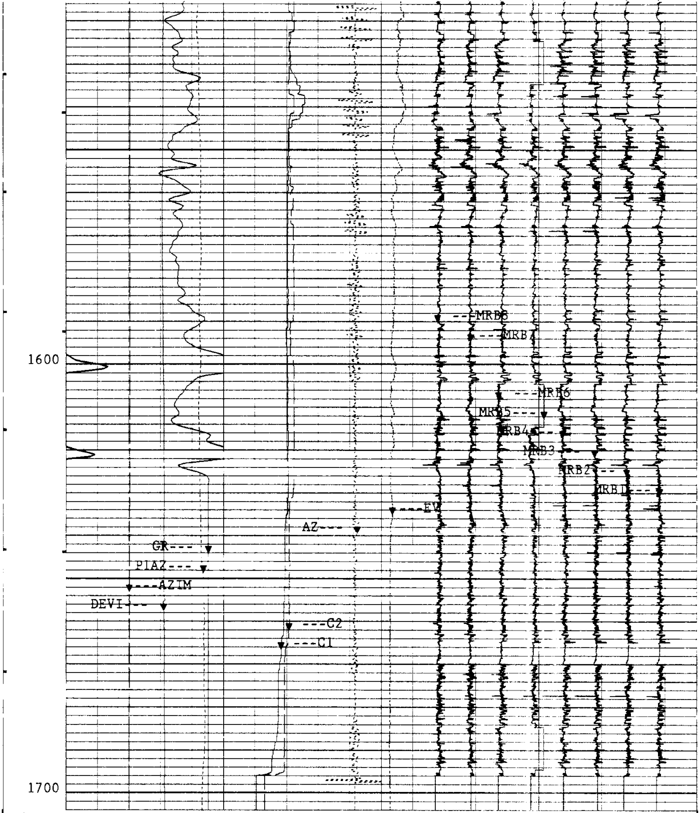
AZ(M/S2)
0.0 10.000

C2(IN)
6.0000 11.000

C1(IN)
6.0000 11.000

CP 44.2 FILE 56 04-OCT-1997 10:15 (UP)





5"/100'

CP 44.2 FILE 56 04-OCT-1997 10:01 (UP)

EV(V.)
0.0 5.0000

MRB8
-1000. 19000.

MRB7
-3000. 17000.

MRB6
-5000. 15000.

		MRB5
		-7000 13000.
GR(GAPI)		MRB4
0.0 150.00		-9000. 11000.
P1AZ(DEG)	AZ(M/S2)	MRB3
-40.00 360.00	0.0 10.000	-11000 9000.0
AZIM(DEG)	C2(IN)	MRB2
-40.00 360.00	6.0000 11.000	-13000 7000.0
DEVI(DEG)	C1(IN)	MRB1
0.0 50.000	6.0000 11.000	-15000 5000.0

SENSOR MEASURE POINT TO TOOL ZERO

CNTC	63.9	FEET	CFTC	64.4	FEET
LL	46.8	FEET	LITH	46.8	FEET
LU	46.8	FEET	LS	46.8	FEET
SS1	46.3	FEET	PARI	46.3	FEET
GR	73.4	FEET	SS2	46.3	FEET
TENS	-2.9	FEET	CALI	46.9	FEET
C2	2.2	FEET	C1	2.2	FEET
MRPD	2.2	FEET	MDRB	2.2	FEET
MRPB	2.2	FEET	MRPC	2.2	FEET
AX	1.1	FEET	MRPA	2.2	FEET
AZ	1.1	FEET	AY	1.1	FEET
FY	1.1	FEET	FX	1.1	FEET
FCAX	1.1	FEET	FZ	1.1	FEET
FCAZ	1.1	FEET	FCAY	1.1	FEET
TNRA	64.9	FEET	FTIM	1.1	FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PADI	0.0	DEG	WMUD	8.60000	LB/G
NCJT	GSRY		DHC	BS	
BFM	LIQU		NPDC	0	
HSCO	YES		SOCO	NO	
MCCO	NO		BSCO	NO	
FSCO	NO		MWCO	NO	
PTCO	NO		CCCO	NO	
SDAT	SOCN		MCOR	NATU	
SOCN	.500000	IN	FSAL	-50000.0	PPM
ANGL	0.0	DEG	GGRD	.0100000	DF/F
BHFL	WATE		MDEN	2.65000	G/C3
FD	1.00000	G/C3	FCSR	0.1"	
AFMO	HAMM		ICMO	AUTO	
MDEC	19.5000	DEG	GLM	DIPM	
ICSD	-50000.0	F	RBS	AUTO	
PTYP	MEC		MLM	1800	
SOFF	-1.00000	IN	CSR	.6"	
ODFO	RAW		XMOD	AUTO	
XGAI	2		XOFF	0	
DPPM	STAN		MATR	SAND	
HC	CALI		FCD	5.50000	IN
SPCR	DISA		TDL	1399.00	F
MRT	102.000	DEGF	DFD	9.50000	LB/G
RMFS	3.72000	OHMM	RMS	2.31000	OHMM
MST	69.0000	DEGF	MFST	66.0000	DEGF
BS	7.87500	IN	BHS	OPEN	

COMPANY	NORTHWEST NATURAL GAS			**SCHL.**	**FR**	2282.0 F
				SCHL.	**TD**	2292.0 F
WELL	IW 23a-22-65			**DRLR.**	**TD**	2299.0 F
				Elev:	**KB**	596.5 F
FIELD	MIST GAS STORAGE				**DF**	
COUNTY	COLUMBIA	**STATE**	OREGON		**GL**	580.5 F

Schlumberger

FORMATION MICROSCANNER GAMMA RAY