Tucker ENERGY SERVICES

COMPOSITE LOG

Company VAL ENERGY, INC.
Well SAWYER V #1-31 OWWO
Field WILSON
County COWLEY
State KANSAS
Country USA
API No. 15-035-30366-0002

File No : TUL-60971
Company : VAL ENERGY, INC.
Well : SAWYER V #1-31 OWWO
Field : WILSON
County : COWLEY
State : KANSAS
Country : USA
API No : 15-035-30366-0002

Location :
4950' FSL & 1650' FEL
NE NW NE

LSD : **Sect :** 31 **Twp :** 32S **Rge :** 6E

Permanent Datum:	GL	**Elevations:**		**Services:**	
Drilling Measured From:	GL	**KB**	0.00 Ft	CNT	PIT
Log Measured From:	GL	**DF**	0.00 Ft	LDT	
Above Permanent Datum:	0.00 Ft	**GL**	1263.00 Ft	MLT	

Date	08-24-2016						
Run Number	1						
Depth--Driller	3476.0	Ft					
Depth--Logger	3475.0	Ft					
First Reading	3475.0	Ft					
Last Reading	2458.0	Ft					
Casing--Driller	2458.0	Ft					
Casing--Logger	2458.0	Ft					
Bit Size	6.125	In					
Casing Size	7.000	In					
Hole Fluid Type	WBM						
Density	0.0						
Fluid Loss	0.0						
PH/Viscosity	0.0	0.0					
Sample Source	MEASURED						
RM@Measured Temp.	2.000 @ 75 F						
RMF@Measured Temp	1.600 @ 75 F						
RMC@Measured Temp.	2.400 @ 75 F						
Source RMF/RMC	CALCULATED	CALCULATED					
RM@BHT	1.400 @ 110 F						
Time Circulation Stopped	08-24-2016 09:00						
Max Recorded Temp.	110 F						
Equipment/Base	1022	TULSA, OK					
Recorded By	SHELDON TYLER						
Witnessed By	DEON HOWARD						

Bitsize Intervals

Size (In)	Bottom (Ft)
6.125	3476.00

Casing Strings

Size (In)	Weight (Lbs)	Bottom (Ft)	Top (Ft)
7.000	23.00	2458.00	0.00

Run Number	1		
Date	08-24-2016		
Date/Time On Bottom	08-24-2016 12:00		
Depth to Fluid	0.0 Ft		
Salinity	0.000		
RMF@BHT	1.120 @ 110 F		
RMC@BHT	1.680 @ 110 F		

Run Number 1

Comments

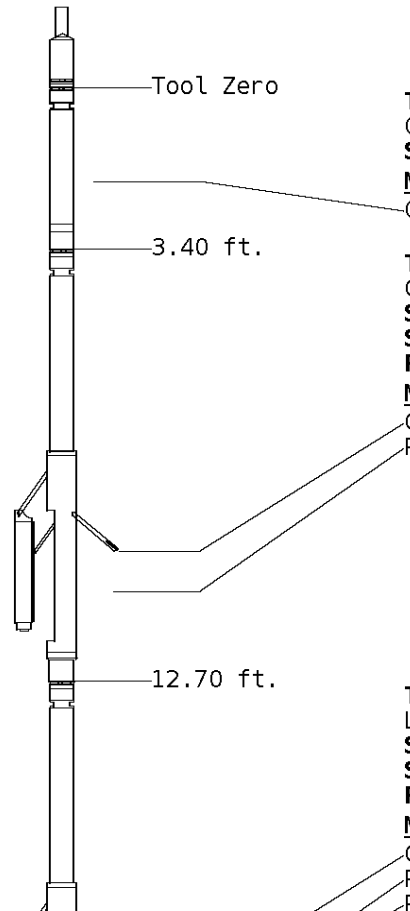
ALL PRESENTATIONS AS PER CUSTOMER REQUEST
GRT, CNT, LDT, MLT AND PIT RUN IN COMBINATION
CALIPERS ORIENTED ON X-Y AXIS
2.71 G/CC USED TO CALCULATE POROSITY
ANNULAR HOLE VOLUME CALCULATED USING 5.5" PRODUCTION CASING
PHIN IS CALIPER CORRECTED

GRT: GRP, GRX
CNT: PHIN, CLCNIN, PHXN
LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN, PRXL, PECLX, LDENNX, LCORX
MLT: NOR_RF, INV_RF, MSCLPIN
PIT: ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS:
B.BAILEY
R.FRANKLIN

Tool String Schematic

Total Tool Length - 53.15 **ft.**
Maximum Outside diameter - 6.00 **in.**
Net Weight in Air - 943.00 **lbs.**



Tool: GRT-B **Length:** 3.40 **ft.** **O.D.** 3.60 **in.**
Gamma Ray Controller
Sonde ID :GRT-BA-121

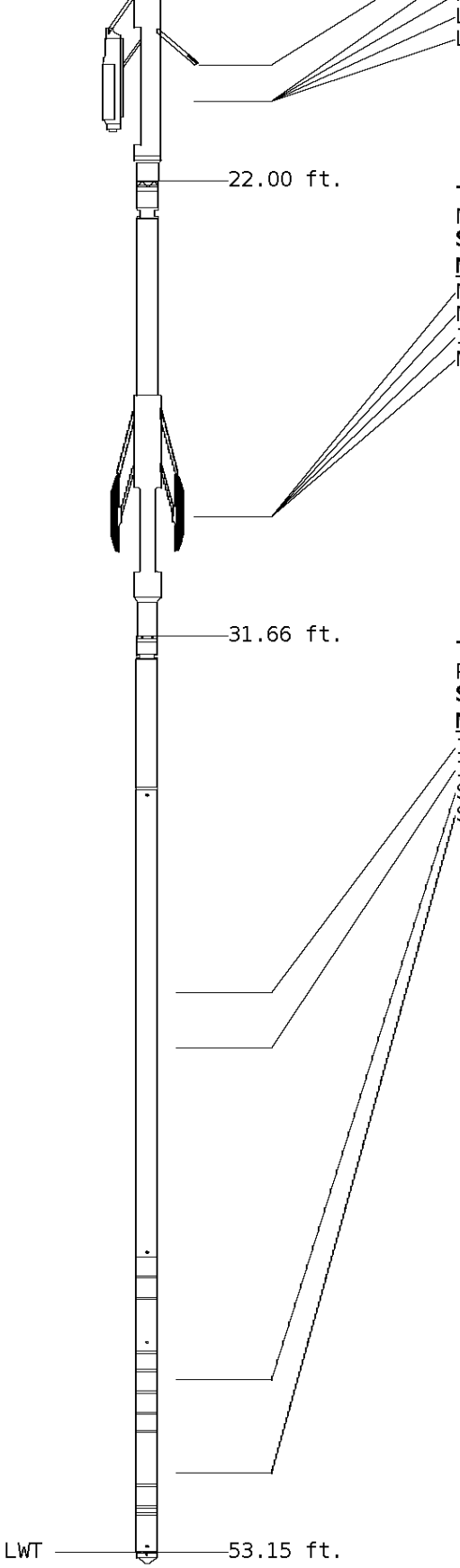
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	51.15

Tool: CNT-AA **Length:** 9.30 **ft.** **O.D.** 4.36 **in.**
Compensated Neutron A Pad on NDT-A
Sonde ID :NDT-AB-400
Source ID :N-1044
Pad ID :CNP-AA-115

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLCN	6.00	9.40	43.75
PHIN	6.80	10.20	42.95

Tool: LDT-DA **Length:** 9.30 **ft.** **O.D.** 4.80 **in.**
Litho Density D Pad on NDT-A
Sonde ID :NDT-BB-153
Source ID :63558B
Pad ID :LDP-DA-50

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLLD	6.00	18.70	34.45
PEL	7.00	19.70	33.45
PES	7.40	20.10	33.05



LDEN	7.20	19.90	33.25
LCOR	7.20	19.90	33.25

Tool: MST-DA **Length:** 9.66 **ft.** **O.D.** 6.00 **in.**
Micro Spherically Focused (IC)
Sonde ID :MST-DA-021

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	29.60	23.55
MSCLP	7.60	29.60	23.55
INV	7.60	29.60	23.55
NOR	7.60	29.60	23.55

Tool: PIT-CA **Length:** 21.49 **ft.** **O.D.** 3.62 **in.**
Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-069

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	40.58	12.56
ILM	10.10	41.76	11.39
SFLU	17.49	49.15	4.00
SP	20.60	52.26	0.88

Well File: VAL_ENERGY_SAWYERV_1-31OWWO_AUG24_MSTK **Scale:** 1:240 **Format:** COMSAT
Segment: V1.D1.S6 Reprocess of MAIN **Acquired:** 2016-08/24 12:42 3.4.0-13544
Reference: 0 **Processed:** 2016-08/24 13:06 3.4.0-13544

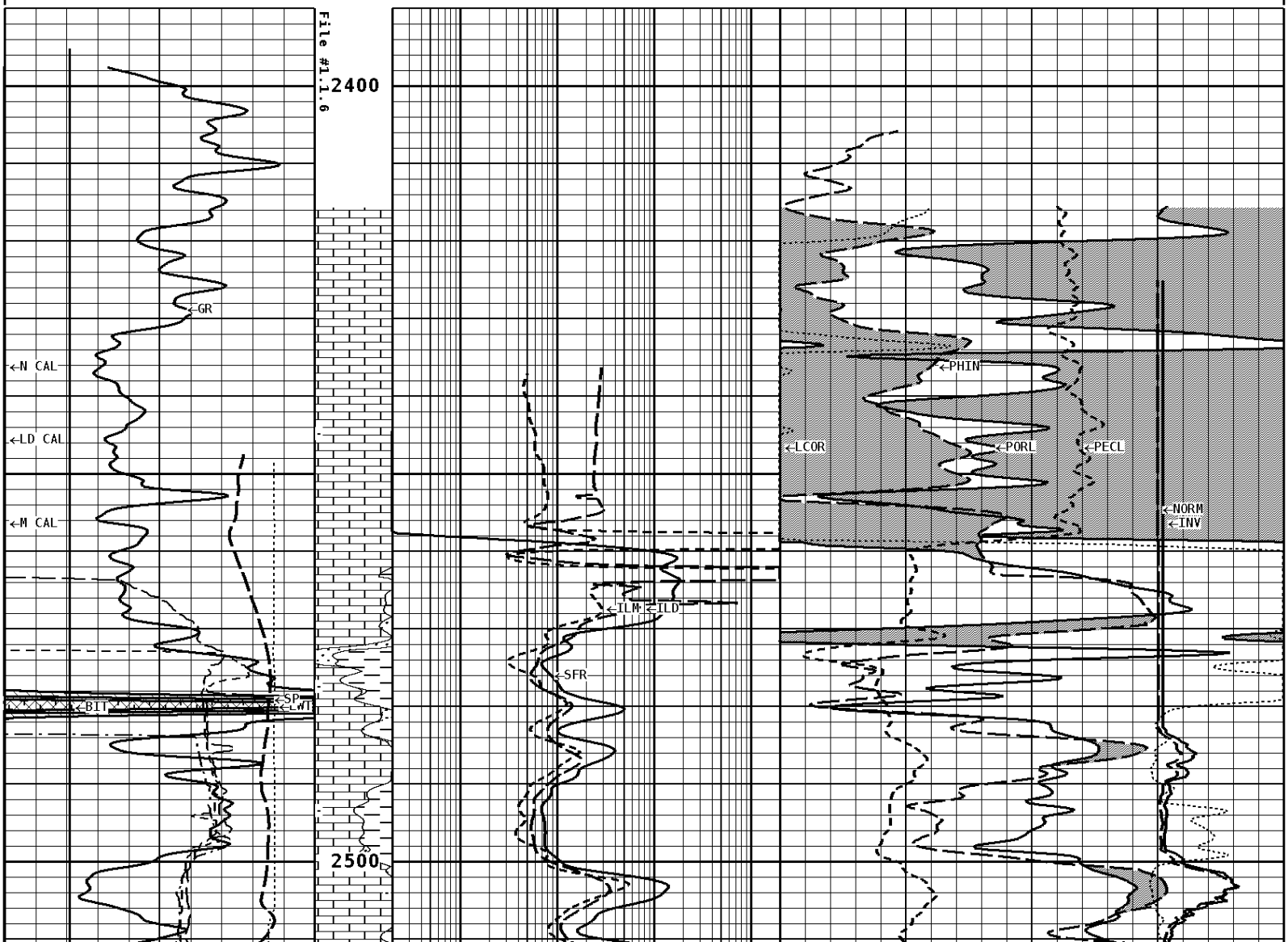
CALIPER MICRO
INCHES (IN)
14 **24**
4 **14**

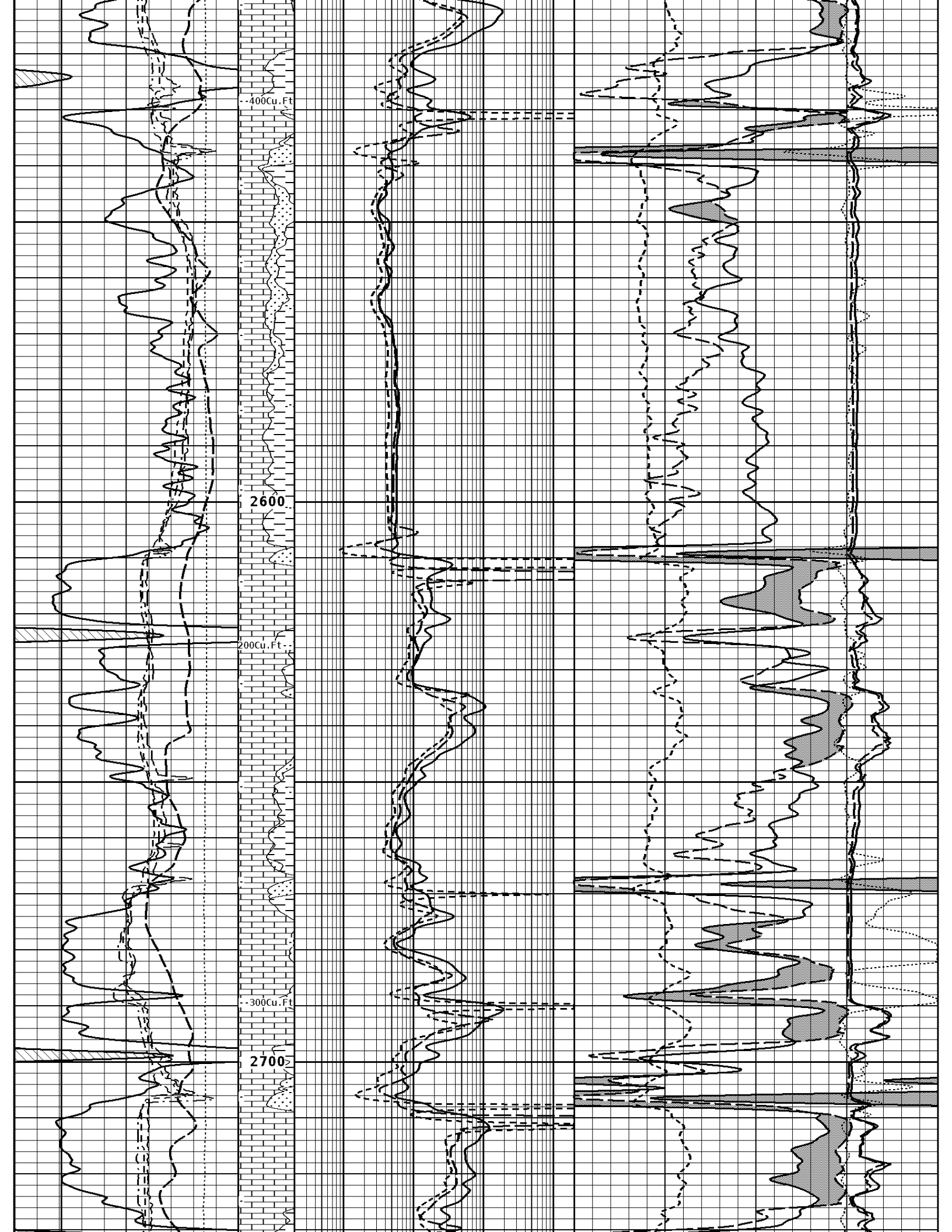
BIT SIZE
INCHES (IN)

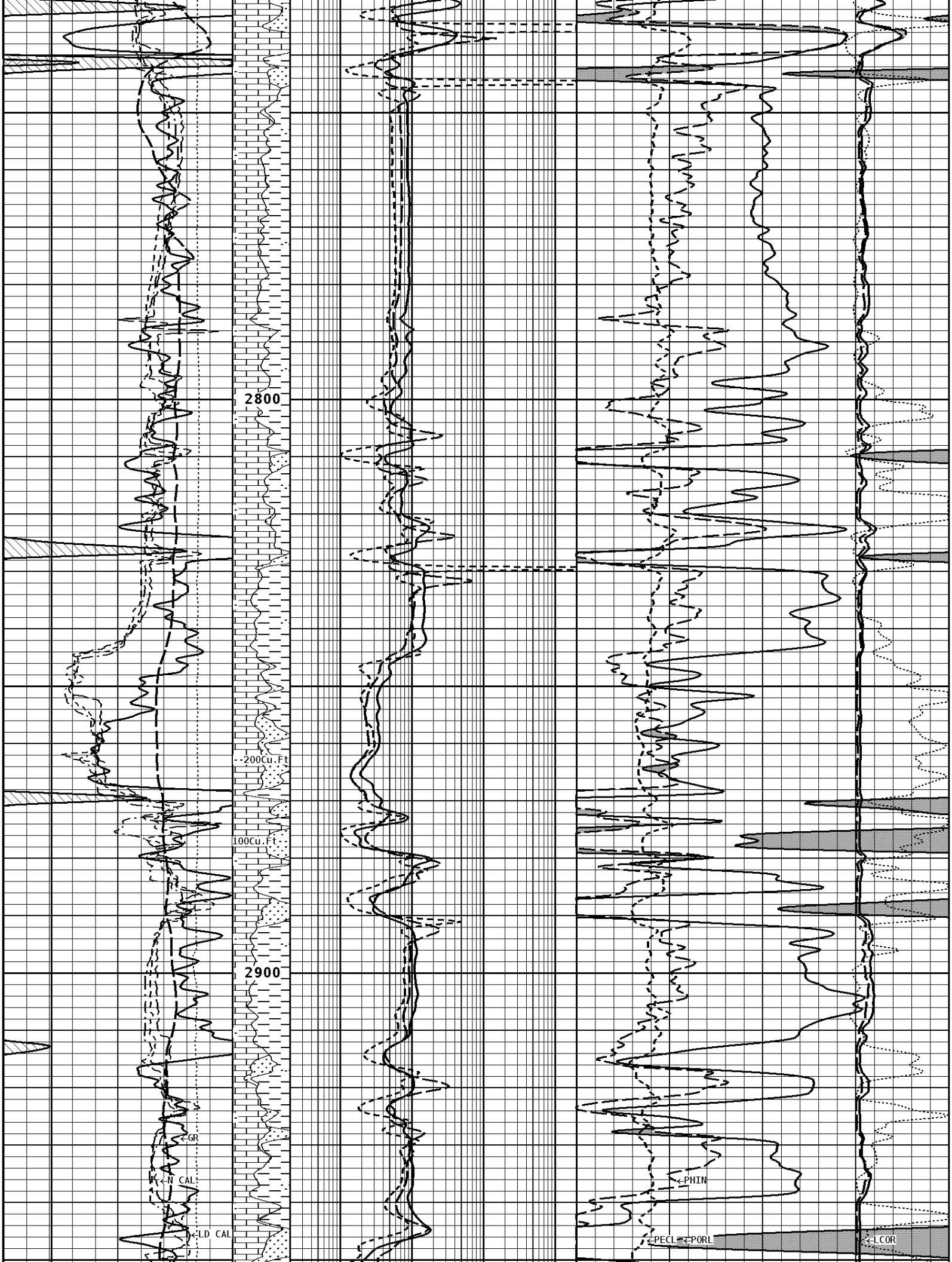
NORMAL
OHMM

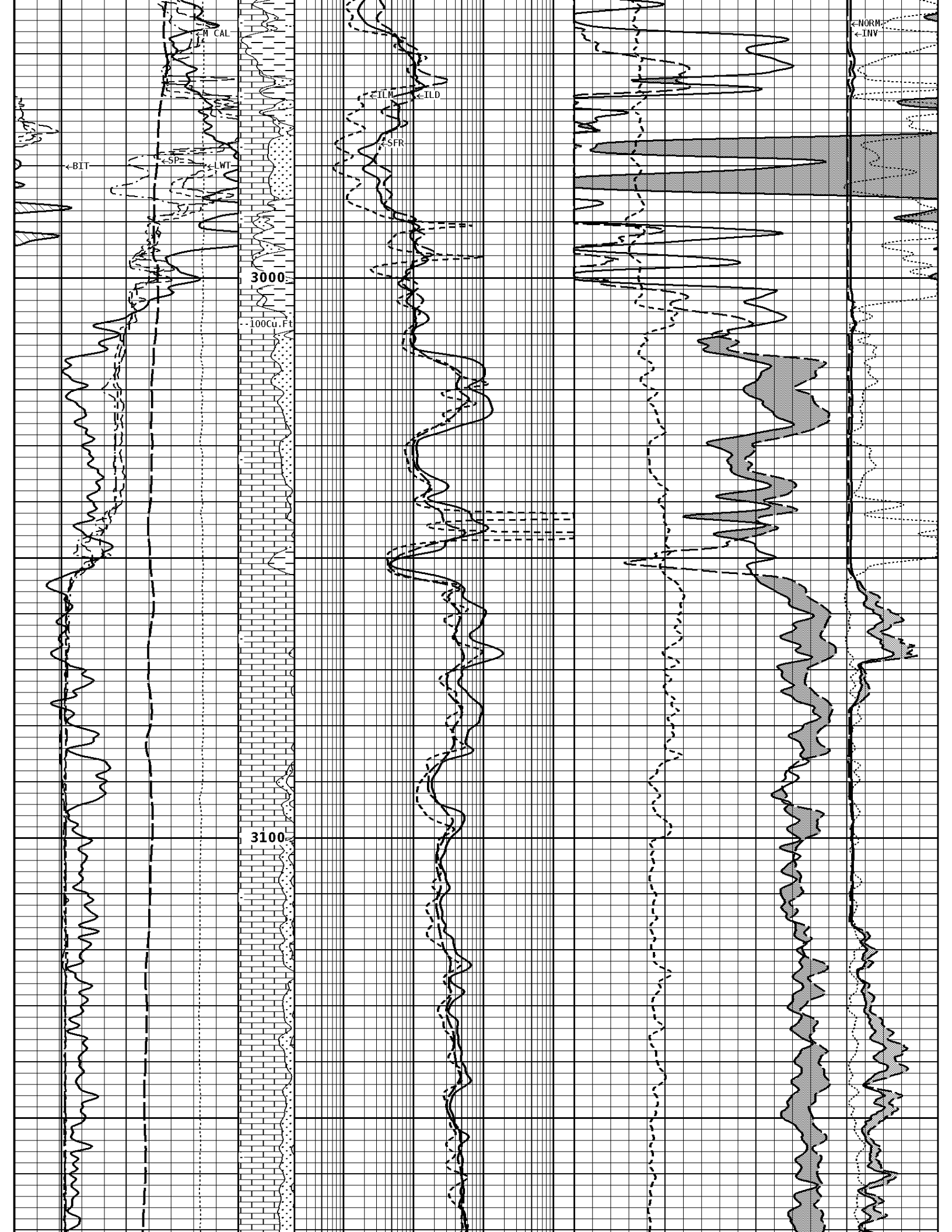
4 14			0 40
NEUTRON (Y) CALIPER INCHES (IN) 14 24 4 14			INVERSE OHMM 0 40
DENSITY (X) CALIPER INCHES (IN) 14 24 4 14	Volume Quartz		DENSITY CORRECTION G/CC -0.75 0.25
TENSION LBS 10000 0	Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0	PE CROSS-SECTION BARNS/ELECTRON 0 20
SPONTANEOUS POTENTIAL mV →| |←20	Volume Dolo/Shale	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 30 -10 -10 -50
GAMMA RAY API UNITS 150 300 0 150	-BHV AHV- CU.FT	MEDIUM INDUCTION OHMM 0.2 2000.0	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10

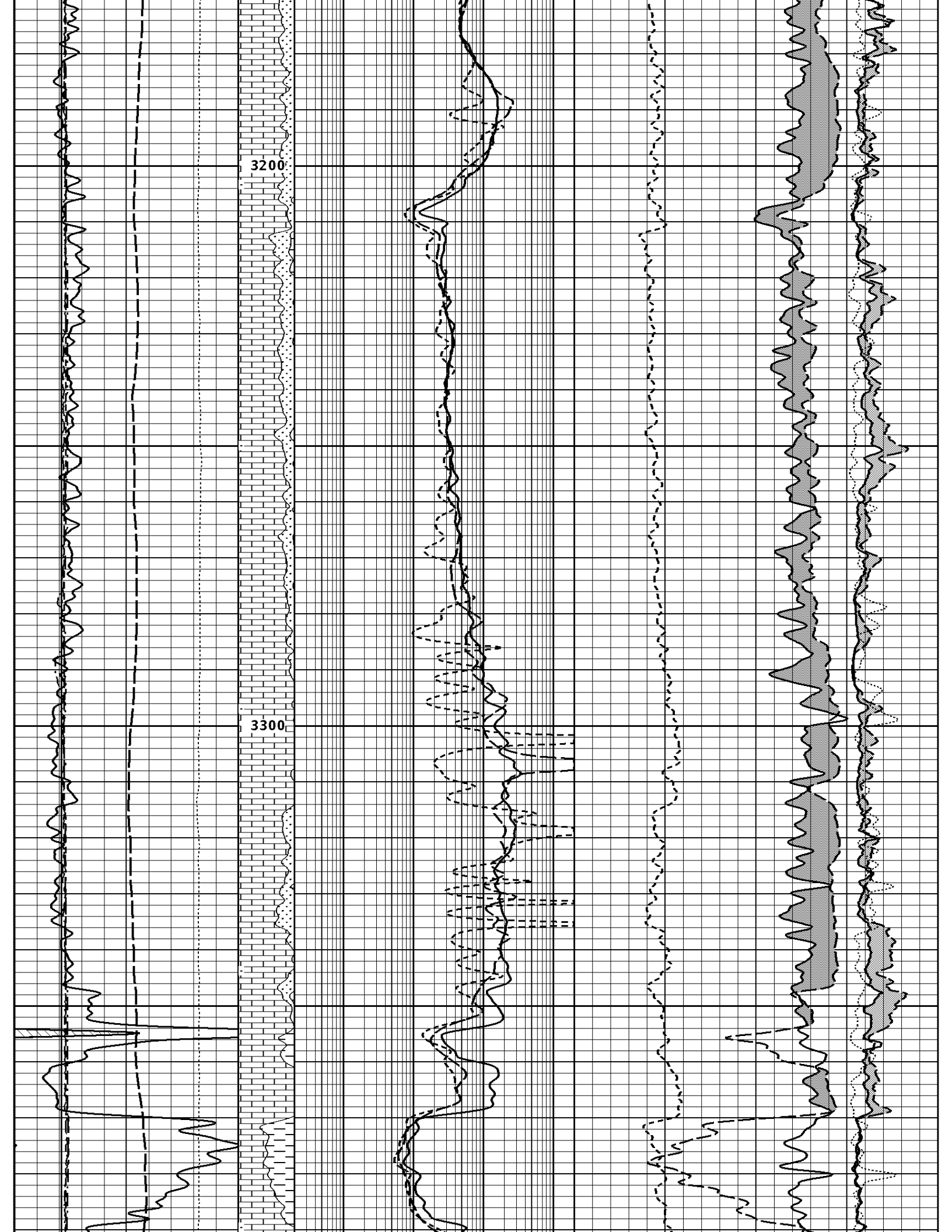
1:240 MAIN SECTION

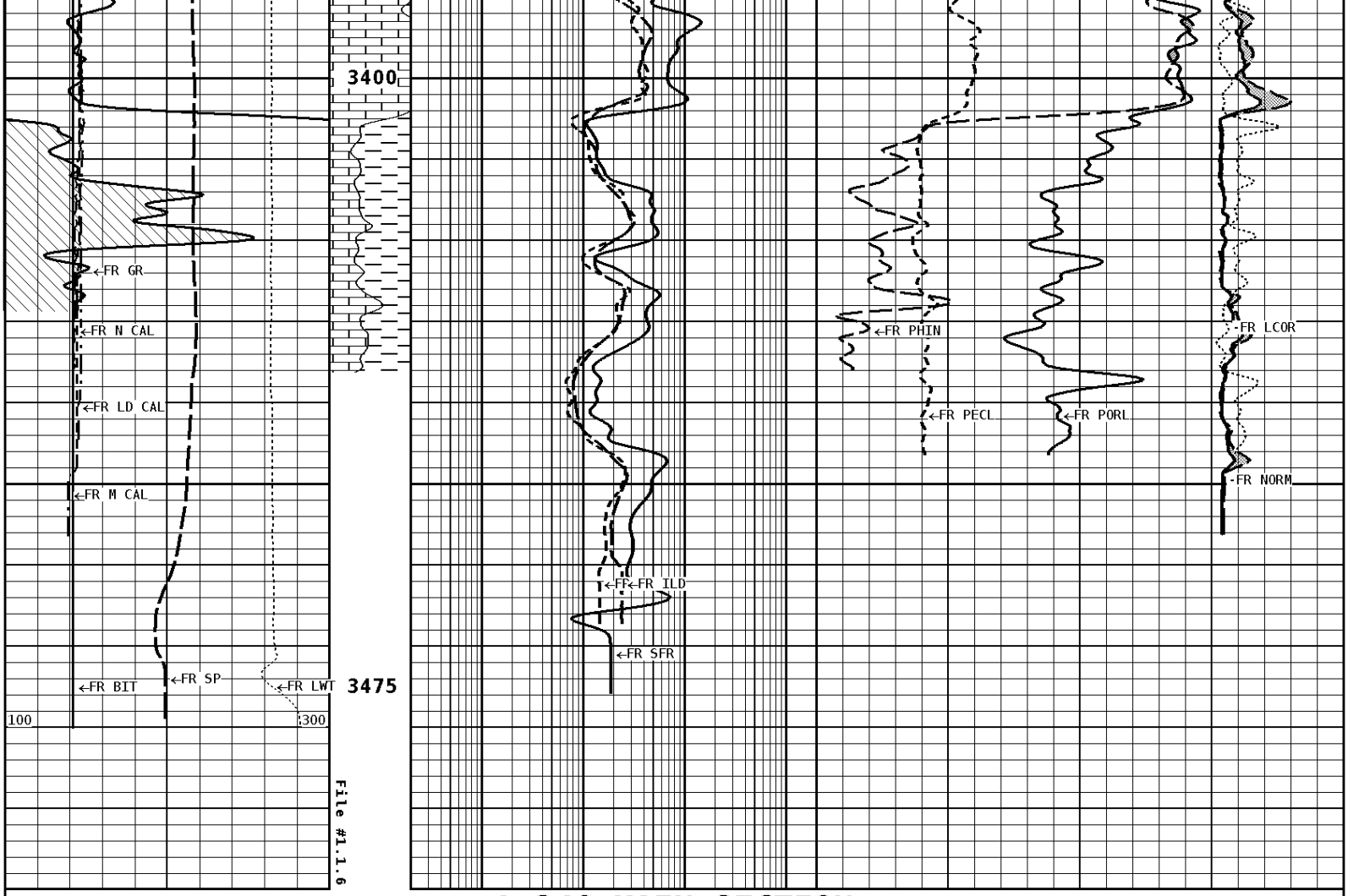



400Cu.Ft
2600
200Cu.Ft
300Cu.Ft
2700


2800
200Cu.Ft
100Cu.Ft
2900
GR
N CAL
LD CAL
PHIN
PECL
PORL
LCOR


M CAL
BIT
SP
LWT
ILM
ILD
SFR
NORM
INV
3000
100Cu.Ft
3100


3200
3300



1:240 MAIN SECTION

GAMMA RAY **API UNITS** 150 300 0 150	-BHV AHV- CU.FT	**MEDIUM INDUCTION** **OHMM** 0.2 2000.0	**NEUTRON POROSITY (LIMESTONE)** **PERCENT** 30 -10
SPONTANEOUS POTENTIAL **mV** →| |←20	Volume Dolo/Shale	**DEEP INDUCTION** **OHMM** 0.2 2000.0	**DENSITY POROSITY (2.71g/cc)** **PERCENT** 70 30 30 -10 -10 -50
TENSION **LBS** 10000 0	Volume Calcite	**SHALLOW FOCUSED RESISTIVITY** **OHMM** 0.2 2000.0	**PE CROSS-SECTION** **BARNS/ELECTRON** 0 20
DENSITY (X) CALIPER **INCHES (IN)** 14 24 4 14	Volume Quartz		**DENSITY CORRECTION** **G/CC** -0.75 0.25
NEUTRON (Y) CALIPER **INCHES (IN)** 14 24 4 14			**INVERSE** **OHMM** 0 40
BIT SIZE **INCHES (IN)** 4 14			**NORMAL** **OHMM** 0 40
CALIPER MICRO **INCHES (IN)**			

CALIPER MICRO INCHES (IN)
14 24
4 14

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 Feet

Matrix Density	2.71	g/cc
Fluid Density	1.00	g/cc
Formation Matrix	Limestone	
Drill Bit Size	6.125	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	
Hole Substance	Fluid	
BHT Depth	3476.000	ft
Borehole Temperature	110.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	2.000	ohmm
MSTNG Normal Correction	0.00	ohmm
MSTNG Inverse Correction	1.75	ohmm

Well File: VAL_ENERGY_SAWYERV_1-31OWWO_AUG24_MSTK **Scale:** 1:240 **Format:** COMSAT
Segment: V1.D1.S4 Reprocess of REPEAT **Acquired:** 2016-08/24 12:28 3.4.0-13544
Reference: 0 **Processed:** 2016-08/24 12:37 3.4.0-13544

CALIPER MICRO INCHES (IN) 14 24 / 4 14

BIT SIZE INCHES (IN) 4 14

NEUTRON (Y) CALIPER INCHES (IN) 14 24 / 4 14

NORMAL OHMM 0 40

INVERSE OHMM 0 40

DENSITY (X) CALIPER INCHES (IN) 14 24 / 4 14

Volume Quartz

DENSITY CORRECTION G/CC -0.75 0.25

TENSION LBS 10000 0

Volume Calcite

SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0

PE CROSS-SECTION BARNS/ELECTRON 0 20

SPONTANEOUS POTENTIAL mV →| |←20

Volume Dolo/Shale

DEEP INDUCTION OHMM 0.2 2000.0

DENSITY POROSITY (2.71g/cc) PERCENT 70 30 / 30 -10 / -10 -50

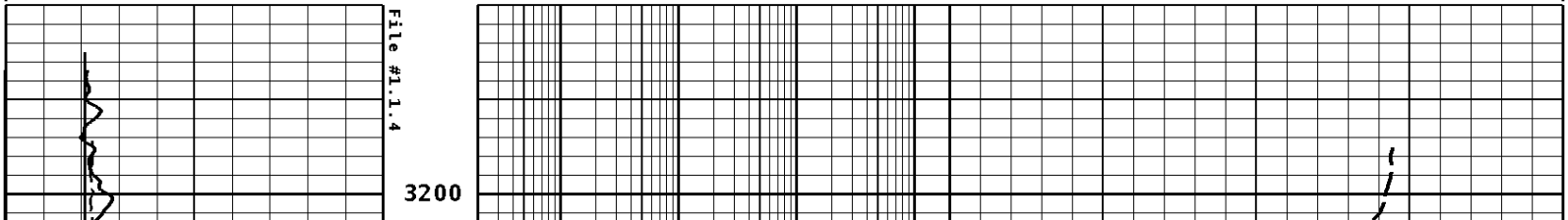
GAMMA RAY API UNITS 150 300 / 0 150

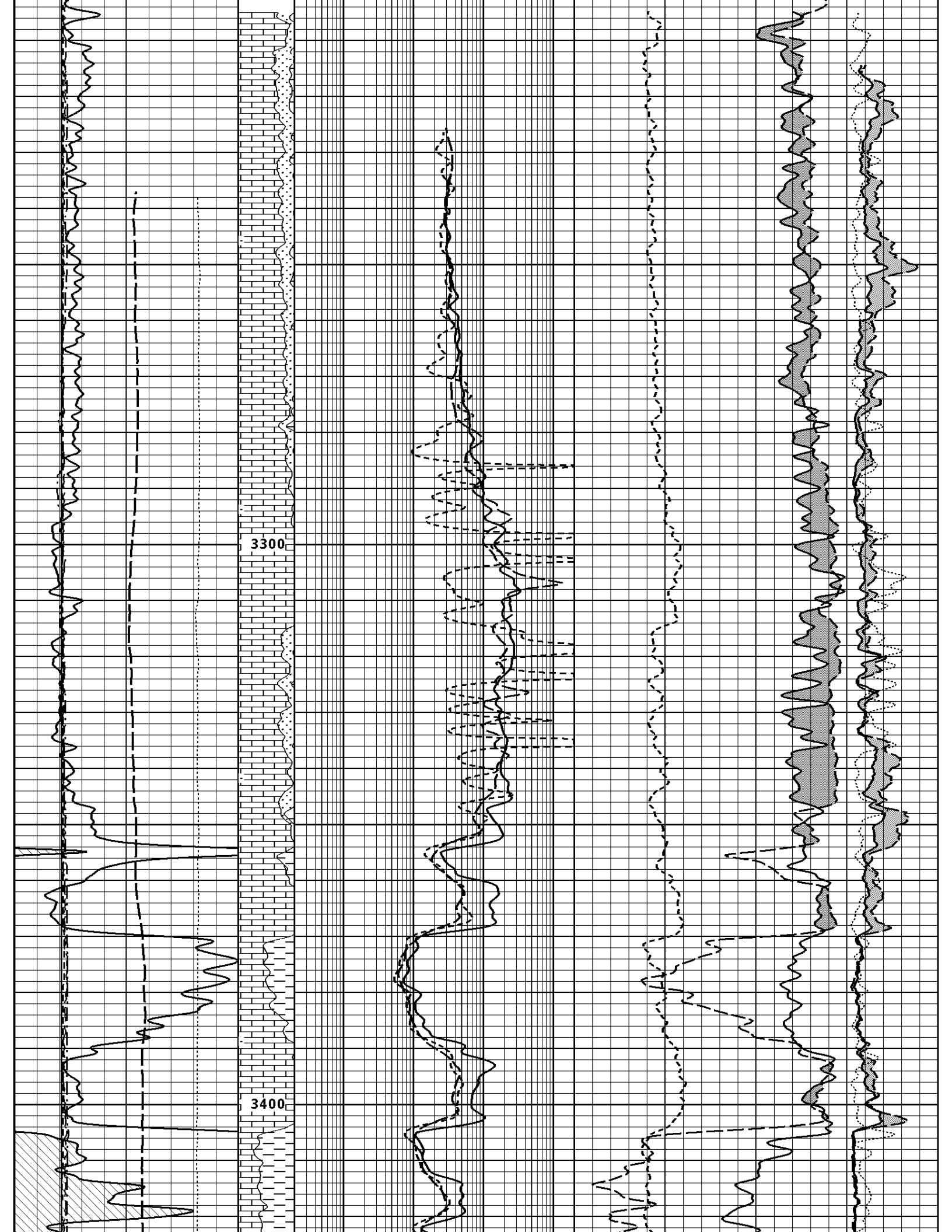
-BHV AHV- CU.FT

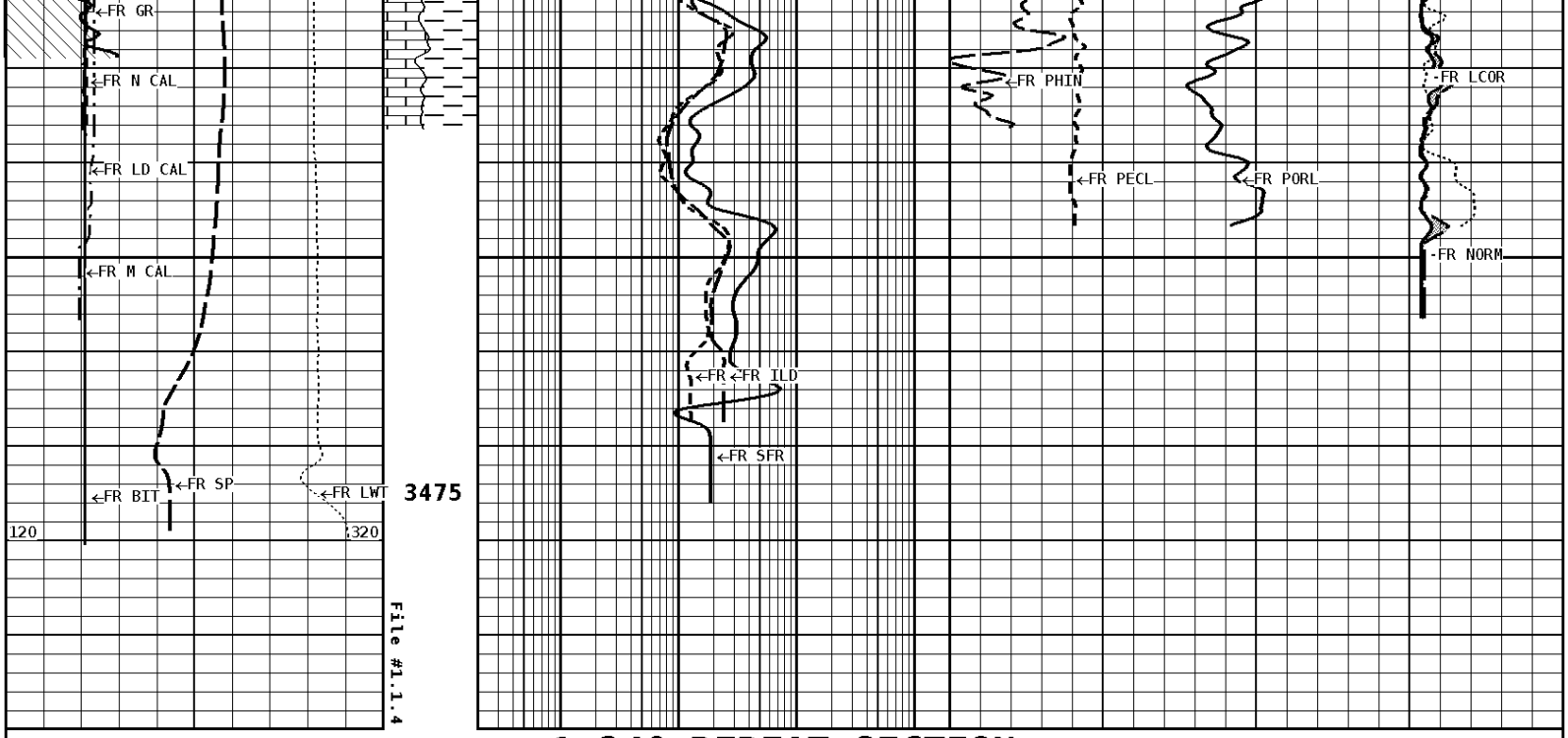
MEDIUM INDUCTION OHMM 0.2 2000.0

NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10

1:240 REPEAT SECTION




3300
3400



1:240 REPEAT SECTION

GAMMA RAY **API UNITS** 150 — 300 0 — 150	-BHV AHV- CU.FT	**MEDIUM INDUCTION** **OHMM** 0.2 — 2000.0	**NEUTRON POROSITY (LIMESTONE)** **PERCENT** 30 — -10
SPONTANEOUS POTENTIAL **mV** → ←20	Volume Dolo/Shale	**DEEP INDUCTION** **OHMM** 0.2 — 2000.0	**DENSITY POROSITY (2.71g/cc)** **PERCENT** 70 — 30 30 — -10 -10 — -50
TENSION **LBS** 10000 — 0	Volume Calcite	**SHALLOW FOCUSED RESISTIVITY** **OHMM** 0.2 — 2000.0	**PE CROSS-SECTION** **BARNS/ELECTRON** 0 — 20
DENSITY (X) CALIPER **INCHES (IN)** 14 — 24 4 — 14	Volume Quartz		**DENSITY CORRECTION** **G/CC** -0.75 — 0.25
NEUTRON (Y) CALIPER **INCHES (IN)** 14 — 24 4 — 14			**INVERSE** **OHMM** 0 — 40
BIT SIZE **INCHES (IN)** 4 — 14			**NORMAL** **OHMM** 0 — 40
CALIPER MICRO **INCHES (IN)** 14 — 24 4 — 14			

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 Feet

Matrix Density	2.71	g/cc
Fluid Density	1.00	g/cc
Formation Matrix	Limestone	

Drill Bit Size	6.125	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	
Hole Substance	Fluid	
BHT Depth	3476.000	ft
Borehole Temperature	110.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	2.000	ohmm
MSTNG Normal Correction	0.00	ohmm
MSTNG Inverse Correction	1.75	ohmm

* Calibration Summary *

Shop Calibration
GRT-B

Performed : 08-AUG-2016 Time : 10:25
Sensor Suite : GR-GR5 ID : GRT-BA-121

	Measured		Units	Calibrated	Units
	Background	Jig		Jig	
GR	47	341	CPS	175	GRAPI

Shop Calibration
CNT-AA

Performed : 08-AUG-2016 Time : 10:32
Sensor Suite : CALI-BCN ID : NDT-AB-400

	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	8.5	12.9	6.0	12.0	IN.

Performed : 08-Aug-2016 Time : 10:41
Sensor Suite : BHC NEUT ID : CNP-AA-115
Source ID : N-1044

	Tank		Verification	Units
	Measured	Calibrated	Jig	
N/F	3.9975	3.6893	3.7016	
Porosity	25.5	20.5	20.7	%

Shop Calibration
LDT-DA

Performed : 08-AUG-2016 Time : 10:02
Sensor Suite : CALI-LTH ID : NDT-BB-153

	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	7.3	12.1	6.0	12.0	IN.

Performed : 08-Aug-2016 Time : 10:16
Sensor Suite : BHCPELNG ID : LDP-DA-50
Source ID : 63558B

Short Space

	BKGD	Al	Mg	Al+Fe	Units
LSW1	69	1331	2149	854	CPS
LSW2	73	1494	2370	1097	CPS
LSW3	267	3415	5516	2904	CPS
LSW4	321	3061	4385	2680	CPS
LSW5	31	59	69	54	CPS
LSW6	90	93	95	95	CPS
LSW7	54	60	59	61	CPS
LSW8	1	5	6	4	CPS
QS	0.250	0.213	0.235	0.217	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC

Long Space

	BKGD	Al	Mg	Al+Fe	Units
LLW1	98	1618	6680	986	CPS
LLW2	111	2469	9491	1861	CPS
LLW3	409	4401	16499	3816	CPS
LLW4	522	2066	6578	1868	CPS
LLW5	62	74	140	70	CPS
LLW6	161	157	148	158	CPS
LLW7	109	104	98	105	CPS
LLW8	5	8	20	8	CPS
QL	0.194	0.205	0.201	0.201	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

Shop Calibration

Shop Calibration
MST-DA

Performed : 08-AUG-2016 Time : 09:20
Sensor Suite : CALI-MSN ID : MST-DA-021

	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	8.3	12.6	6.0	12.0	IN.

Performed : 08-AUG-2016 Time : 09:20
Sensor Suite : MSTDA-NI ID : MST-DA-021

Internal

	Measured			Calibrated		
	Zero	Reference	Units	Zero	Reference	Units
INV-V	0.0	30239.5		0.00	1546.00	MV
NOR-V	3.9	30809.3		0.00	1646.00	MV
IN-C	0.0	29408.3		0.00	15.46	UA
INV-R					32.34	OHMM
NOR-R					58.67	OHMM

Shop Calibration
PIT-CA

Performed : 08-AUG-2016 Time : 09:31
Sensor Suite : P-IND-T ID : PIT-CA-069

Medium

	Measured		Calibrated		
	R	X	R	X	Units
Air	130143	131168	0.7	0.2	MMHOS
Zero	131071	131068	42.6	-7.7	MMHOS
Reference	248896	248691	5042.6	4992.3	MMHOS
Loop	129628	217994	3669.7	3712.9	MMHOS
Sonde Error			-1.0	-6.9	MMHOS
Cond			5042.6	4992.3	MMHOS

Deep

	Measured		Calibrated		
	R	X	R	X	Units
Air	128078	132113	0.0	-0.3	MMHOS
Zero	131064	131069	56.8	-22.3	MMHOS
Reference	234442	233900	2056.8	1977.7	MMHOS
Loop	127802	222193	1746.7	1757.0	MMHOS
Sonde Error			-3.0	-0.7	MMHOS
Cond			2056.8	1977.7	MMHOS

Temperature

Measured		Calibrated		
Low	High	Low	High	Units
16980.0	56920.0	70.0	350.0	DEGF

Performed : 08-AUG-2016 Time : 09:31
Sensor Suite : SFL ID : PIT-CA-069

Internal

	Measured		Calibrated		
	Zero	Reference	Zero	Reference	Units
Im	32764.0	50173.0	0.0	7028.0	uA
Ib	32771.0	49454.7	0.0	1750.0	mA
MOM1	32777.0	57600.3	0.0	175.0	mV
Equivalent SFL				43.97	OHMM

Performed : 08-AUG-2016 Time : 09:31
Sensor Suite : P-SP ID : PIT-CA-069

Internal

Measured		Calibrated		
Zero	Reference	Zero	Reference	Units
32789.4	58814.3	0.0	1000.0	mV

Tucker ENERGY SERVICES

Company: VAL ENERGY, INC.
Well: SAWYER V #1-31 OWWO
Location: 4950' FSL & 1650' FEL
Logged: 08-24-2016
K.B. Elev: 0.0 Ft