Schlumberger

CEMENT EVALUATION LOG

COUNTY.	COLUMBIA
FIELD	MIST GAS STORAGE
LOCATION	N 86-47-54 W 2065.04 & S 03-12-06
WELL	IW 32-22-65
COMPANY	NORTHWEST NATURAL GAS CO

COMPANY NORTHWEST NATURAL GAS CO.

WELL IW 32-22-65

FIELD MIST GAS STORAGE

COUNTY: COLUMBIA **STATE:** OREGON

LOCATION
N 86-47-54 W 2065.04' & S 03-12-06
1827.47' FROM THE NE COR. OF SEC 22

API SERIAL NO.	SECT.	TWP.	RANGE
36-009-00325	22	6N	5W

Other Services:
INDUCTION
SONIC
FMS
DENSITY
NEUTRON
GAMMA RAY

Permanent Datum	GROUND LEVEL	**Elev.**	822.1 F		
Log Measured From	KELLY BUSHING	16.0 F	**above Perm. Datum**	**Elev.:**	K.B. 838.11
					D.F.
Drilling Measured From	KELLY BUSHING				G.L. 822.11

Date	02-DEC-1997			
Run No.	ONE			
Depth Driller	2600.0 F			
Depth Logger (Schl.)	1778.0 F			
Btm. Log Interval	1775.0 F			
Top Log Interval	0.0 F			
Type Fluid in Hole	FLO-PRO			
Salinity NaCl				
Density	8.60 LB/G			
Fluid Level	50.0 F			
Max. Rec. Temp.	98.0 DEGF			
Deviation				
Logger on Bottom	SEE LOG			
Equip. / **Location**	8303	BAKERSFIELD		
Recorded By	GREG PERRY			
Witnessed By	MR. MEYER / MR. THOMAS			
BOREHOLE RECORD				
Bit Size				
Depth				
CASING & TUBING RECORD				
Size	13 3/8"	8 5/8"		
Weight	48.0000 LB/F	32.0000 LB/F		
Casing Top-Driller	0.0 F	0.0 F		
Casing Top-Logger	0.0 F	0.0 F		
Casing Shoe-Driller	377.0 F	1802.0 F		
Casing-Logger	376.0 F			

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	
Service Order No.		
Logging Speed	1800.0 F/HR	
EQUIPMENT DATA		
Tool Number 1	CET	
Tool Number 2	SGT	
Tool Number 3	TCCB	
Tool Number 4	.	
Tool Number 5	.	
Tool Number 6	.	
Tool Number 7		
Tool Number 8	.	
Tool Number 9	.	
Tool Number 10		
Tool Number 11		
Tool Number 12		

REMARKS:

RAN FLEX JOINTS ON INDUCTION AND SONIC.
RAN 6 ARM FINS ON SONIC.
RAN FLEX JOINTS ABOVE FMS AND ABOVE AMS.
DID NOT TAG TD DUE TO PUSH DOWN TOOLS.

CREW: DAN LEE.
TLC: DAVID BLYTHE.
THANKS FOR CHOOSING SCHLUMBERGER!!!!!!

ECCE(IN)
0.0 .50000
CALU(IN)
6.0000 7.0000
GR(GAPI)
0.0 150.00

CSMX
5000.0 0.0
CSMN
5000.0 0.0

WWV
0.0 2.0000

CSMN

CEMENT MAP

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CP 44.2            FILE     5       02-DEC-1997 08:51

                   INPUT FILE(S)   CREATION DATE
                         1         02-DEC-1997 07:18

                   5"/100'
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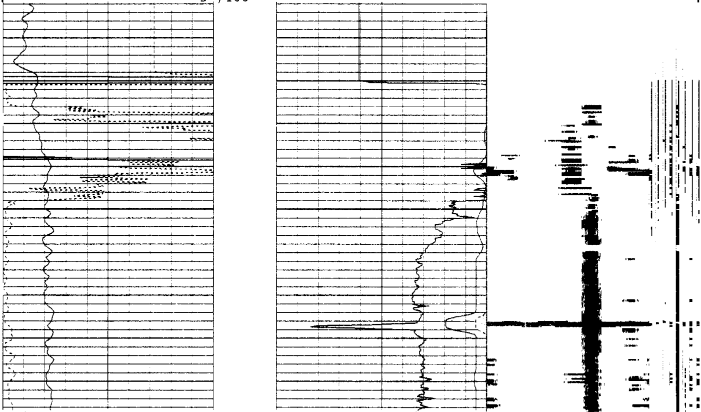
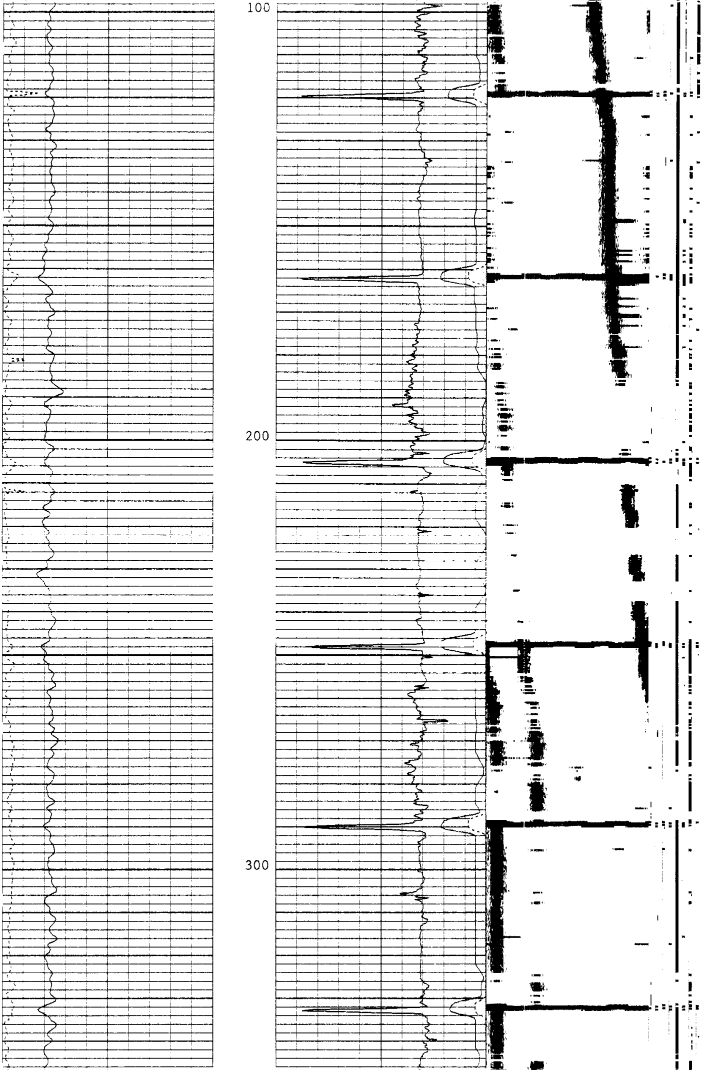
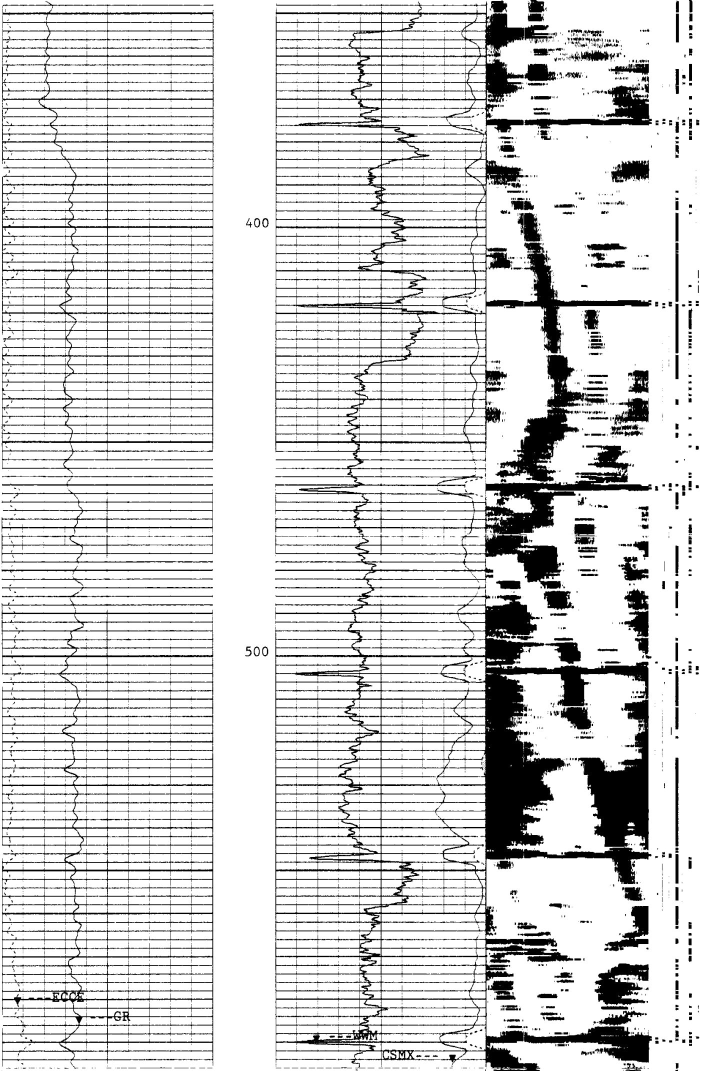
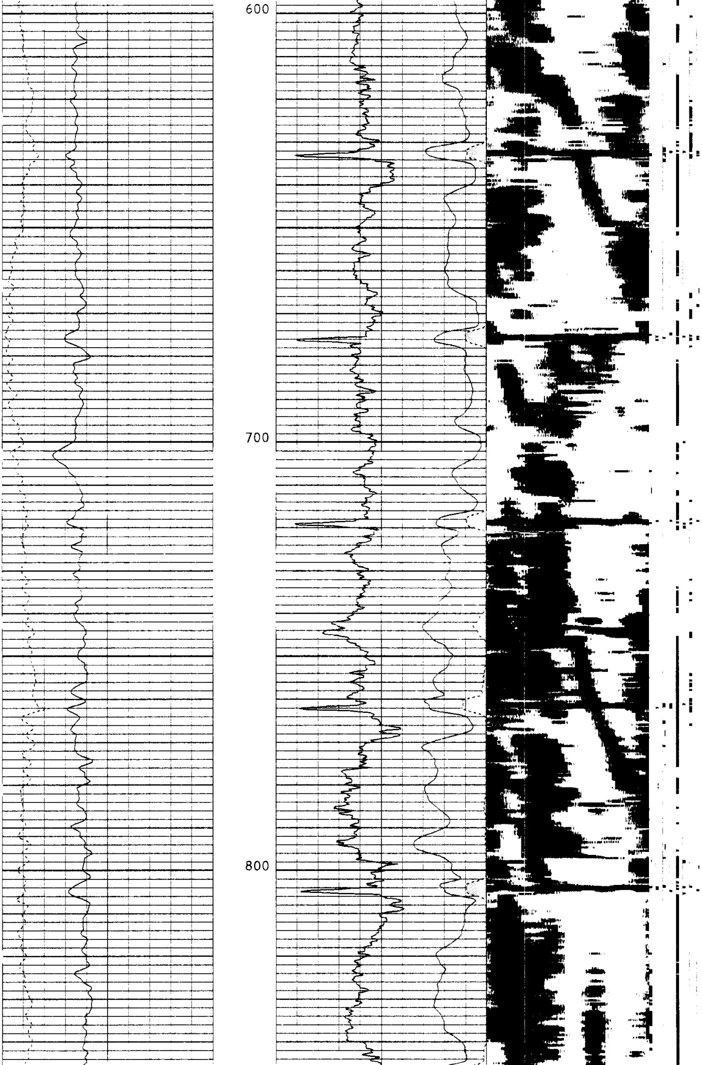
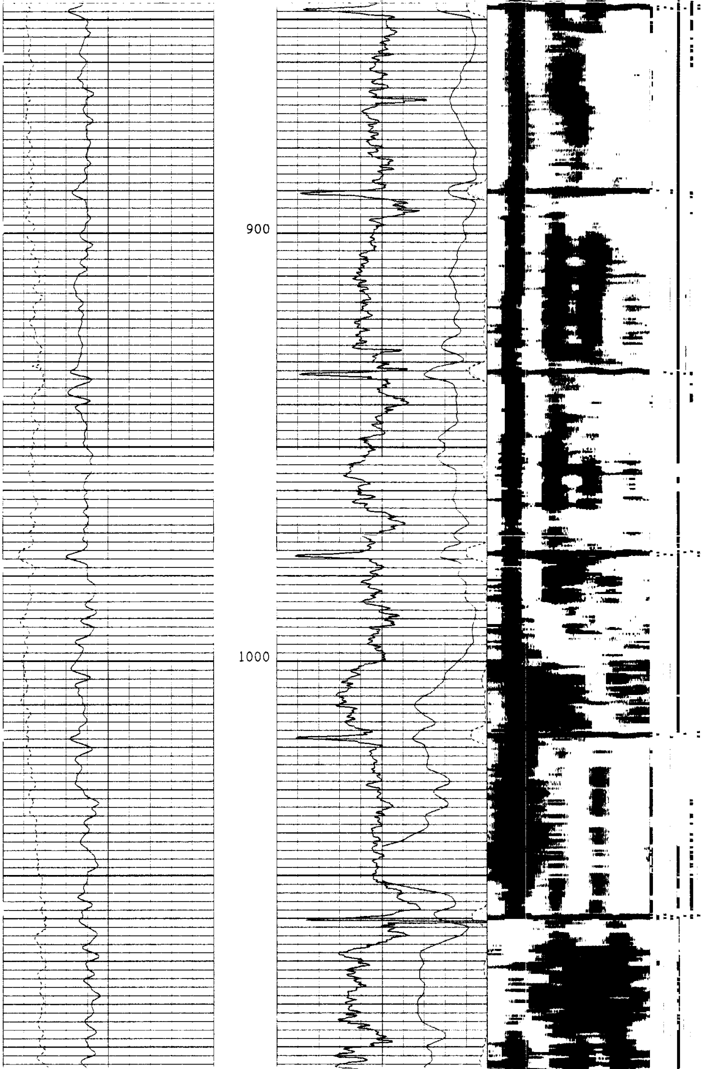
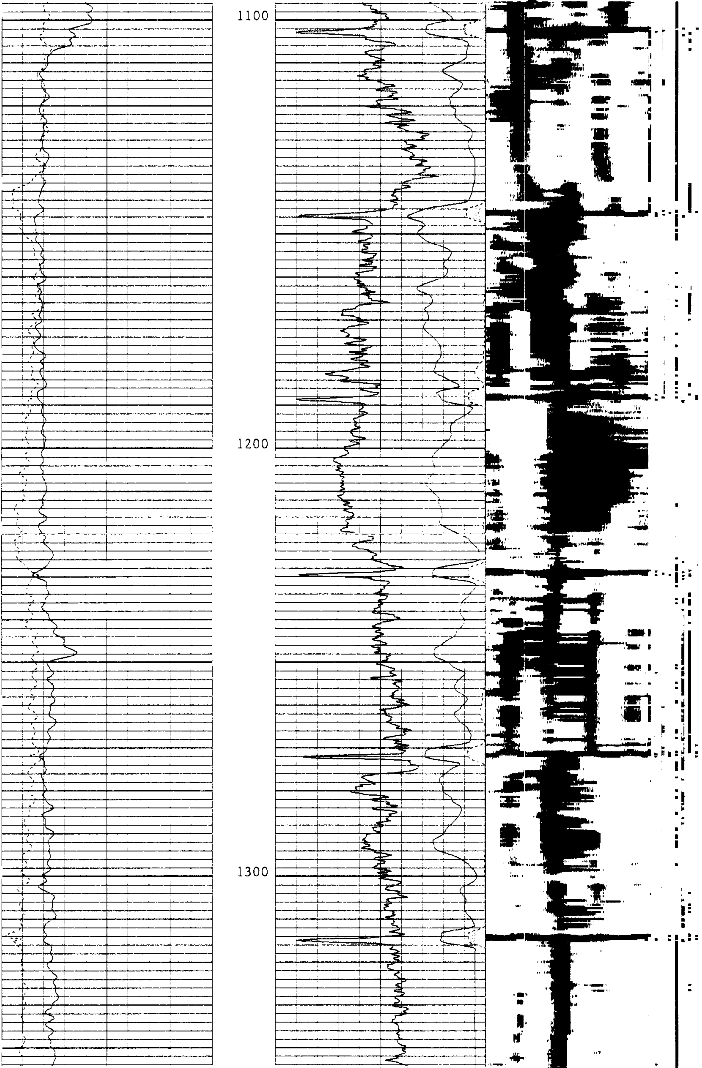


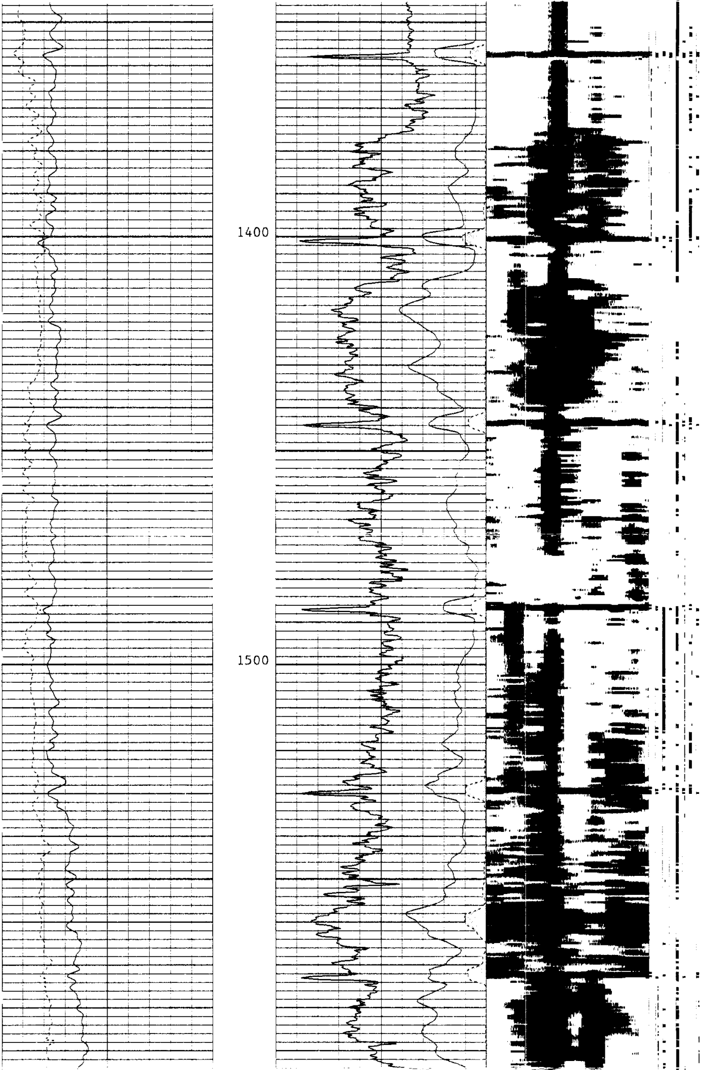


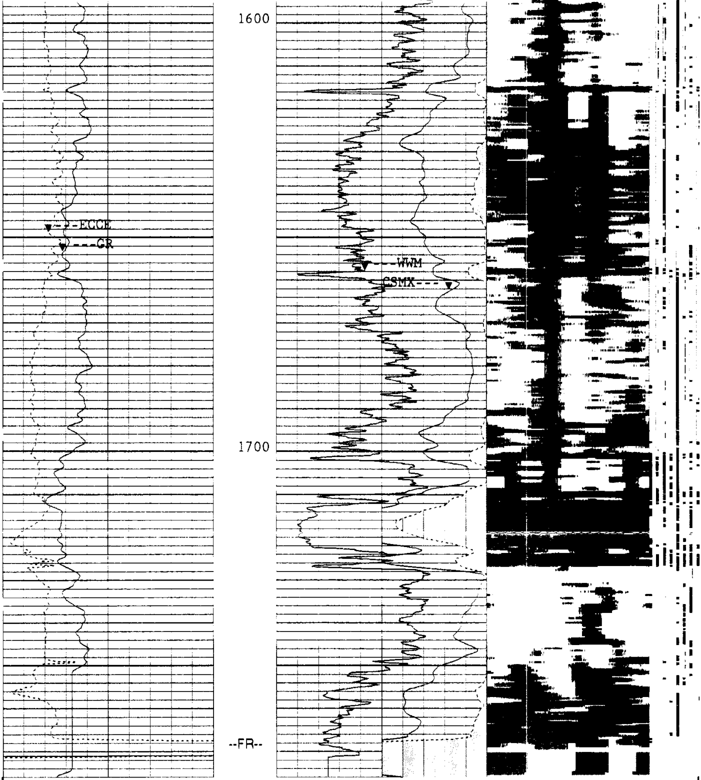












5"/100'

CP 44.2 FILE 5 02-DEC-1997 08:29

INPUT FILE(S) CREATION DATE
1 02-DEC-1997 07:18

CSMN

CEMENT MAP

ECCE(IN)
0.0 .50000

CALU(IN)
6.0000 7.0000

GR(GAPI)
0.0 150.00

CSMX
5000.0 0.0

CSMN
5000.0 0.0

WWM
0.0 2.0000

SENSOR MEASURE POINT TO TOOL ZERO

RB	6.1	FEET	GR	24.8	FEET
TENS	0.0	FEET	DEVI	6.1	FEET
WAG9	1.9	FEET	WTT9	1.9	FEET
WAG8	6.8	FEET	WTT8	6.8	FEET
WAG7	5.7	FEET	WTT7	5.7	FEET
WAG6	6.3	FEET	WTT6	6.3	FEET
WAG5	7.0	FEET	WTT5	7.0	FEET
WAG4	5.9	FEET	WTT4	5.9	FEET
WAG3	6.6	FEET	WTT3	6.6	FEET
WAG2	5.4	FEET	WTT2	5.4	FEET
WAG1	6.1	FEET	WTT1	6.1	FEET
WFT8	6.8	FEET	WFT9	1.9	FEET
WFT6	6.3	FEET	WFT7	5.7	FEET
WFT4	5.9	FEET	WFT5	7.0	FEET
WFT2	5.4	FEET	WFT3	6.6	FEET
WFT1	6.1	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PADT	0.0	DEG	PP	RECO	
DO	-3.70000	F	WMUD	8.60000	LB/G
AGMX	49.0000	DB	WEGA	0.0	DB
W3FP	.720000		IS2	19.2000	US
IL2	19.2000	US	TR9R	1.70400	IN
DOT	.925000	IN	W2FP	1.26000	
CDIA	85/8	IN	CSID	7.92130	IN
CSW	32	LB/F	CETS	SB	
CEEC	AC		MCSF	1000.00	
IMAR	ALLO		IMAL	2.50000	
IMAU	3.20000		ECCF	.100000	IN
CSAV	A		IMAO	I	
IMAF	A		W2GS	1.80000	
WFVS	6		CMUD	8.60000	LB/G
TR9O	0.0	IN	CSCO	3800.00	
CSCG	1520.00		CHTY	N	
ROT1	0.0	IN	ROT2	0.0	IN
ROT3	0.0	IN	ROT4	0.0	IN
ROT5	0.0	IN	ROT6	0.0	IN
ROT7	0.0	IN	ROT8	0.0	IN
LAO9	-65.0000	DB	W2C9	1.00000	
W3C9	1.00000		IDSL	CSID	
NCJT	GSRY		FCD	0.0	IN
BS	12.2500	IN	BHS	CASE	
CSIZ	8.67500	IN			

ECCE(IN)
0.0 .50000
CALU(IN)
6.0000 7.0000
GR(GAPI)
0.0 150.00

WWM
0.0 2.0000

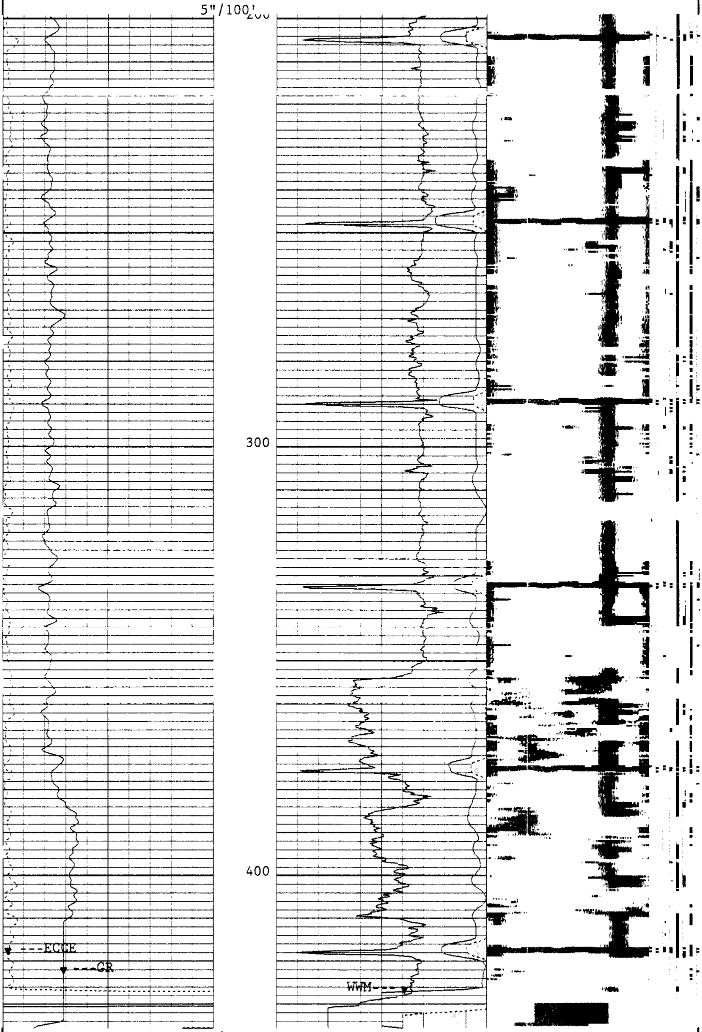
CSMX
5000.0 0.0
CSMN
5000.0 0.0

CSMN

CEMENT MAP

CP 44.2 FILE 6 02-DEC-1997 09:13

INPUT FILE(S)	CREATION DATE
2	02-DEC-1997 08:04



CP 44.2   FILE 6   02-DEC-1997 09:10

INPUT FILE(S)   CREATION DATE
2   02-DEC-1997 08:04

CSMN   CEMENT MAP

ECCE(IN)		CSMX	
0.0	.50000	5000.0	0.0
CALU(IN)		CSMN	
6.0000	7.0000	5000.0	0.0
GR(GAPI)		WWM	
0.0	150.00	0.0	2.0000

SENSOR MEASURE POINT TO TOOL ZERO

RB	6.1	FEET	GR	24.8	FEET
TENS	0.0	FEET	DEVI	6.1	FEET
WAG9	1.9	FEET	WTT9	1.9	FEET
WAG8	6.8	FEET	WTT8	6.8	FEET
WAG7	5.7	FEET	WTT7	5.7	FEET
WAG6	6.3	FEET	WTT6	6.3	FEET
WAG5	7.0	FEET	WTT5	7.0	FEET
WAG4	5.9	FEET	WTT4	5.9	FEET
WAG3	6.6	FEET	WTT3	6.6	FEET
WAG2	5.4	FEET	WTT2	5.4	FEET
WAG1	6.1	FEET	WTT1	6.1	FEET
WFT8	6.8	FEET	WFT9	1.9	FEET
WFT6	6.3	FEET	WFT7	5.7	FEET
WFT4	5.9	FEET	WFT5	7.0	FEET
WFT2	5.4	FEET	WFT3	6.6	FEET
WFT1	6.1	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PADT	0.0	DEG	PP	RECO	
DO	-3.70000	F	WMUD	8.60000	LB/G
AGMX	49.0000	DB	WEGA	0.0	DE
W3FP	.720000		IS2	19.2000	US
IL2	19.2000	US	TR9R	1.70400	IN
DOT	.925000	IN	W2FP	1.26000	
CDIA	85/8	IN	CSID	7.92130	IN
CSW	32	LB/F	CETS	SB	
CEEC	AC		MCSF	1000.00	
IMAR	ALLO		IMAL	2.50000	
IMAU	3.20000		ECCF	.100000	IN
CSAV	A		IMAO	I	
IMAF	A		W2GS	1.80000	
WFVS	6		CMUD	8.60000	LB/G
TR9O	0.0	IN	CSCO	3800.00	
CSCG	1520.00		CMTY	N	
ROT1	0.0	IN	ROT2	0.0	IN
ROT3	0.0	IN	ROT4	0.0	IN
ROT5	0.0	IN	ROT6	0.0	IN
ROT7	0.0	IN	ROT8	0.0	IN
LAO9	-65.0000	DB	W2C9	1.00000	
W3C9	1.00000		IDSL	CSID	
NCJT	GSRY		FCD	0.0	IN
BS	12.2500	IN	BHS	CASE	
CSIZ	8.67500	IN			

COMPANY	NORTHWEST NATURAL GAS CO.			**SCHL.**	**FR**	1775.0 F
				SCHL.	**TD**	1778.0 F
WELL	IW 32-22-65			**DRLR.**	**TD**	2600.0 F
				Elev:	**KB**	838.1 F
FIELD	MIST GAS STORAGE				**DF**	
COUNTY:	COLUMBIA	**STATE:**	OREGON		**GL**	822.1 F

Schlumberger

CEMENT EVALUATION LOG