



**SEGMENTED BOND TOOL
GAMMA RAY LOG
CASING COLLAR LOCATOR**

FILE NO: MD11800	COMPANY HOLLY FRONTIER - NAVAJO
API NO: 30-015-44677	WELL NAVAJO REFINING WDW #4
	FIELD ARTESIA
	COUNTY EDDY STATE NEW MEXICO

Ver. 4.10	LOCATION: 1217' FSL & 2443' FWL SECTION 23, T17S, R27E N.M.P.M. SURVEY	OTHER SERVICES TEMP
FINAL PRINT		

PERMANENT DATUM	GL	ELEVATION	KB 3565.8 FT
LOG MEASURED FROM	KB	20 FT	ABOVE P.D.
DRILL. MEAS. FROM	KB		ELEVATIONS: KB 3565.8 FT DF 3584.8 FT GL 3565.8 FT

DATE	TRIP	11-May-2018	1
RUN	1		
SERVICE ORDER	133677		
DEPTH DRILLER	1680 FT		
DEPTH LOGGER	1619 FT		
BOTTOM LOGGED INTERVAL	1619 FT		
TOP LOGGED INTERVAL	50 FT		
TIME STARTED	14:30		
TIME FINISHED	19:30		
OPERATOR RIG TIME	5 HRS		
TYPE OF FLUID IN HOLE	WBM		
FLUID DENSITY	9.5 LB/G		
FLUID SALINITY	NA		
FLUID LEVEL	0 FT		
LOGGED CEMENT TOP	70 FT		
WELLHEAD PRESSURE	0 PSI		
MAXIMUM HOLE DEVIATION	NA		
NOMINAL LOGGING SPEED	30 FMIN		
MAX. RECORDED TEMP.	NA		
REFERENCE LOG	ZDLCN/SL		
REFERENCE LOG DATE	09-MAY-2018		
EQUIP. NO.	HL6845	MIDLAND, TX	
RECORDED BY	O. ROBLES / B. TELLER		
WITNESSED BY	K. COOK		

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE THE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD		
BIT SIZE	FROM	TO
17.5 IN	80 FT	1680 FT

CASING RECORD				
SIZE	WEIGHT	GRADE	FROM	TO
20 IN			0 FT	80 FT
13.375 IN	54.5 LB/F		0 FT	1680 FT

REMARKS

RUN 1 TRIP 1: CASING OD: 13.375 IN
CASING WEIGHT: 54.5 LBS/FT
COMPRESSIVE STRENGTH: 1200 (ACTUAL UNKNOWN)

LOG RUN WITH 0 PSI
LOG CORRELATED TO ZDL/CN/SL BAKER HUGHES LOG FROM 09-MAY-2018

RIG: PATRIOT #4
CREW: R.SANCHEZ

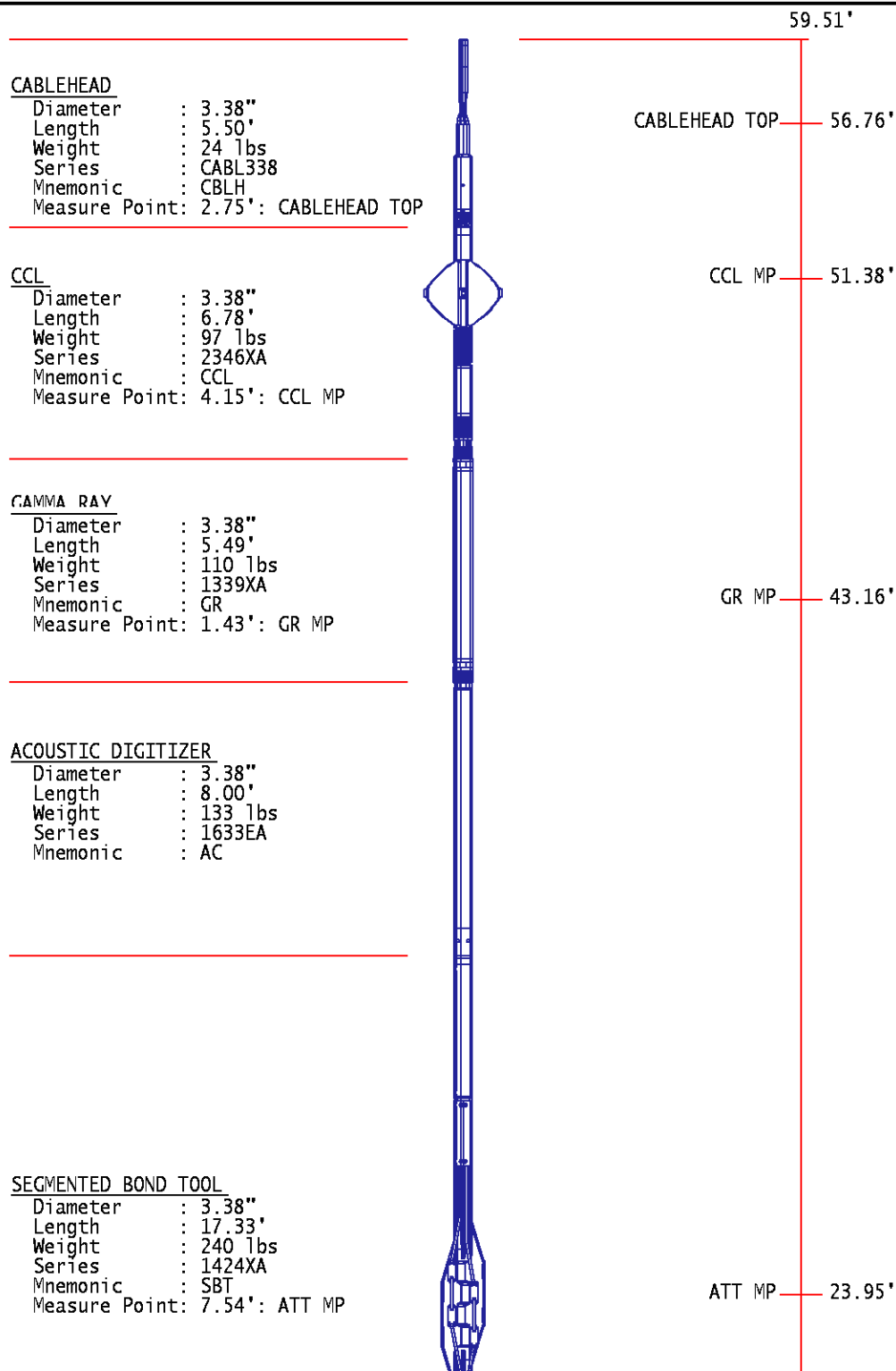
EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	CC	2212X1	272150	NAVAJO

1	1	CCL	2346XA	073159	4ARMS
1	1	GR	1339XA	10195043	FREE
1	1	SBT EL	1633EA	117089	FREE
1	1	SBT	1424XA	12429721	PAD DEVICE
1	1	CENT	4341XA	10599838	PAD DEVICE
1	1	VDL	1424PA	118040	CENTRALIZED
1	1	CENT	4341XA	10599836	PAD DEVICE

INSTRUMENT CONFIGURATION

Source File: /dat1a/md11800/p331d~3B-tdg



4 ARM BOW SPRING CENTRALIZER

Diameter : 3.38"
Length : 4.12'
Weight : 72 lbs
Series : 4341XA
Mnemonic : CENT

SEGMENTED BOND TOOL VDL SUB

Diameter : 3.38"
Length : 7.89'
Weight : 108 lbs
Series : 1424PA
Mnemonic : SBT
Measure Point: 4.00': SBT MP

SBT MP 8.40'

4 ARM BOW SPRING CENTRALIZER

Diameter : 3.38"
Length : 4.12'
Weight : 72 lbs
Series : 4341XA
Mnemonic : CENT

BULL PLUG 3 3/8

TOTAL LENGTH: 59.51'
TOTAL WEIGHT: 858 lbs
MAX DIAMETER: 0'3.38"

0.00'

MAIN LOG 5"/100FT SCALE

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017

Updates: 32 Patches: 2

Plotted: Fri May 11 18:44:28 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/md11800/p331dR02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 63.250 ft BOTTOM DEPTH: 1618.000 ft

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR	FILTER ()	medium (1)		TOP	BOTTOM
SBT	FILTER, 2pf	medium (1)		"	"
	FILTER, 4pf	medium (1)		"	"
TENSION	FILTER ()	medium (1)		"	"

SBT PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
SBT	CASING OD	13.375	in	TOP	BOTTOM
	CASING WT	54.500	lbm/ft	"	"
	FREE PIPE AMP.	47.123	mV	"	"
	FREE PIPE ATTN.	1.447	dB/ft	"	"
	CORR. FACTOR 1 (1424XA 1)	-0.029	dB/ft	"	"
	CORR. FACTOR 2 (1424XA 1)	-0.473	dB/ft	"	"

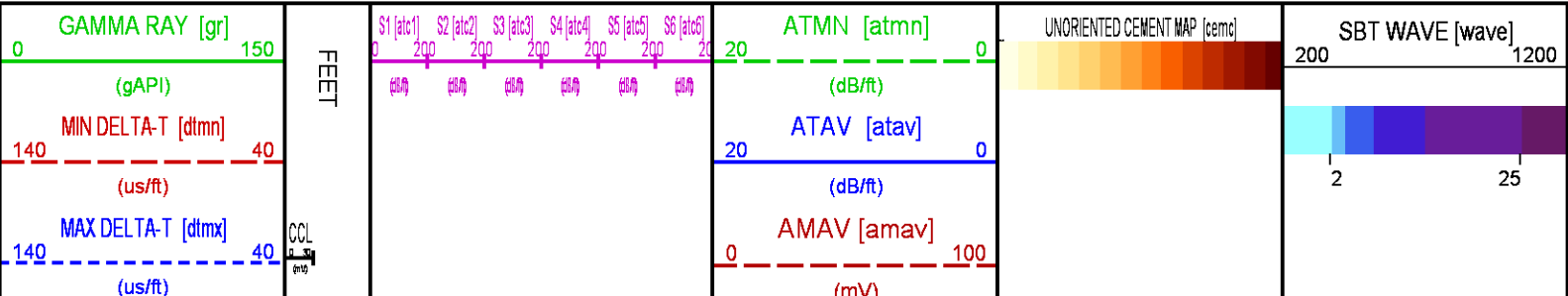
CORR. FACTOR 3 (1424XA 1)	0.012	dB/ft	"	"
CORR. FACTOR 4 (1424XA 1)	-0.055	dB/ft	"	"
CORR. FACTOR 5 (1424XA 1)	0.314	dB/ft	"	"
CORR. FACTOR 6 (1424XA 1)	0.231	dB/ft	"	"
SPACING	0.809	ft	"	"
SPREADING FACTOR	3.709	dB/ft	"	"
CEMENT STRENGTH	1200	psi	"	"
HI CUTOFF (1424XA 1)	7.375	dB/ft	"	"
LOW CUTOFF (1424XA 1)	2.929	dB/ft	"	"

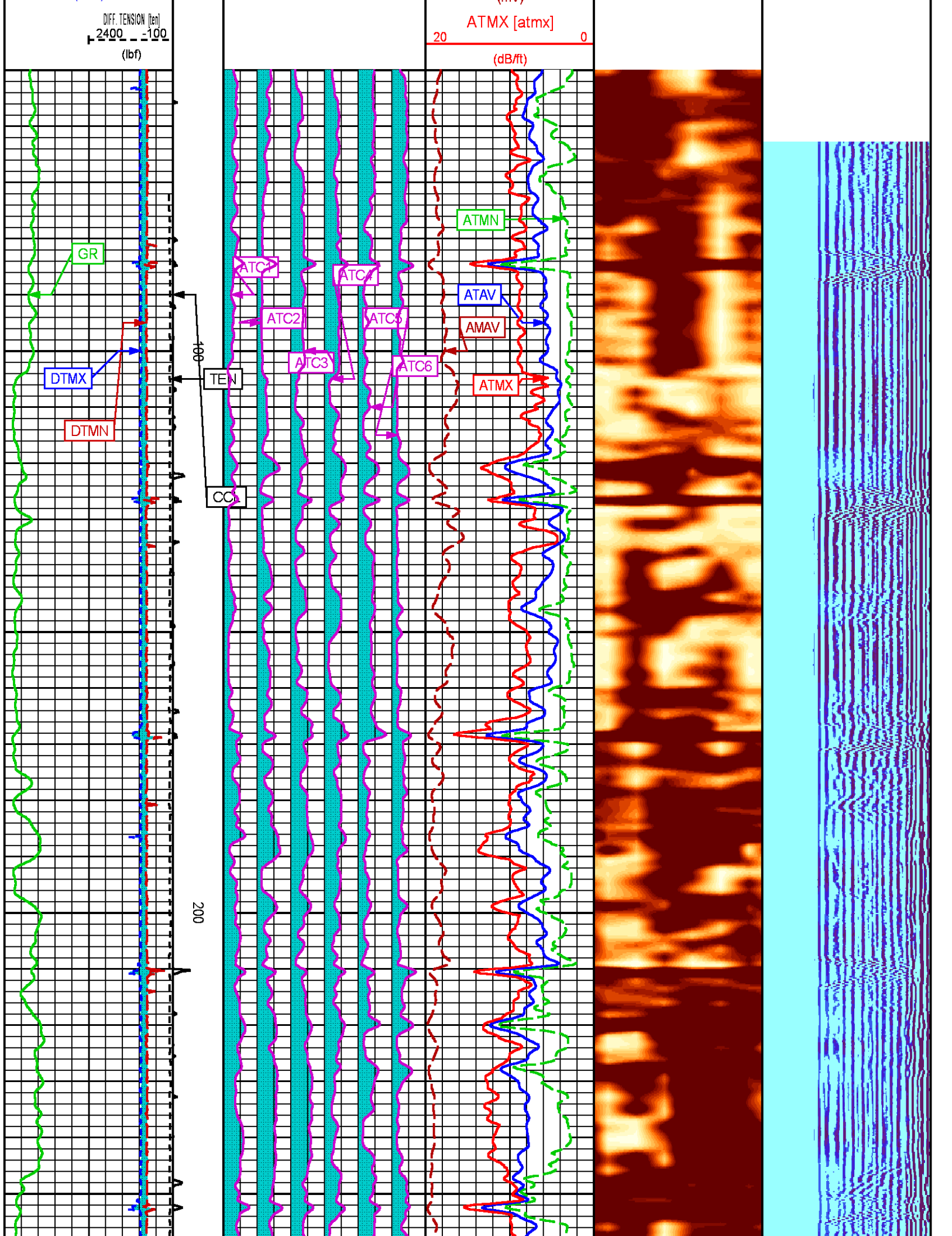
SBT NORMALIZATION RESULTS			
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS
SBT	CORR. FACTOR1	-0.126	dB/ft
	CORR. FACTOR2	-0.097	dB/ft
	CORR. FACTOR3	0.200	dB/ft
	CORR. FACTOR4	0.066	dB/ft
	CORR. FACTOR5	-0.134	dB/ft
	CORR. FACTOR6	0.091	dB/ft
FILE: /dat1a/md11800/p331dR02.sbt.qc.meta			

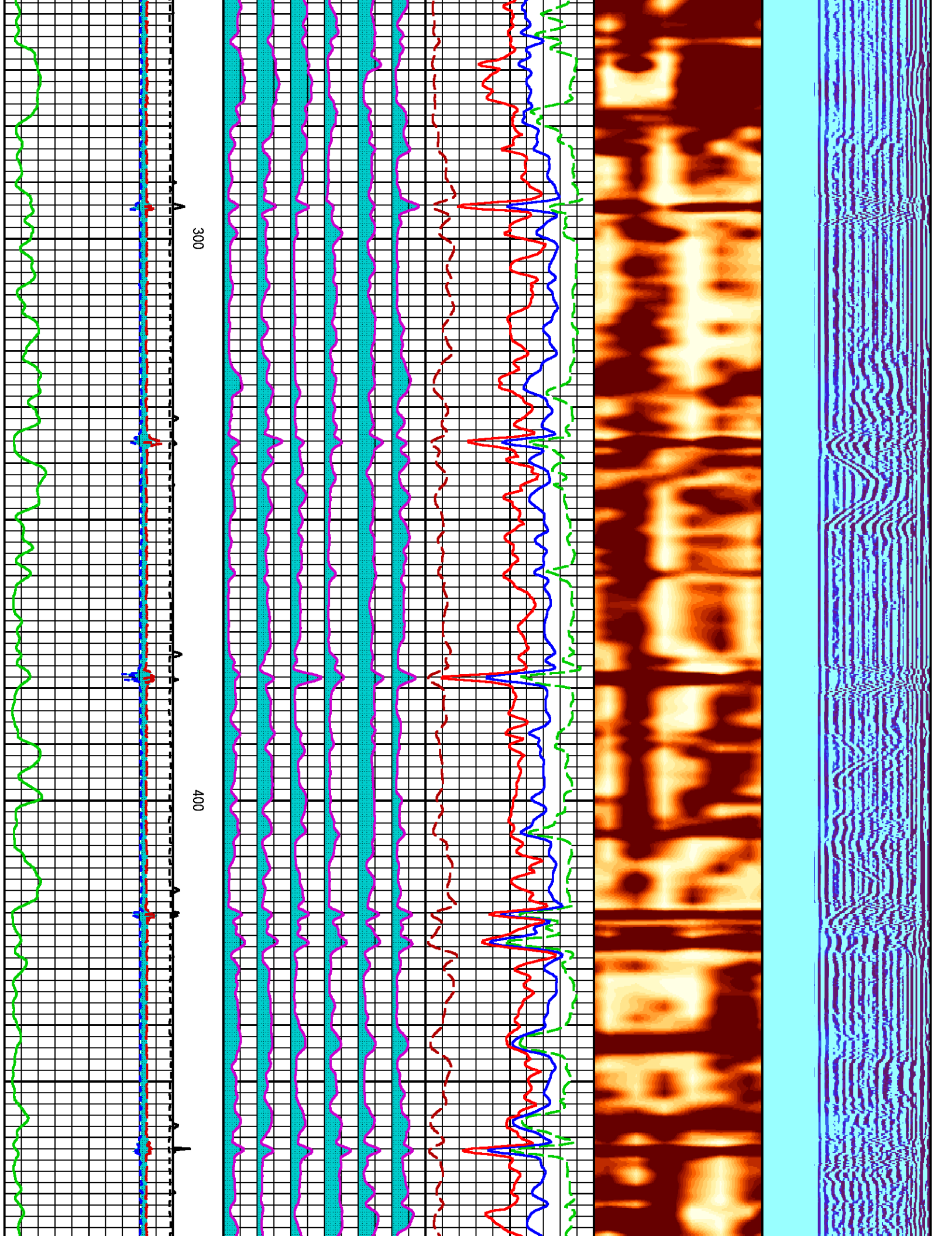
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AMAV	N/A	AVERAGE AMPLITUDE
F1:ATAV	N/A	AVERAGE ATTENUATION
F1:ATC1	N/A	ATTENUATION PAD 1
F1:ATC2	N/A	ATTENUATION PAD 2
F1:ATC3	N/A	ATTENUATION PAD 3
F1:ATC4	N/A	ATTENUATION PAD 4
F1:ATC5	N/A	ATTENUATION PAD 5
F1:ATC6	N/A	ATTENUATION PAD 6
F1:ATMN	N/A	ATTENUATION MINIMUM
F1:ATMX	N/A	ATTENUATION MAXIMUM
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:CEMC	N/A	CALIBRATED CEMENT MAP
F1:DTMN	N/A	MINIMAL SLOWNESS
F1:DTMX	N/A	MAXIMAL SLOWNESS
F1:GR	N/A	GAMMA RAY
F1:TEN	N/A	DIFFERENTIAL TENSION
F1:WAVE	N/A	DIGITIZED WAVEFORM

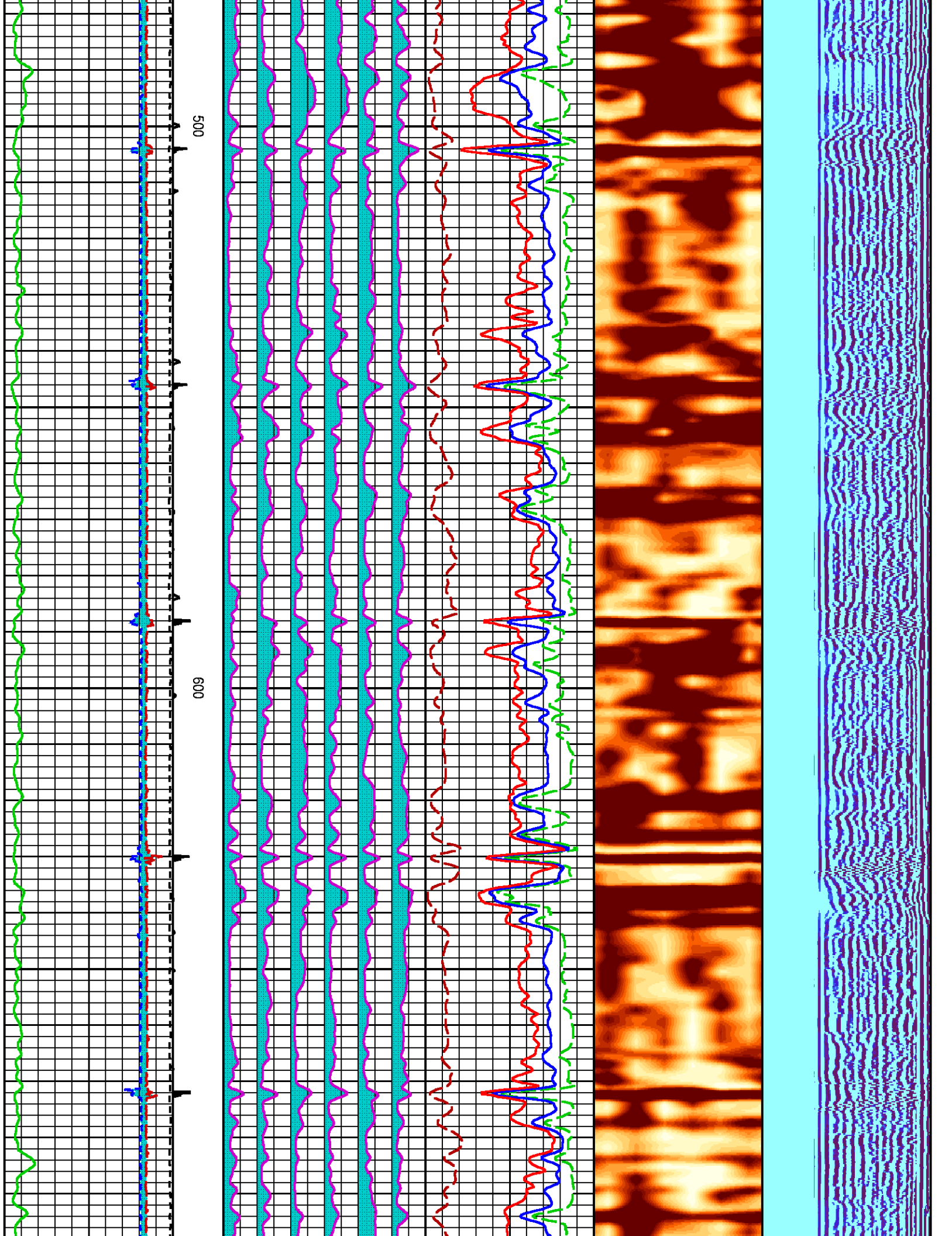
CURVE MEASURE POINT OFFSET							
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AMAV	-23.75	ATC3	-23.75	ATMN	-23.75	DTMX	-23.75
ATAV	-23.75	ATC4	-23.75	ATMX	-23.75	GR	-43.00
ATC1	-23.75	ATC5	-23.75	CCL	-51.00	TEN	0.00
ATC2	-23.75	ATC6	-23.75	DTMN	-23.75		

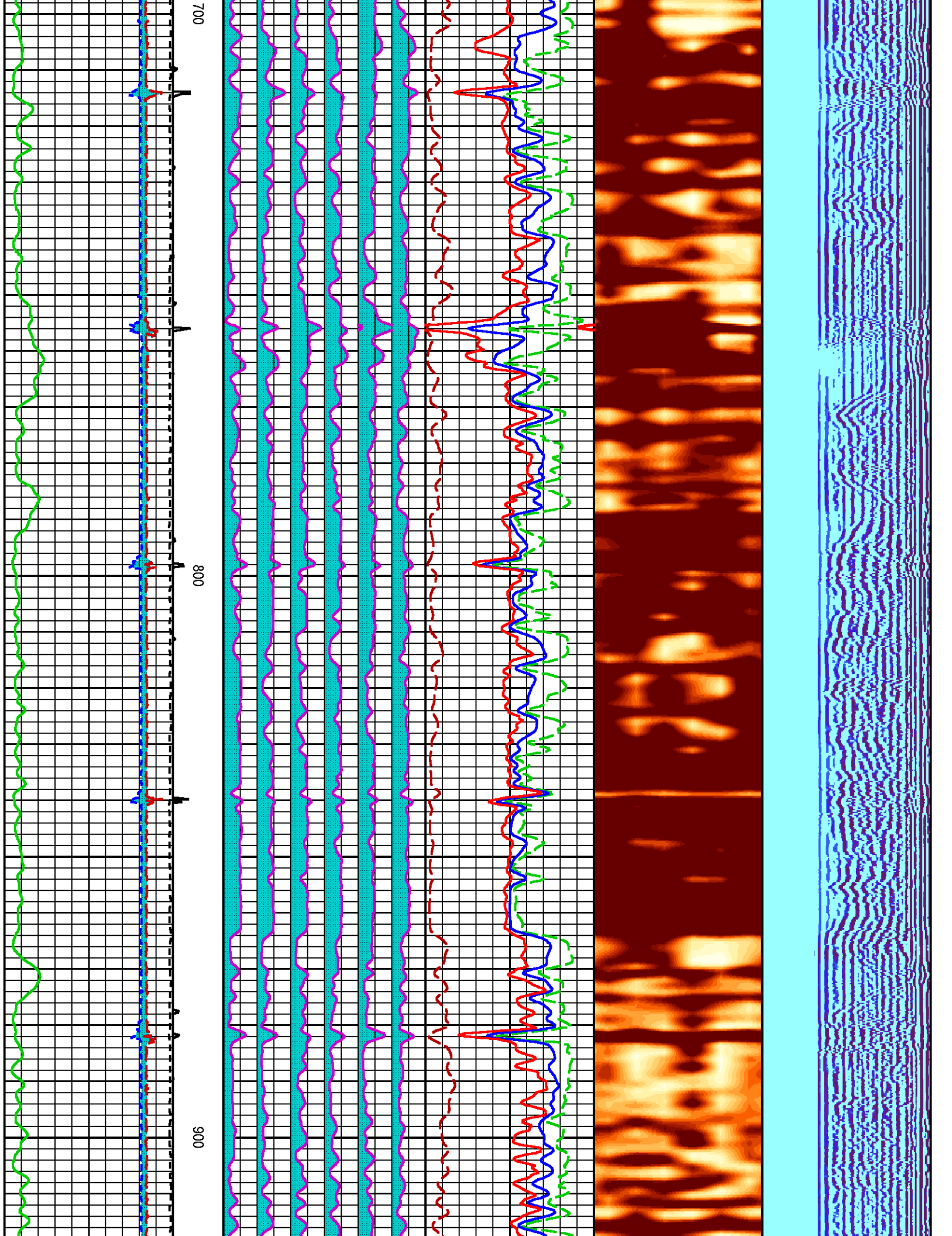
Presentation	: sys1:MAIN.fvpdf [5"/100' Scale]
Plot Interval	: 50 - 1624.5 Feet
Data File 1	: F1 : sys1:/dat1a/md11800/MAIN.xtf
Created On	: N/A
Company	: HOLLY FRONTIER - NAVAJO
Well	: NAVAJO REFINING WDW #4
Field	: ARTESIA
File Interval	: 20 - 1625.75 Feet
OCT	: p331d

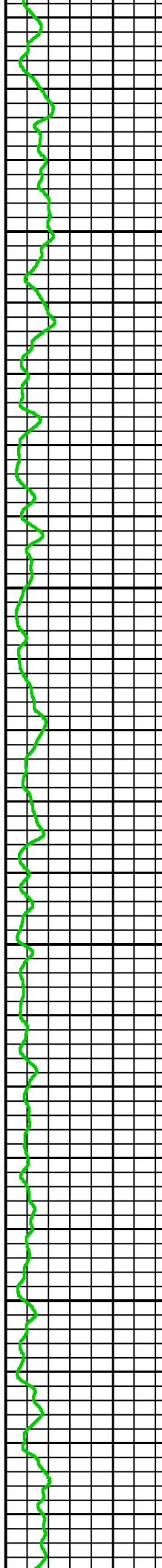
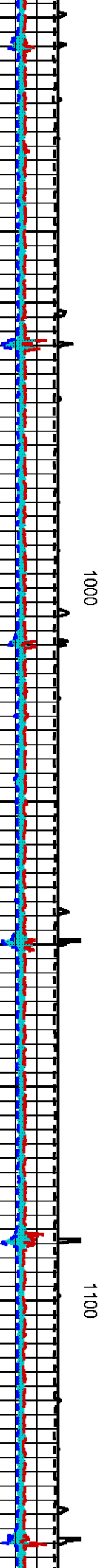
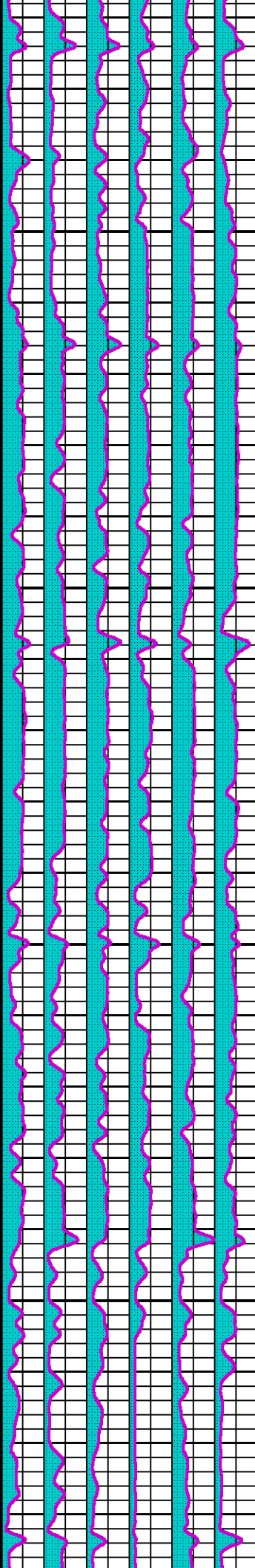
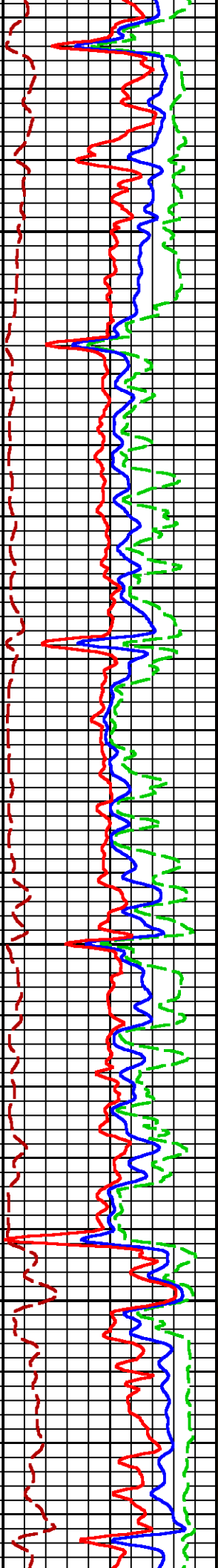
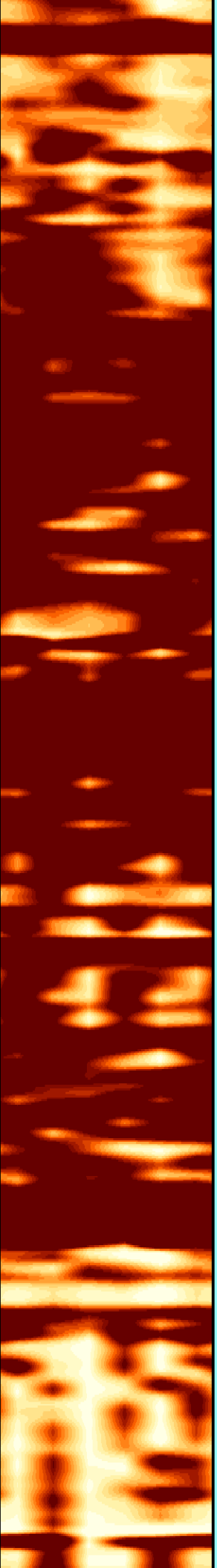
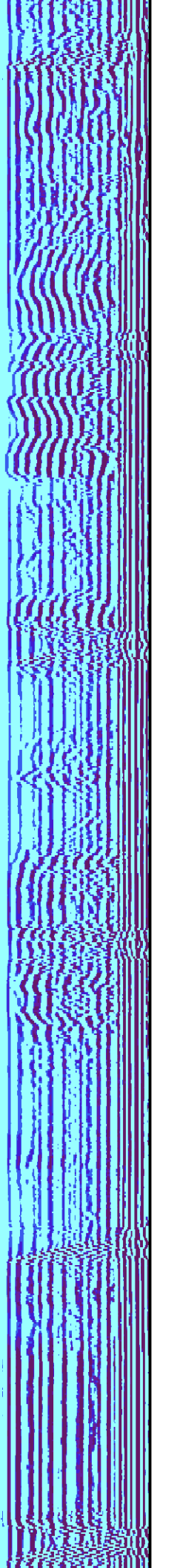


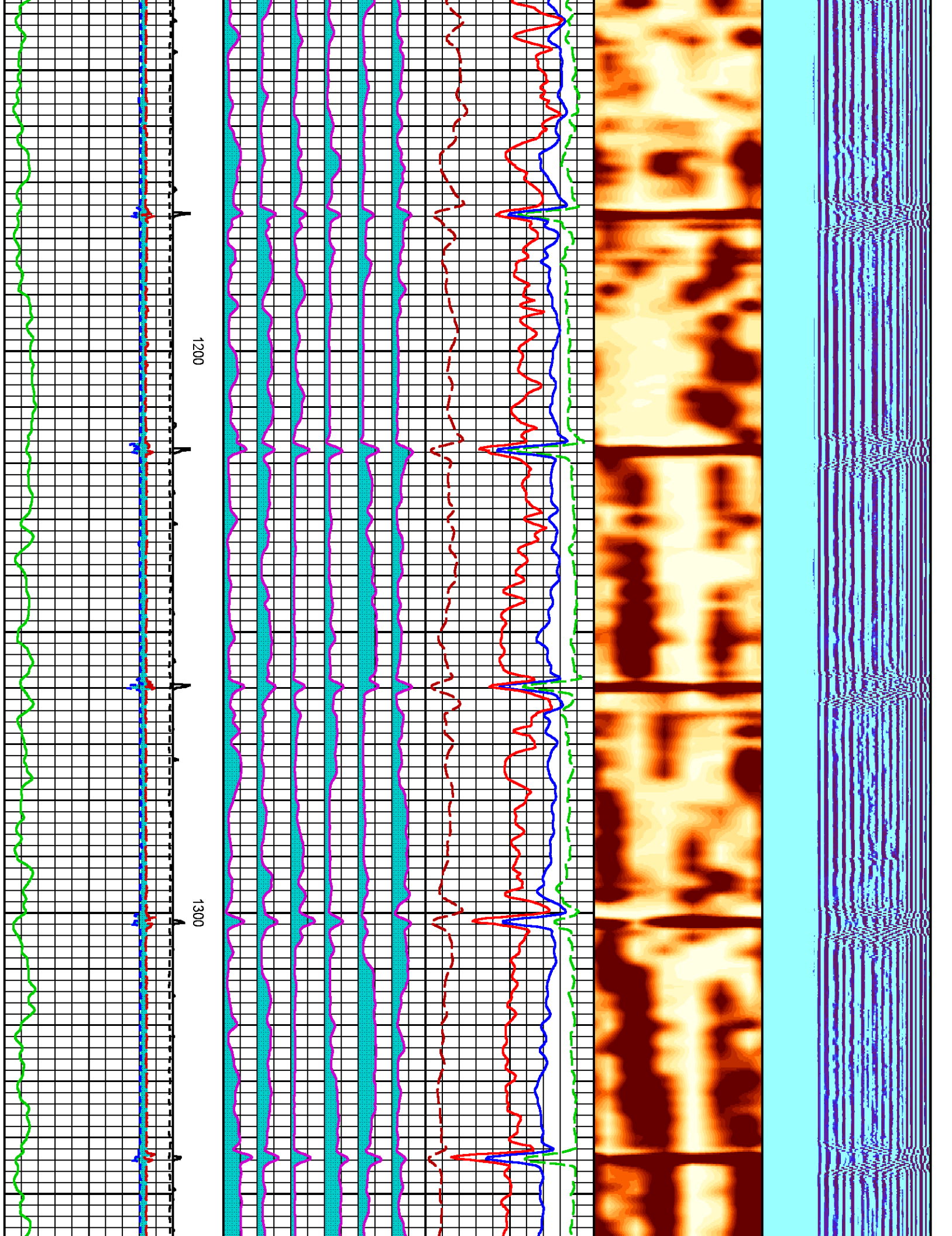


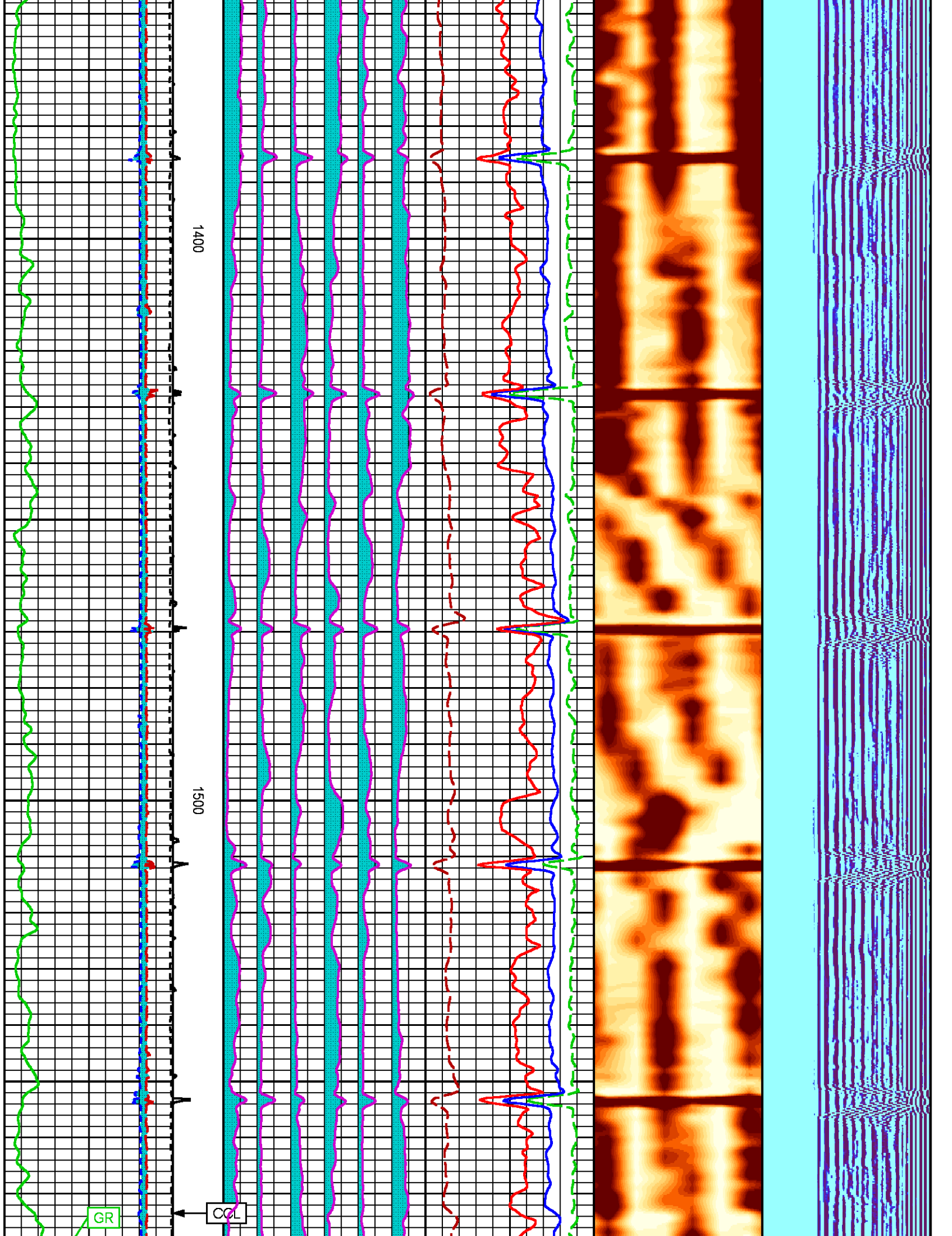


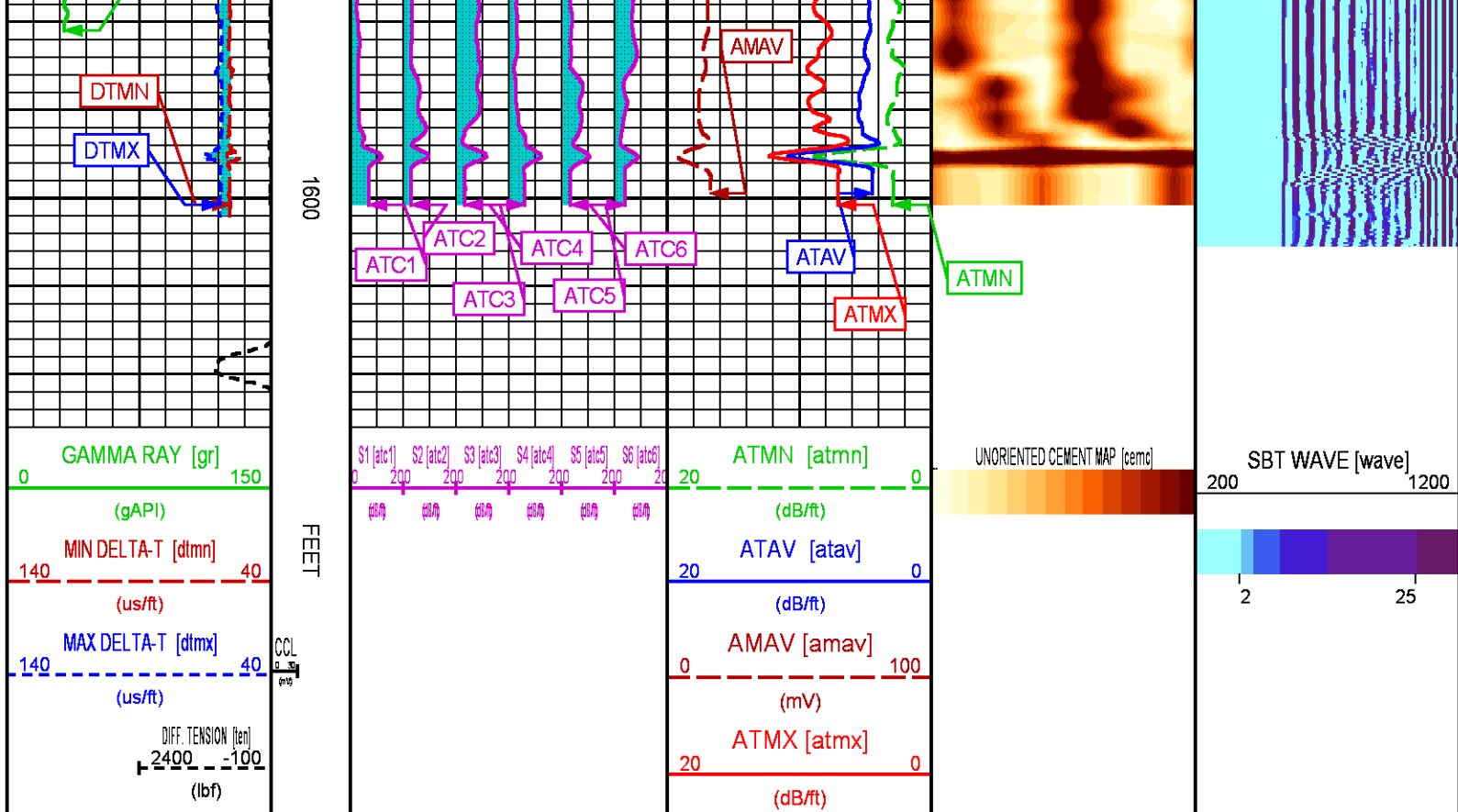












REPEAT LOG

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017
Updates: 32 Patches: 2

Plotted: Fri May 11 18:45:01 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/md11800/p331dR01.prm
LOGGING MODE: DEPTH DOWN
TOP DEPTH: 380.750 ft BOTTOM DEPTH: 867.500 ft

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR	FILTER ()	medium (1)		TOP	BOTTOM
SBT	FILTER, 2pf	medium (1)		"	"
	FILTER, 4pf	medium (1)		"	"
TENSION	FILTER ()	medium (1)		"	"

SBT PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
SBT	CASING OD	13.375	in	TOP	BOTTOM
	CASING WT	54.500	lbm/ft	"	"
	FREE PIPE AMP.	47.123	mV	"	"
	FREE PIPE ATTN.	1.447	dB/ft	"	"
	CORR. FACTOR 1 (1424XA 1)	0.000	dB/ft	"	"
	CORR. FACTOR 2 (1424XA 1)	0.000	dB/ft	"	"
	CORR. FACTOR 3 (1424XA 1)	0.000	dB/ft	"	"
	CORR. FACTOR 4 (1424XA 1)	0.000	dB/ft	"	"

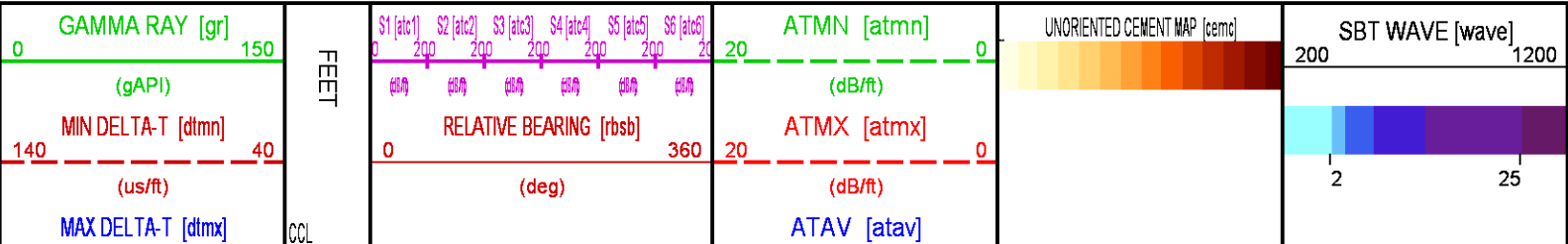
	CORR. FACTOR 5 (1424XA 1)	0.000	dB/ft	"	"
	CORR. FACTOR 6 (1424XA 1)	0.000	dB/ft	"	"
	SPACING	0.809	ft	"	"
	SPREADING FACTOR	3.709	dB/ft	"	"
	CEMENT STRENGTH	1200	psi	"	"
	HI CUTOFF (1424XA 1)	7.375	dB/ft	"	"
	LOW CUTOFF (1424XA 1)	2.929	dB/ft	"	"

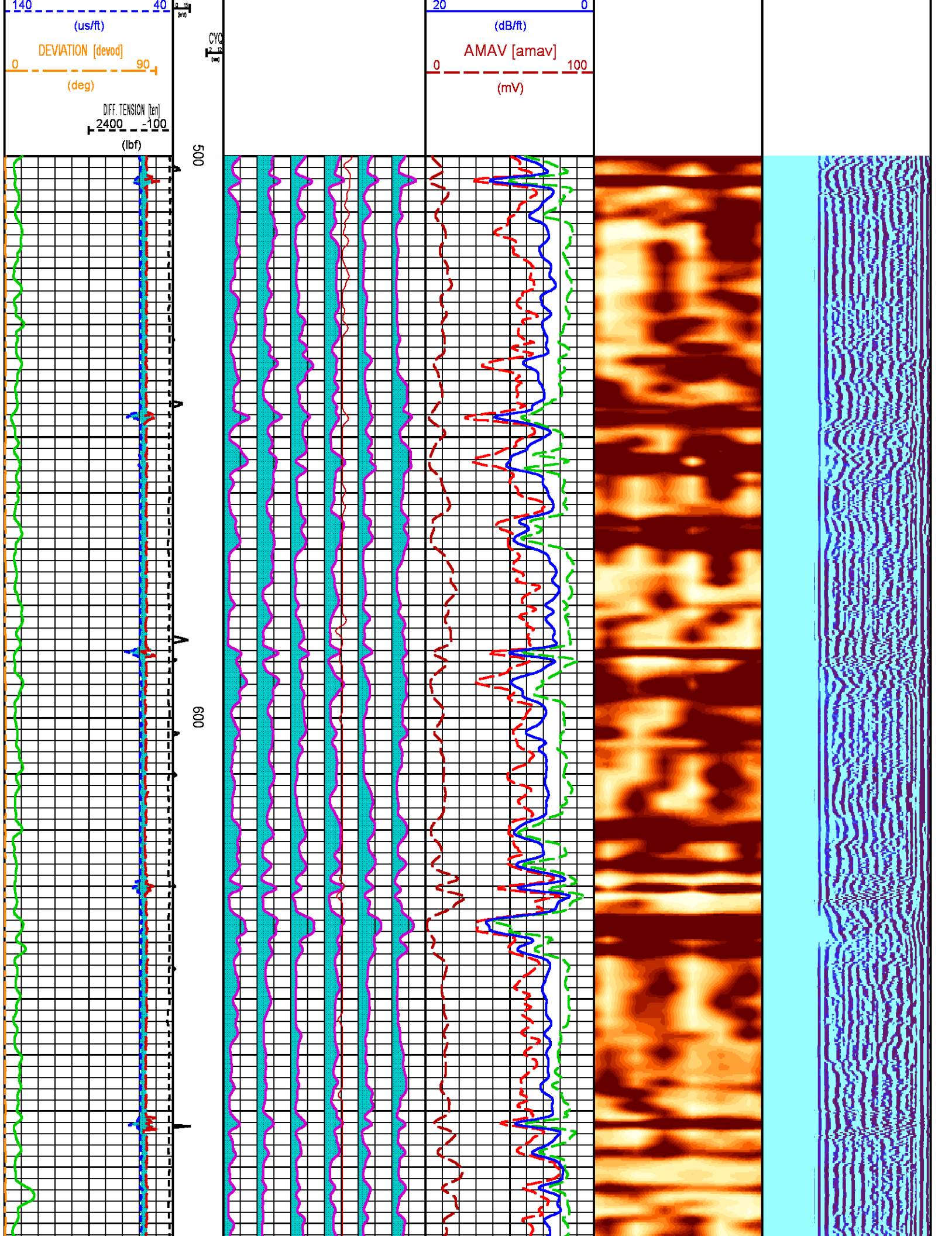
SBT NORMALIZATION RESULTS			
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS
SBT	CORR. FACTOR1	-0.029	dB/ft
	CORR. FACTOR2	-0.473	dB/ft
	CORR. FACTOR3	0.012	dB/ft
	CORR. FACTOR4	-0.055	dB/ft
	CORR. FACTOR5	0.314	dB/ft
	CORR. FACTOR6	0.231	dB/ft
FILE: /dat1a/md11800/p331dR01.sbt.qc.meta			

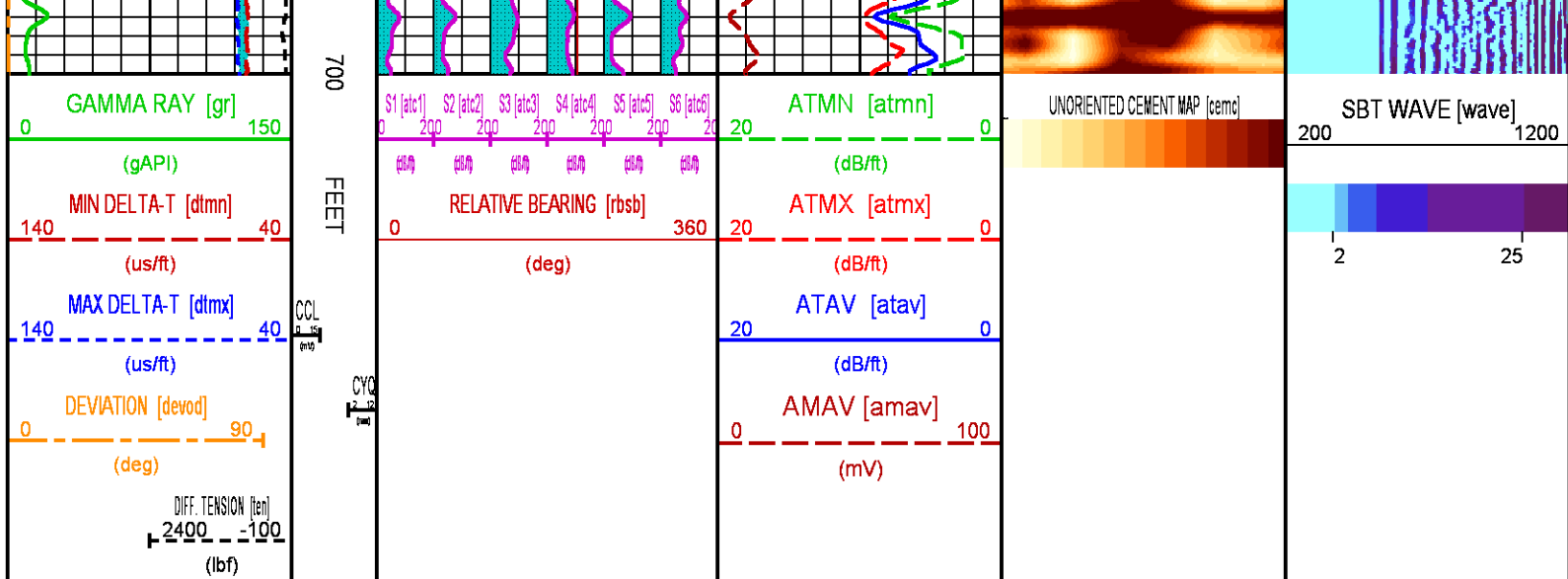
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AMAV	N/A	AVERAGE AMPLITUDE
F1:ATAV	N/A	AVERAGE ATTENUATION
F1:ATC1	N/A	ATTENUATION PAD 1
F1:ATC2	N/A	ATTENUATION PAD 2
F1:ATC3	N/A	ATTENUATION PAD 3
F1:ATC4	N/A	ATTENUATION PAD 4
F1:ATC5	N/A	ATTENUATION PAD 5
F1:ATC6	N/A	ATTENUATION PAD 6
F1:ATMN	N/A	ATTENUATION MINIMUM
F1:ATMX	N/A	ATTENUATION MAXIMUM
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:CEMC	N/A	CALIBRATED CEMENT MAP
F1:CYQ	N/A	CYCLE QUALITY
F1:DEVOD	N/A	DEVIATION
F1:DTMN	N/A	MINIMAL SLOWNESS
F1:DTMX	N/A	MAXIMAL SLOWNESS
F1:GR	N/A	GAMMA RAY
F1:RBSB	N/A	RELATIVE BEARING (RELATIVE TO BOREHOLE LOW SIDE) FOR SBT
F1:TEN	N/A	DIFFERENTIAL TENSION
F1:WAVE	N/A	DIGITIZED WAVEFORM

CURVE MEASURE POINT OFFSET							
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AMAV	-23.75	ATC4	-23.75	CCL	-51.00	GR	-43.00
ATAV	-23.75	ATC5	-23.75	CYQ	-23.75	RBSB	-23.75
ATC1	-23.75	ATC6	-23.75	DEVOD	-23.75	TEN	0.00
ATC2	-23.75	ATMN	-23.75	DTMN	-23.75		
ATC3	-23.75	ATMX	-23.75	DTMX	-23.75		

Presentation	: sys1:REP.fvpdf [5"/100' Scale]
Plot Interval	: 500 - 700 Feet
Data File 1	: F1 : sys1:/dat1a/md11800/REPEAT.xtf
Created On	: N/A
Company	: HOLLY FRONTIER - NAVAJO
Well	: NAVAJO REFINING WDW #4
Field	: ARTESIA
File Interval	: 336.75 - 877.75 Feet
OCT	: p331d







CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/md11800/p331d.tp1

SBT PRIMARY CALIBRATION SUMMARY

TOOL #: 1424XA 12429721

DATE/TIME PERFORMED: Fri May 11 15:30:44 2018

UNIT #: 3882TD HL6685

	PAD 1	PAD 2	PAD 3	PAD 4	PAD 5	PAD 6
NOISE LEVEL	2.2 10.0	2.2 10.0	2.8 10.0	1.8 10.0	2.2 10.0	1.7 10.0
PAD SENS	287.6 150.0	260.8 150.0	360.0 150.0	304.2 150.0	332.0 150.0	300.6 150.0



COMPANY HOLLY FRONTIER - NAVAJO
WELL NAVAJO REFINING WDW #4
FIELD ARTESIA
COUNTY EDDY **STATE** NEW MEXICO

FILE NO: MD11800
API NO: 30-015-44677

LOCATION:
 1217' FSL & 2443' FWL
 SECTION 23, T17S, R27E
 N.M.P.M. SURVEY

ELEVATIONS:
 KB 3585.8 FT
 DF 3584.8 FT
 GL 3565.8 FT

DATE 11-May-2018

FINAL PRINT



