Schlumberger

GEOFRAME PROCESSED INTERPRETATION

Caliban BREAKOUT ADVISOR

*A Mark of Schlumberger

Using the following logs: FMI-GR

COMPANY:	NORTHWEST NATURAL GAS COMPANY				
WELL:	IW 14dH-23-65				
FIELD:	CALVIN CREEK-REICHHOLD POOL				
COUNTY:	COLUMBIA				
STATE:	OREGON				
COUNTRY:					
Date Logged:	21-Oct-2001	Date Processed:	20-Mar-2002		
Well Location:	SHL: 976.5' NORTH & 1256.3 ' EAST FROM THE SW CORNER				
Elevations:	KB: 922.5ft	DF:	922.3ft	GL:	905ft
API Number:	36-009-00353	Job Number:			

FOLD HERE 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 interpretation. 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.

Field Recording:	Location: SACRAMENTO	Software Version: 9C2-303	Engineer: M. KHAN
Office Recording:	ICS Center:	Baseline:	Log Analyst: A. POL

Mud and Borehole Measurements:

Rm @ Measured Temperature: 0.298ohm.m @ 55degF	BHT: 212degF	Bitsize: 12.25in
Rmf @ Measured Temperature: 0.275ohm.m @ 56degF	Type Fluid in Hole:	GEL-WATER
Rmc @ Measured Temperature: 0.358ohm.m @ 55degF	Mud Density: 9.6lbm/gal	

Remarks:

BHL: 1' NORTH & 1176' EAST OF THE SOUTHWEST CORNER OF SECTION 23
RUN 1: 1658 - 410 ft. ; RUN 2: 2152 - 1394 ft. Runs 1-2 Spliced at 1400 ft. BS = 12.25"
RUN 3: 2948 - 2176 ft. ; RUN 4: 3025 - 2950 ft. Runs 3-4 Spliced at 2950 ft. BS = 7.875"

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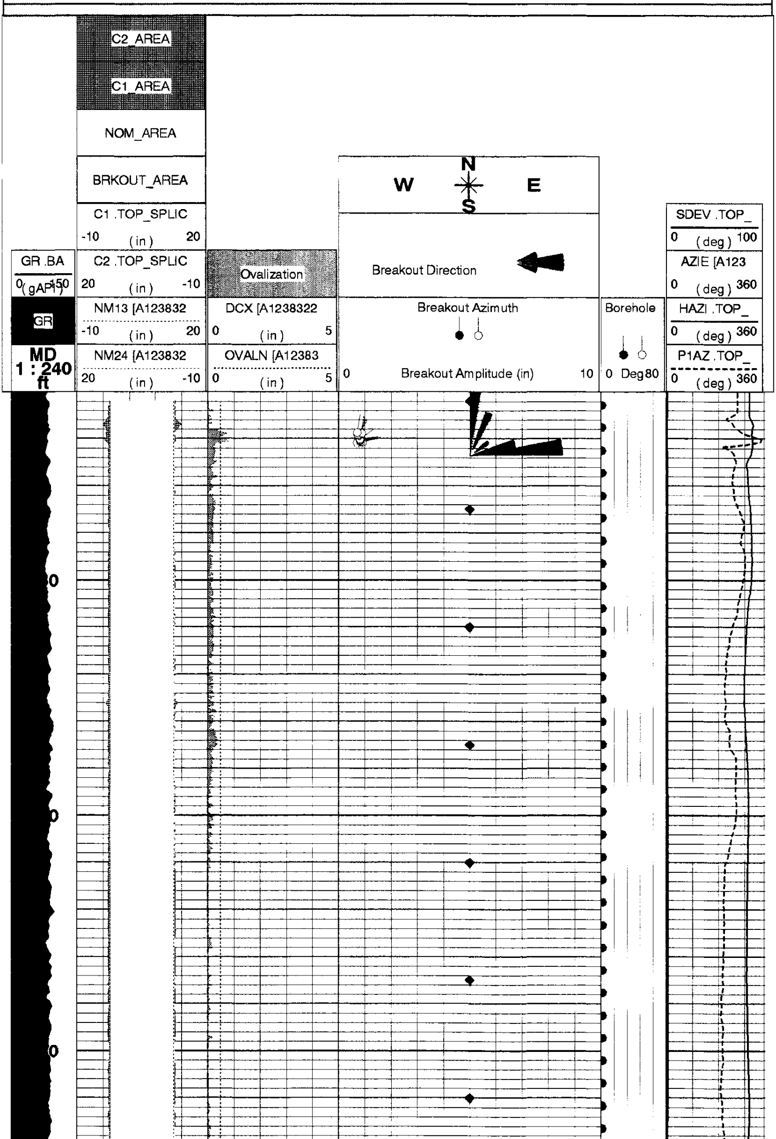

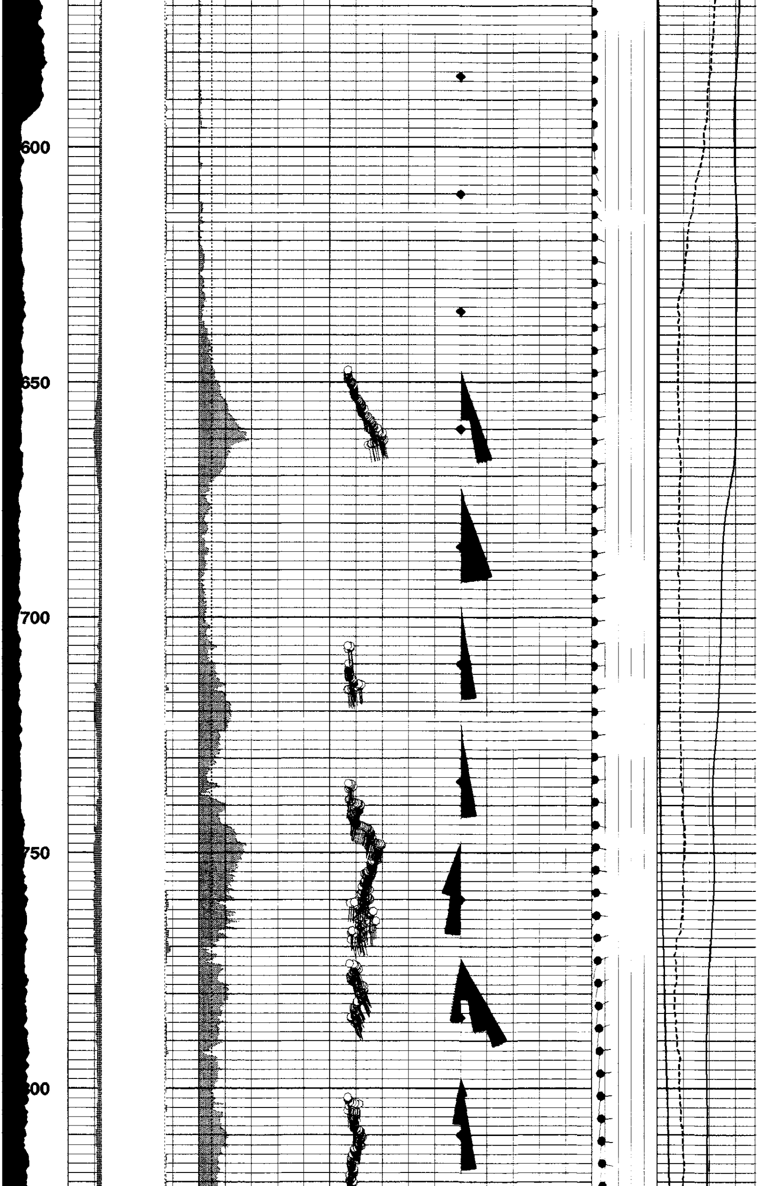

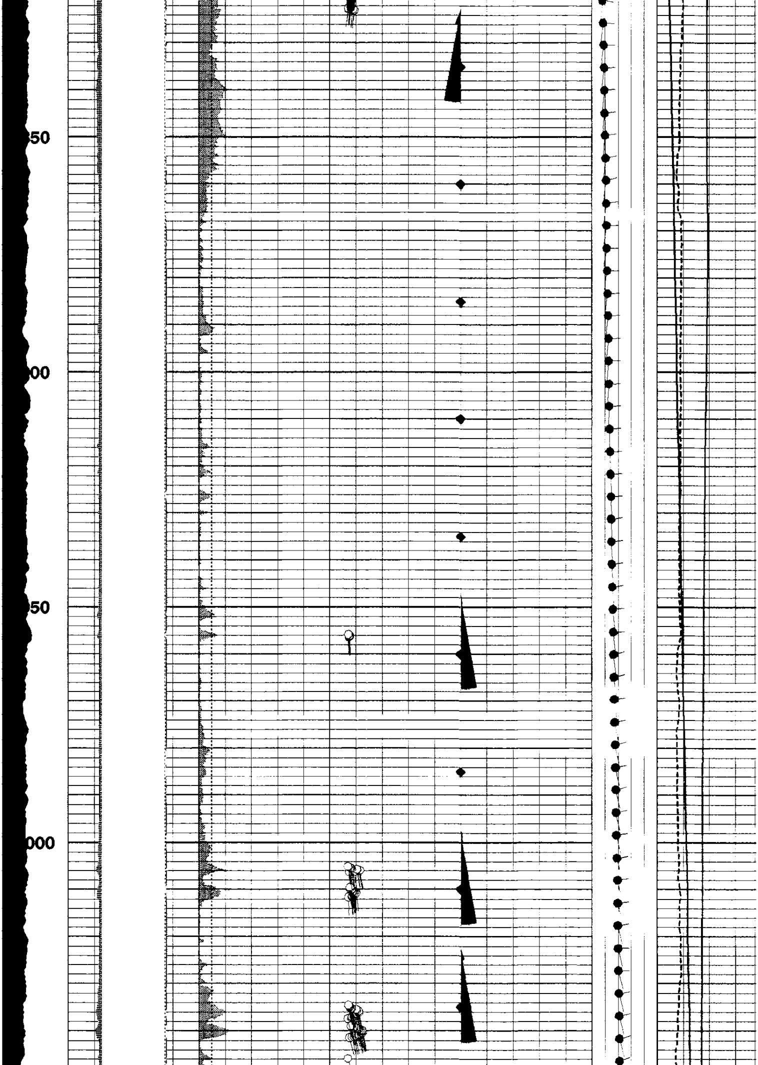

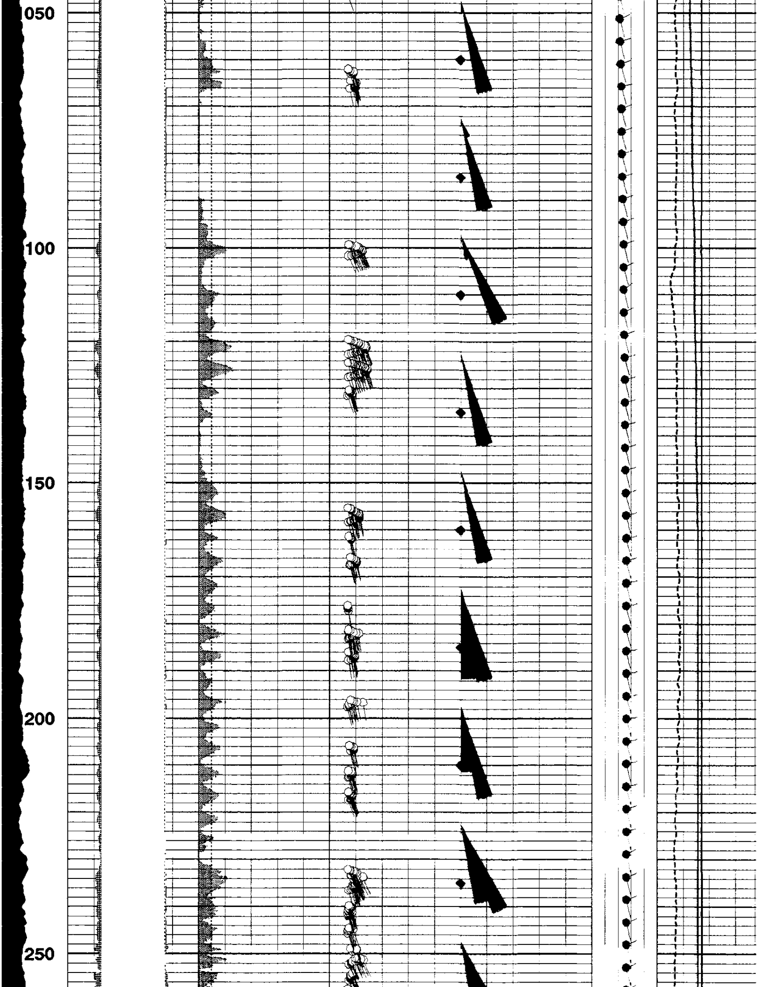

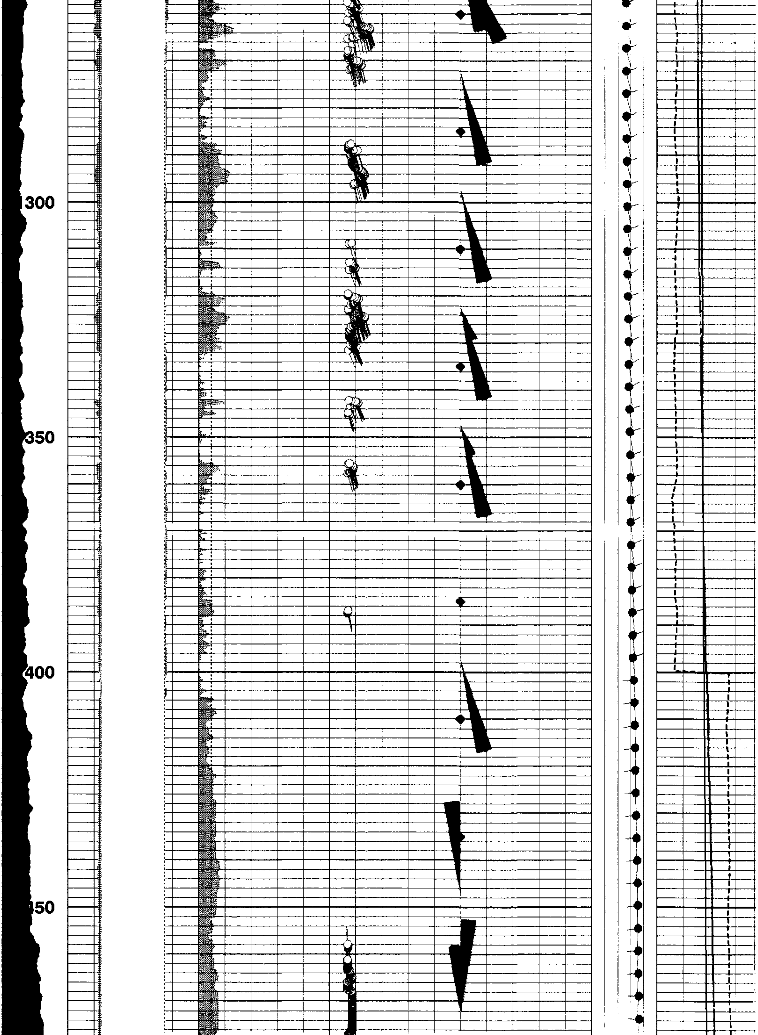

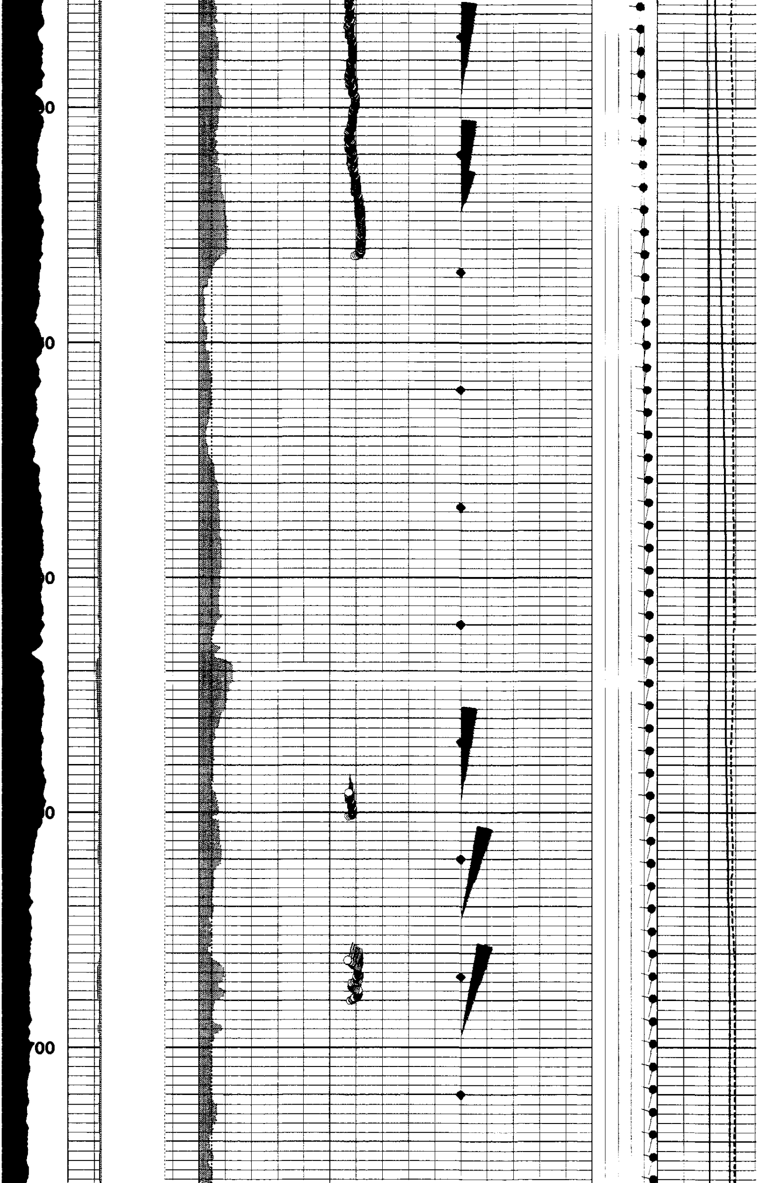

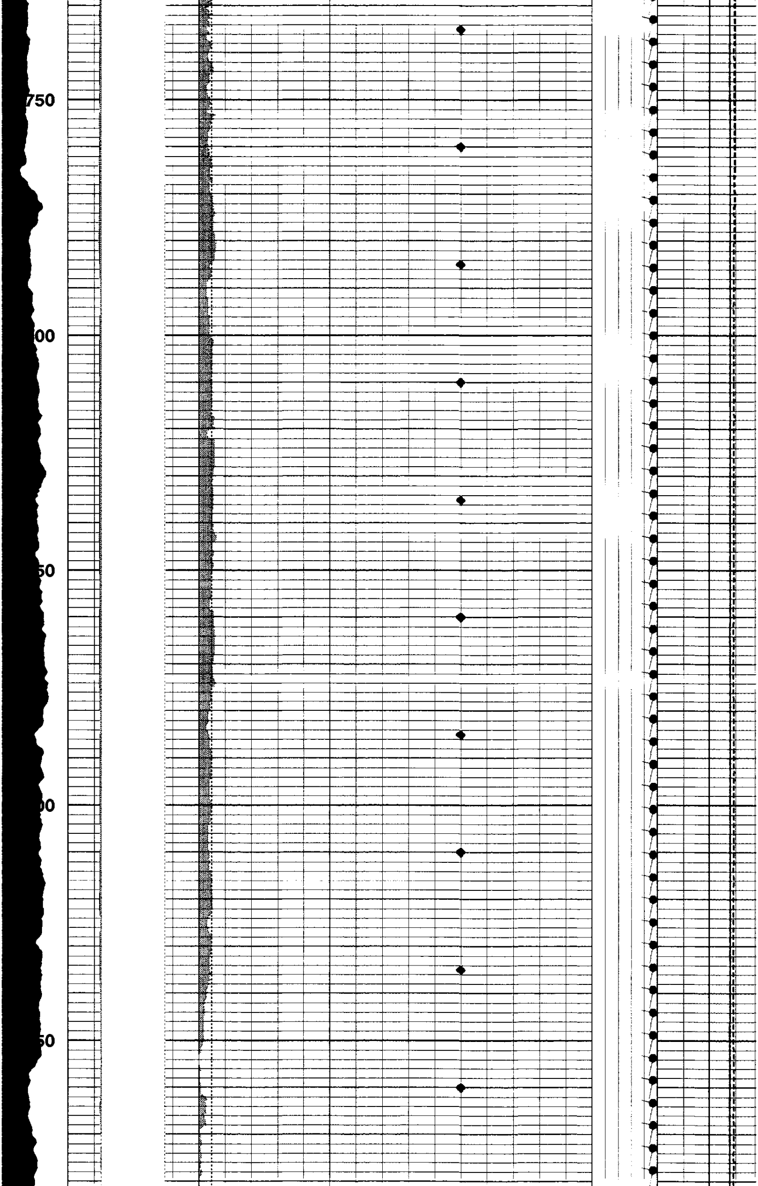

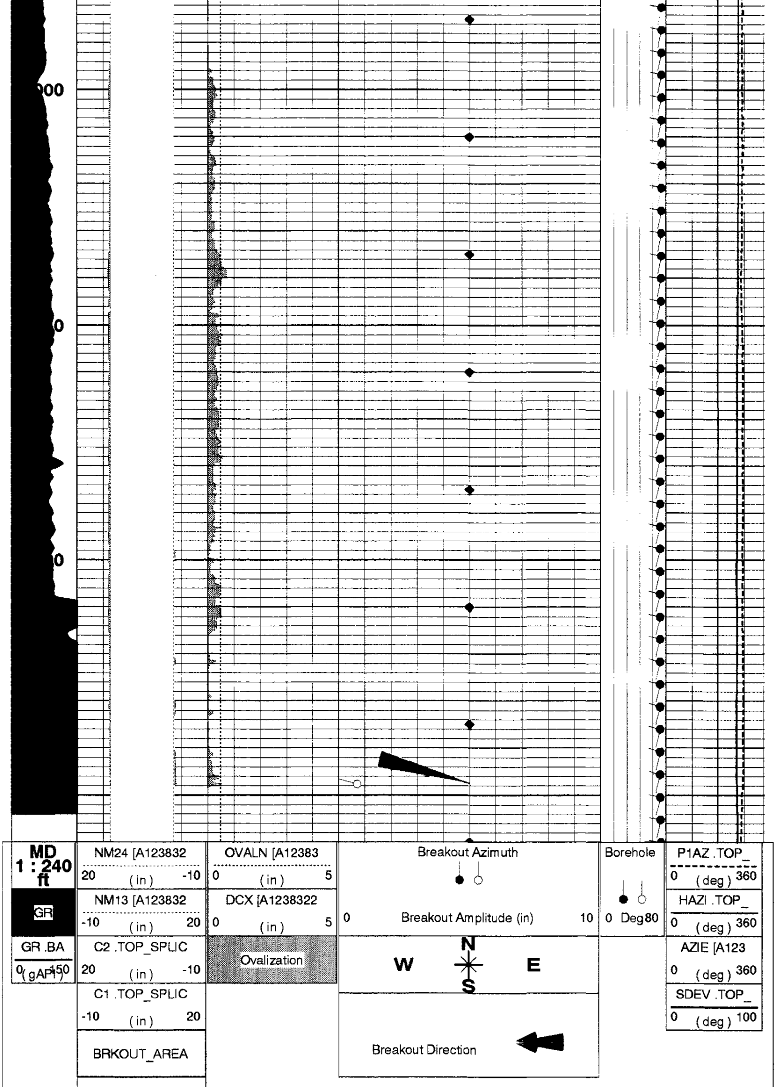

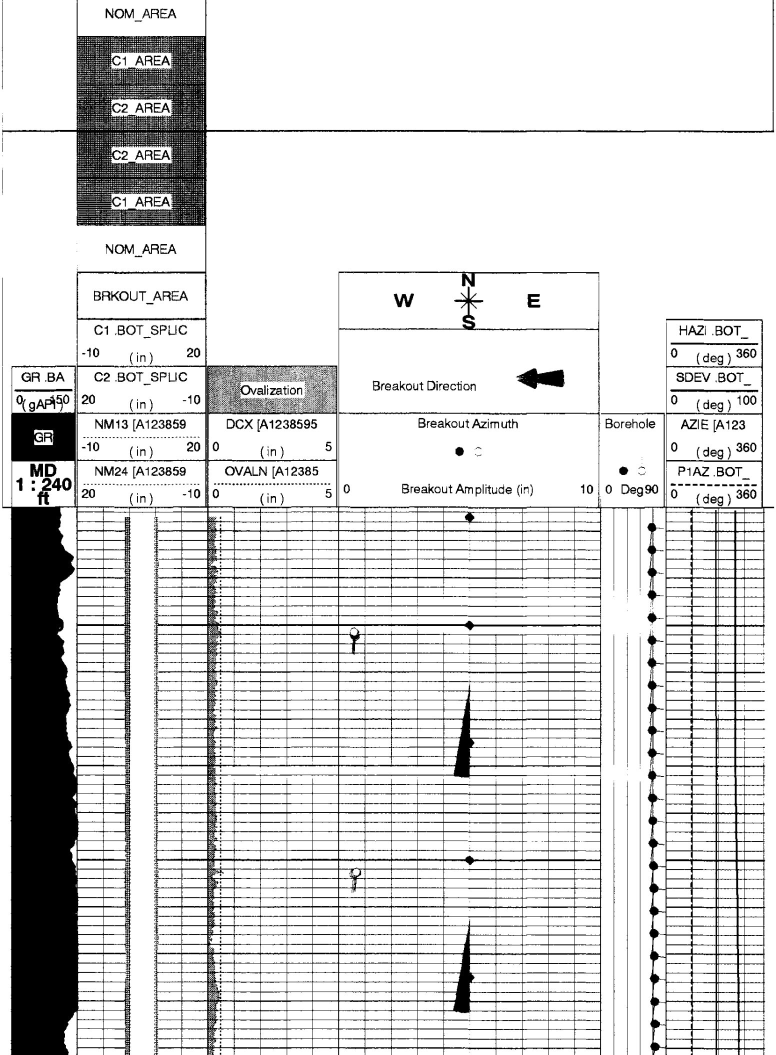

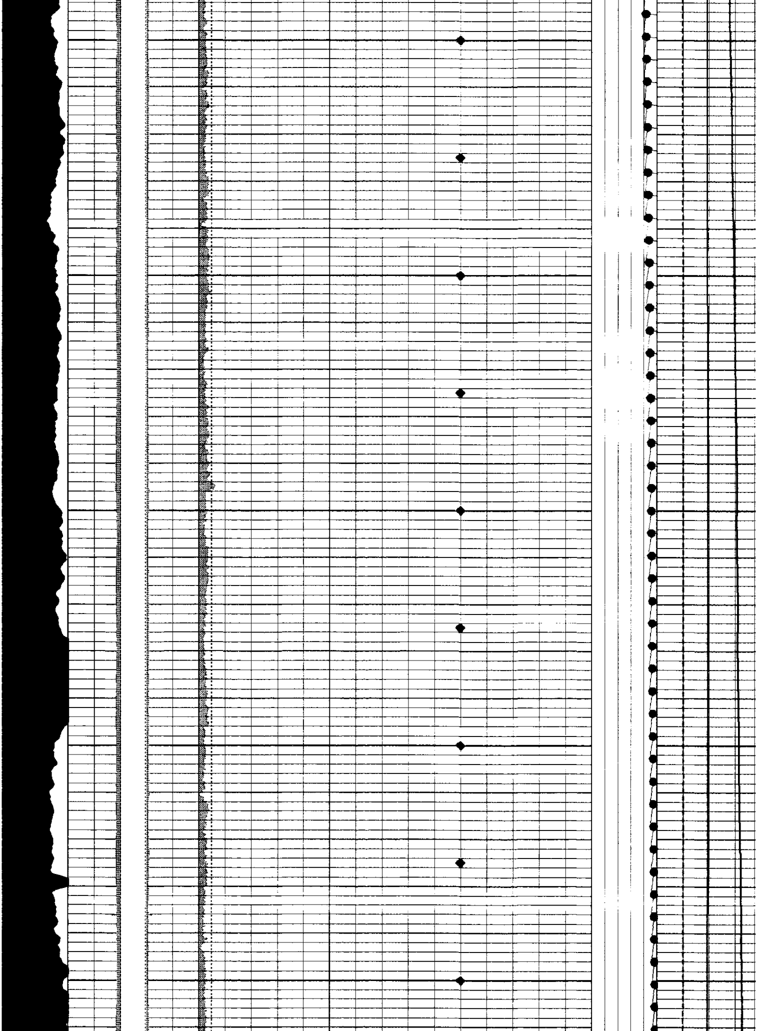

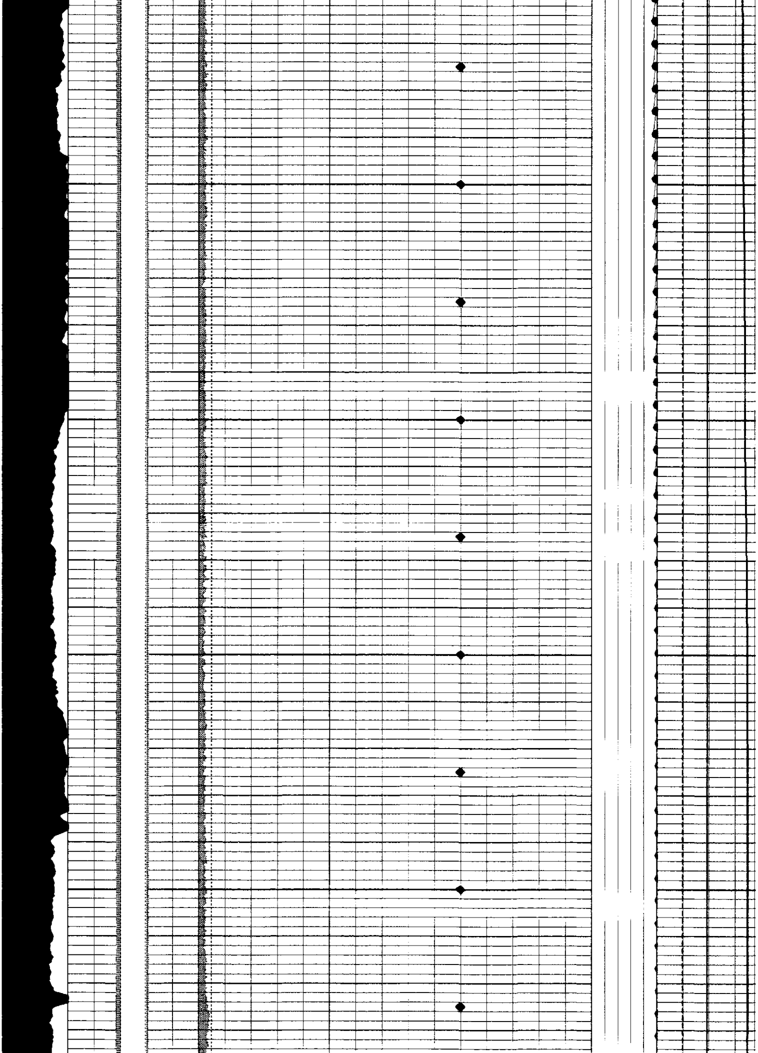

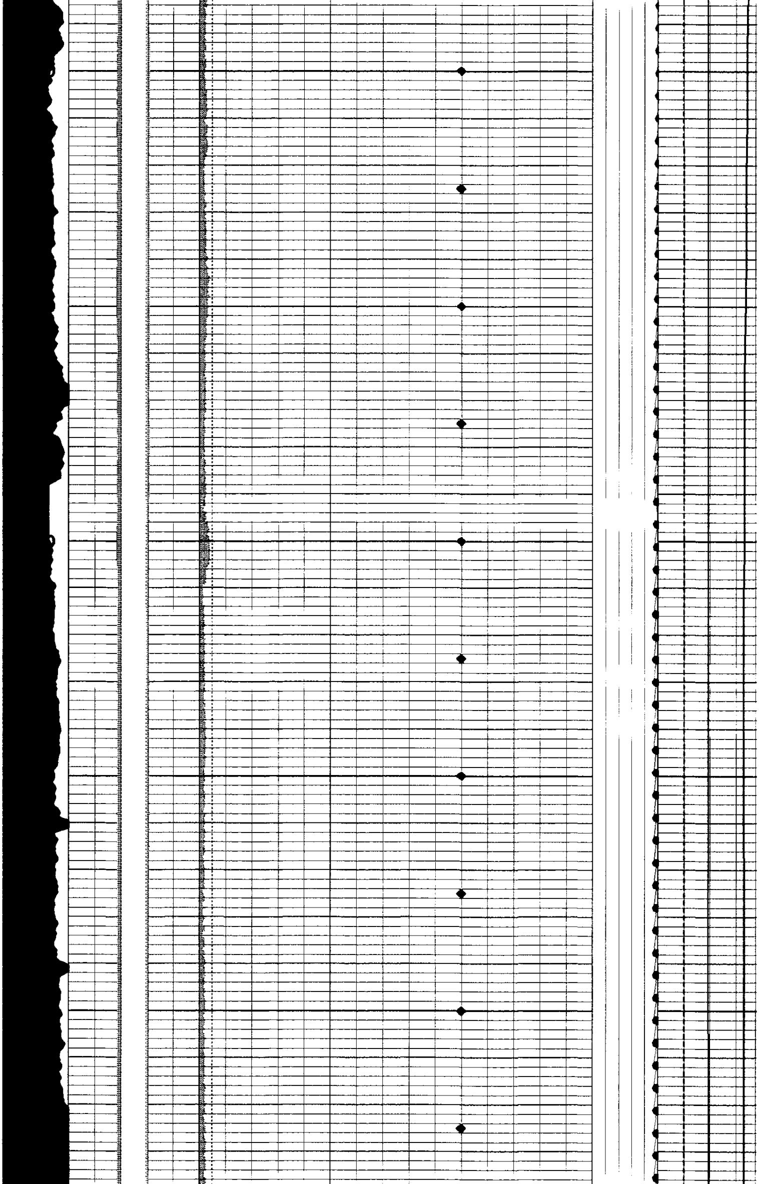

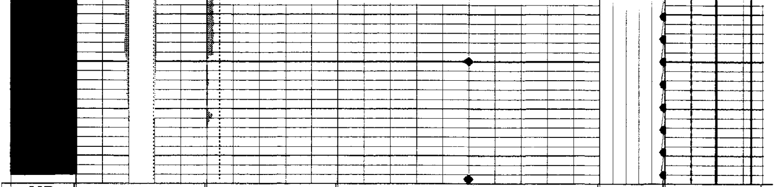

MD **1 : 240** **ft**	NM24 [A123859 20 (in) -10	OVALN [A12385 0 (in) 5	Breakout Azimuth ● ○ 0 Breakout Amplitude (in) 10	Borehole ● ○ 0 Deg 90	P1AZ .BOT_ 0 (deg) 360
GR	NM13 [A123859 -10 (in) 20	DCX [A1238595 0 (in) 5			AZIE [A123 0 (deg) 360
GR .BA 0 (gAPI) 150	C2 .BOT_SPLIC 20 (in) -10	Ovalization	N W E S		SDEV .BOT_ 0 (deg) 100
	C1 .BOT_SPLIC -10 (in) 20		Breakout Direction		HAZI .BOT_ 0 (deg) 360
	BRKOUT_AREA				
	NOM_AREA				
	C1_AREA C2_AREA				

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