

HALLIBURTON

BOREHOLE VOLUME
PLOT

COMPANY		ELM RIDGE EXPLORATION CO LLC	
WELL		IGE 129	
FIELD/BLOCK		IGNACIO BLANCO	
COUNTY		LA PLATA	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		20-Jul-14	
Run No.		ONE	
Depth - Driller		3362.00 ft	
Depth - Logger		3360.0 ft	
Bottom - Logged Interval		3358.0 ft	
Top - Logged Interval		500.0 ft	
Casing - Driller		8.625 in @ 532.0 ft	
Casing - Logger		532.0 ft	
Bit Size		7.875 in @	
Type Fluid in Hole		Water Based Mud	
Density		9.4 ppg	
Viscosity		48.00 s/qt	
PH		9.00 pH	
Fluid Loss		6.2 cpm	
Source of Sample		MUD TANK	
Rm @ Meas. Temperature		2.05 ohmm @ 75.00 degF	
Rmf @ Meas. Temperature		N/A @ N/A	
Rmc @ Meas. Temperature		N/A @ N/A	
Source Rmf		N/A	
Rmc		N/A	
Rm @ BHT		1.23 ohmm @ 129.0 degF	
Time Since Circulation		4.4 hr	
Time on Bottom		20-Jul-14 16:52	
Max. Rec. Temperature		129.0 degF @ 3362.0 ft	
Equipment		11871076	
Location		GJ CO	
Recorded By		B. RIDDEL	
Witnessed By		D. GILES	

API No. 05067099080000
Location SURFACE HOLE LOCATION:
1140' FSL & 987' FWL
LATITUDE: 37.115280
LONGITUDE: -107.728570
Sect. 9 Twp. 33N Rge. 8W

Other Services:
RWCH
DSNT
SDLT
ACRT

Elev. 6711.0 ft
Elev.: K.B. 6723.0 ft
D.F. 6723.0 ft
G.L. 6711.0 ft
12.0 ft above perm. Datum

Fold here

Service Ticket No.: 901521416				API Serial No.: 05067099080000				PGM Version: WL INSITE R4.2.0 (Build 2)							
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE						RESISTIVITY SCALE CHANGES									
Date		Sample No.				Type Log		Depth		Scale Up Hole		Scale Down Hole			
Depth-Driller															
Type Fluid in Hole															
Density		Viscosity													
Ph		Fluid Loss													
Source of Sample						RESISTIVITY EQUIPMENT DATA									
Rm @ Meas. Temp		@		@		Run No.		Tool Type & No.		Pad Type		Tool Pos.		Other	
Rmf @ Meas. Temp.		@		@		ONE		ACRt		N/A		FREE		N/A	
Rmc @ Meas. Temp.		@		@				I-11585787							
Source Rmf		Rmc						S-11585797							
Rm @ BHT		@		@											
Rmf @ BHT		@		@											
Rmc @ BHT		@		@											
EQUIPMENT DATA															
GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.		ONE		Run No.				Run No.		ONE		Run No.		ONE	
Serial No.		11958949		Serial No.				Serial No.		10951300		Serial No.		10993888	
Model No.		GTET		Model No.				Model No.		SDLT		Model No.		DSNT	
Diameter		3.625"		No. of Cent.				Diameter		4.5"		Diameter		3.625"	
Detector Model No.		GTET		Spacing				Log Type		GAMMA-GAMMA		Log Type		NEU-THERM	
Type		SCINT						Source Type		Cs137		Source Type		Am241Be	
Length		8"		LSA [Y/N]				Serial No.		5153GW		Serial No.		DSN-388	
Distance to Source		9'		FWDA [Y/N]				Strength		1.5 Ci		Strength		15 Ci	
LOGGING DATA															

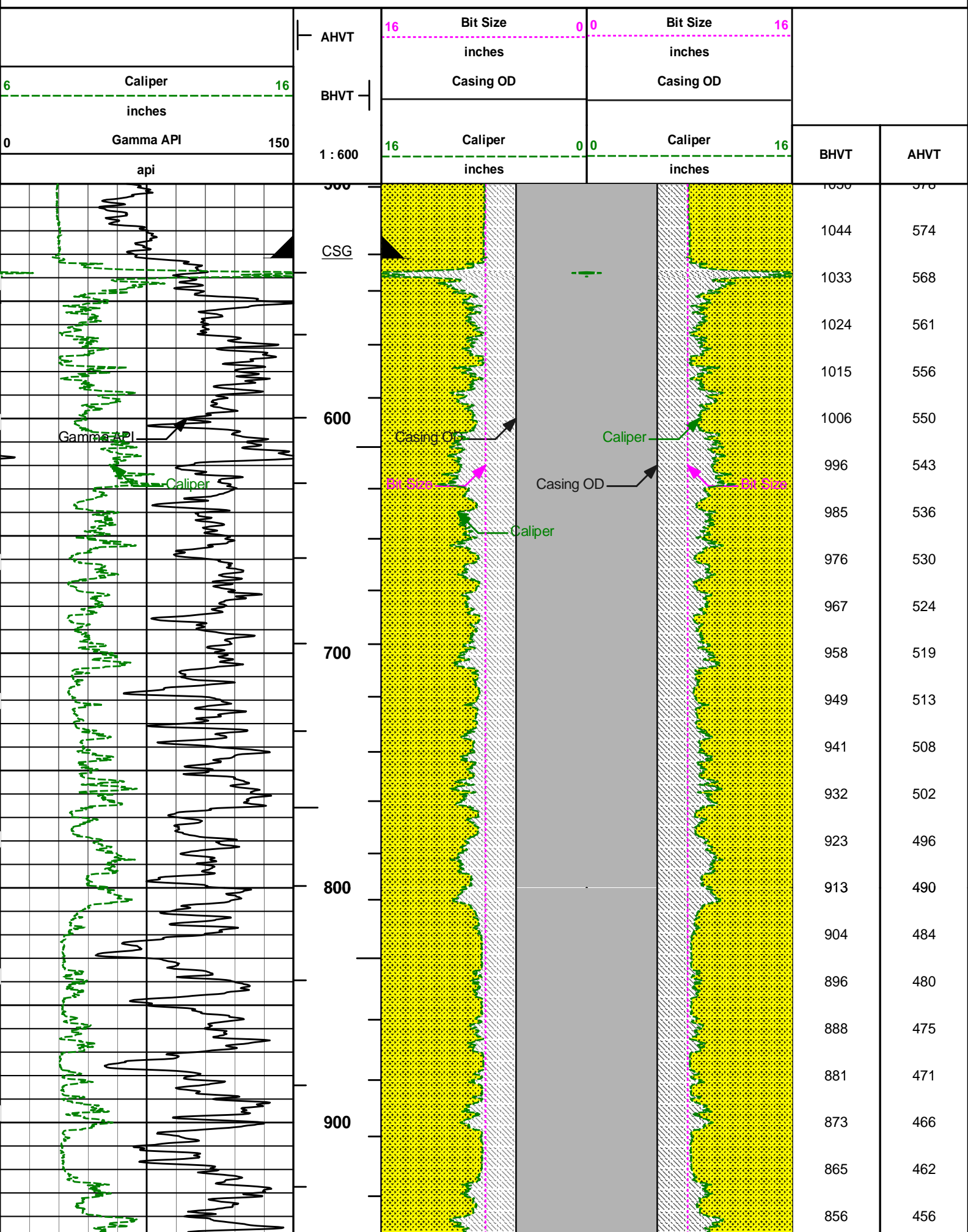
GENERAL			GAMMA		ACOUSTIC			DENSITY			NEUTRON			
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	3360	500	REC	0 API	200 API				30 %	-10 %	2.65 g/cc	30 %	-10 %	SAND
DIRECTIONAL INFORMATION														
Maximum Deviation						@	KOP						@	
Remarks:														
RUN ONE: RWCH/GTET/DSNT/SDLT/FLEX/ACRT/BN														
BORHOLE RUGOSITY, TENSION PULLS, LCM ADDITIVE, AND WASHOUTS MAY EFFECT LOG QUALITY AND REPEATABILITY														
CHLORIDES REPORTED TO BE 600 ppm														
ANNULAR HOLE VOLUME CALCULATED USING 5.5-INCH CASING.														
Rmf & Rmc NOT MEASURED DUE TO FAULTY EQUIPMENT														
YOU CREW TODAY: B. CALDWELL, T. RAFF, A. KOBE										RIG: BEARCAT #1				
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, GRAND JUNCTION, CO (970) 523-3600														
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.														
HALLIBURTON														

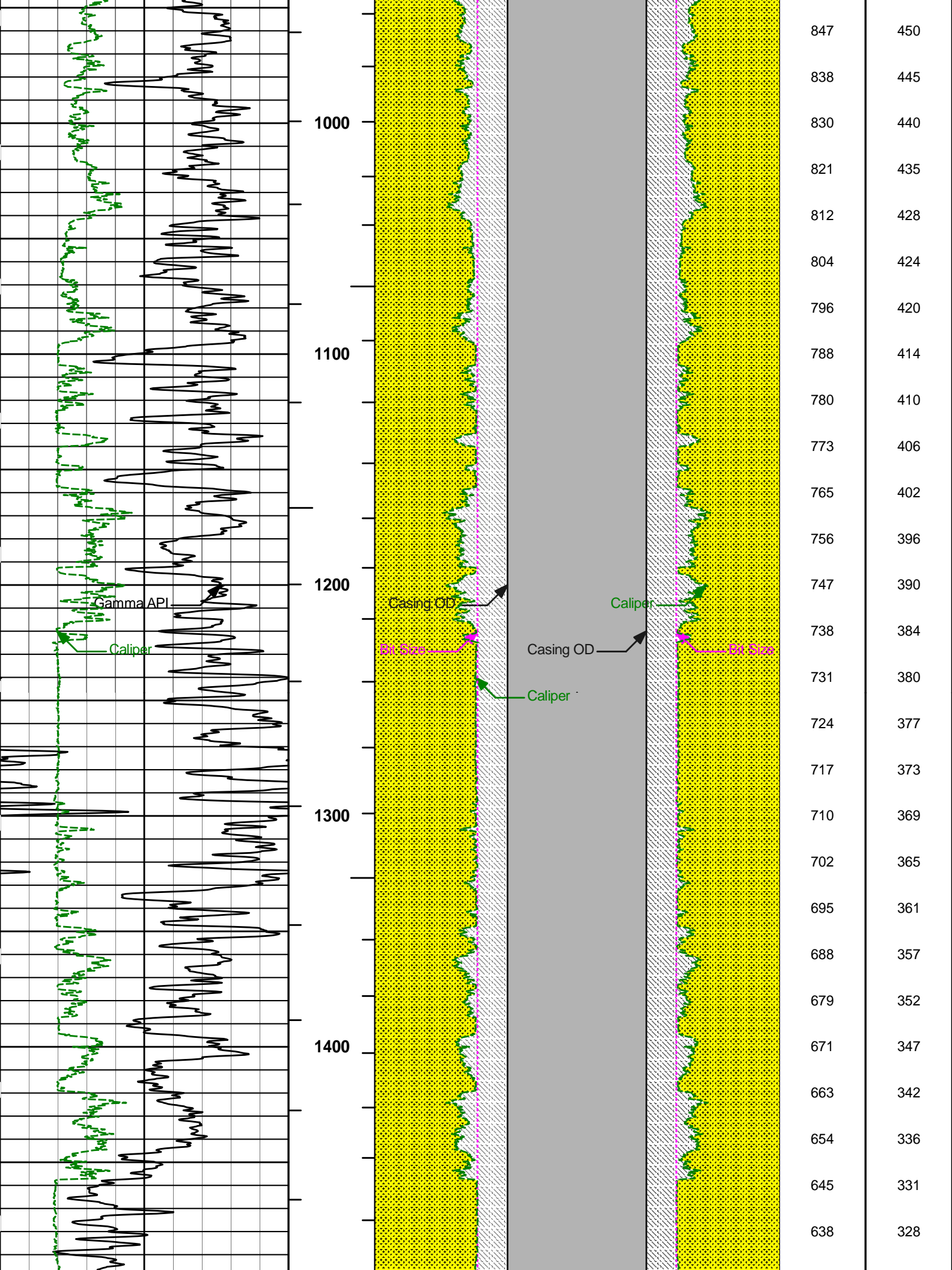
HALLIBURTON

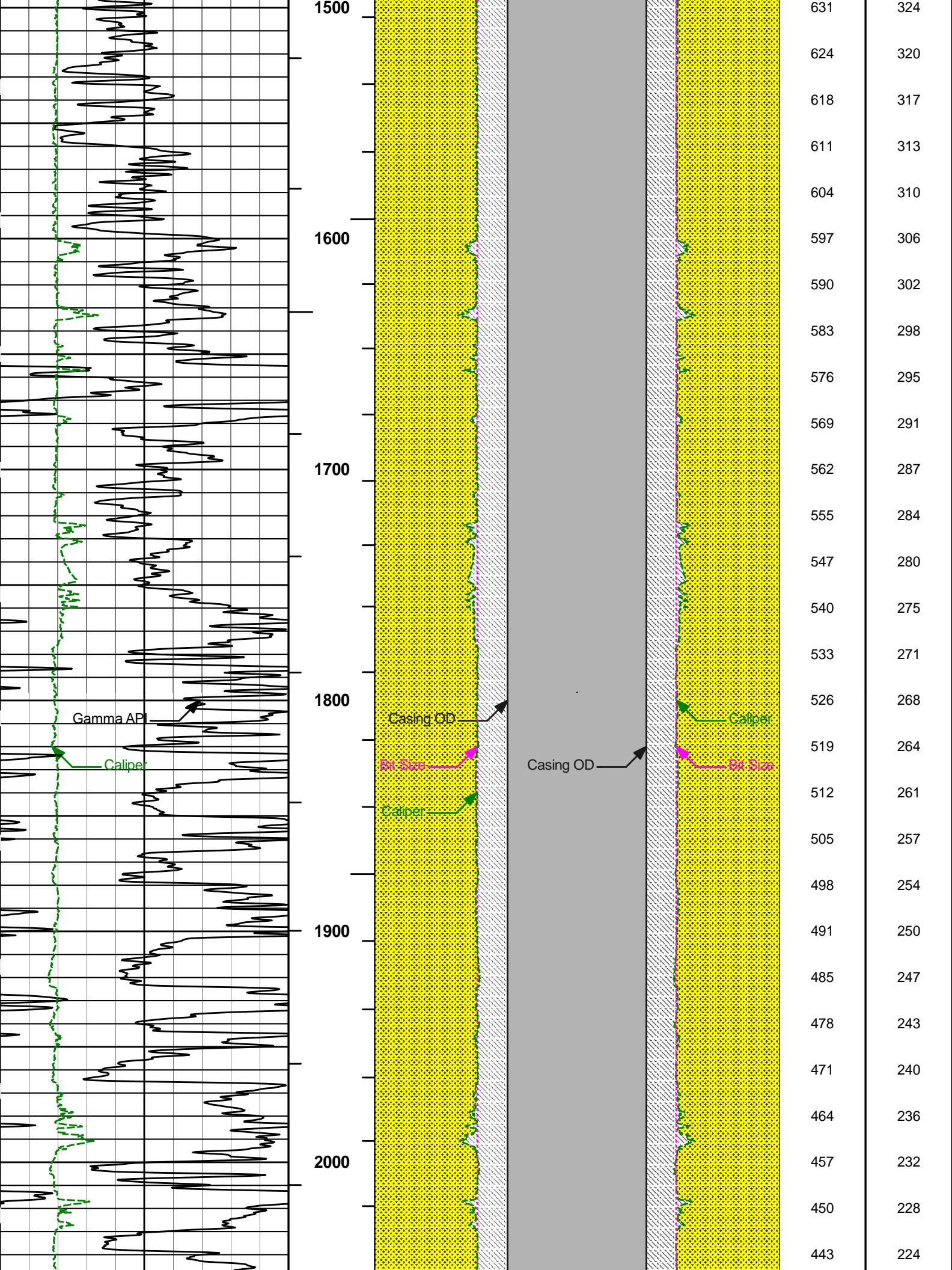
PARAMETERS REPORT

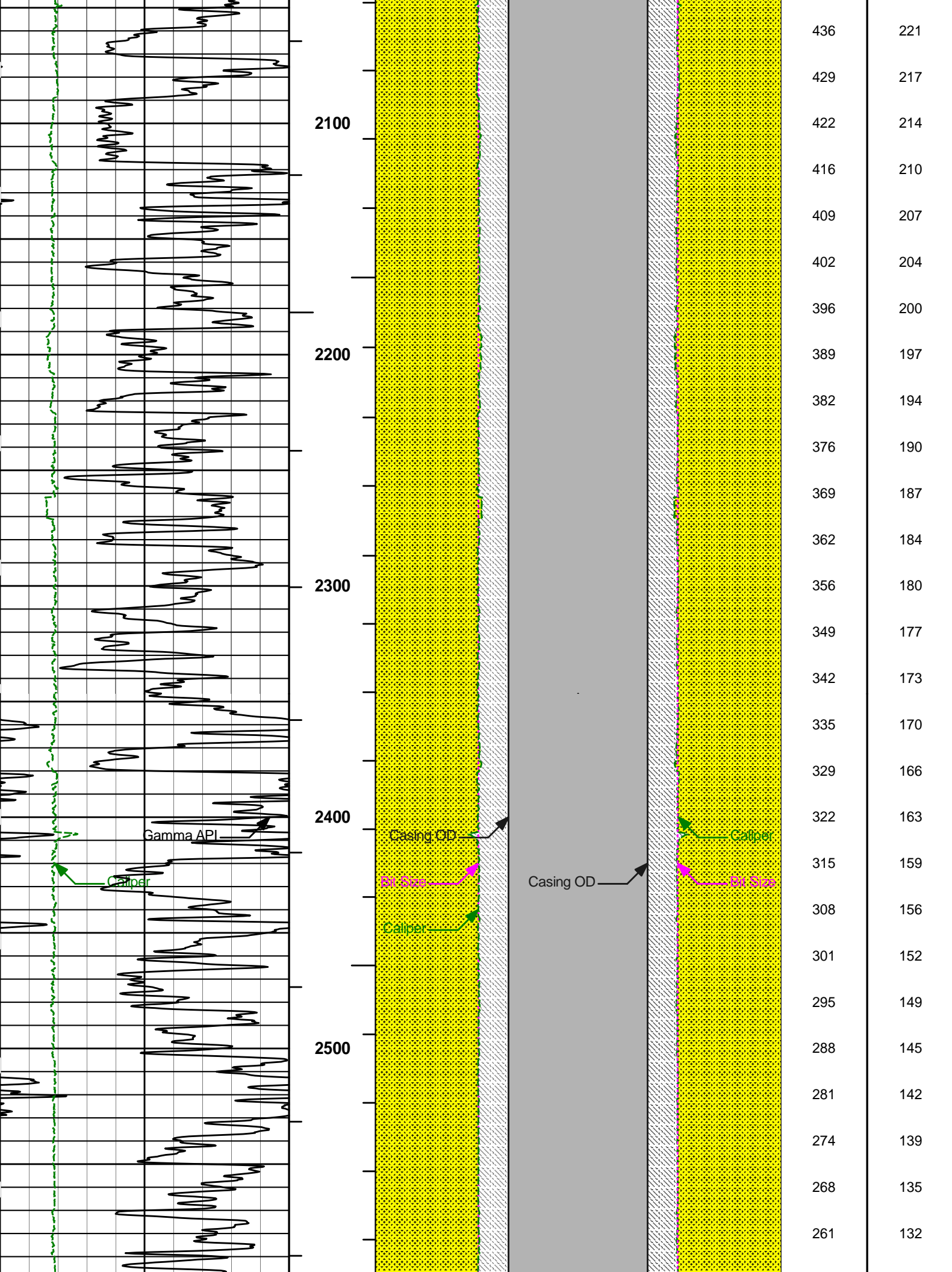
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.400	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	600.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	2.050	ohmm
	SHARED	TRM	Temperature of Mud	69.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	3362.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	

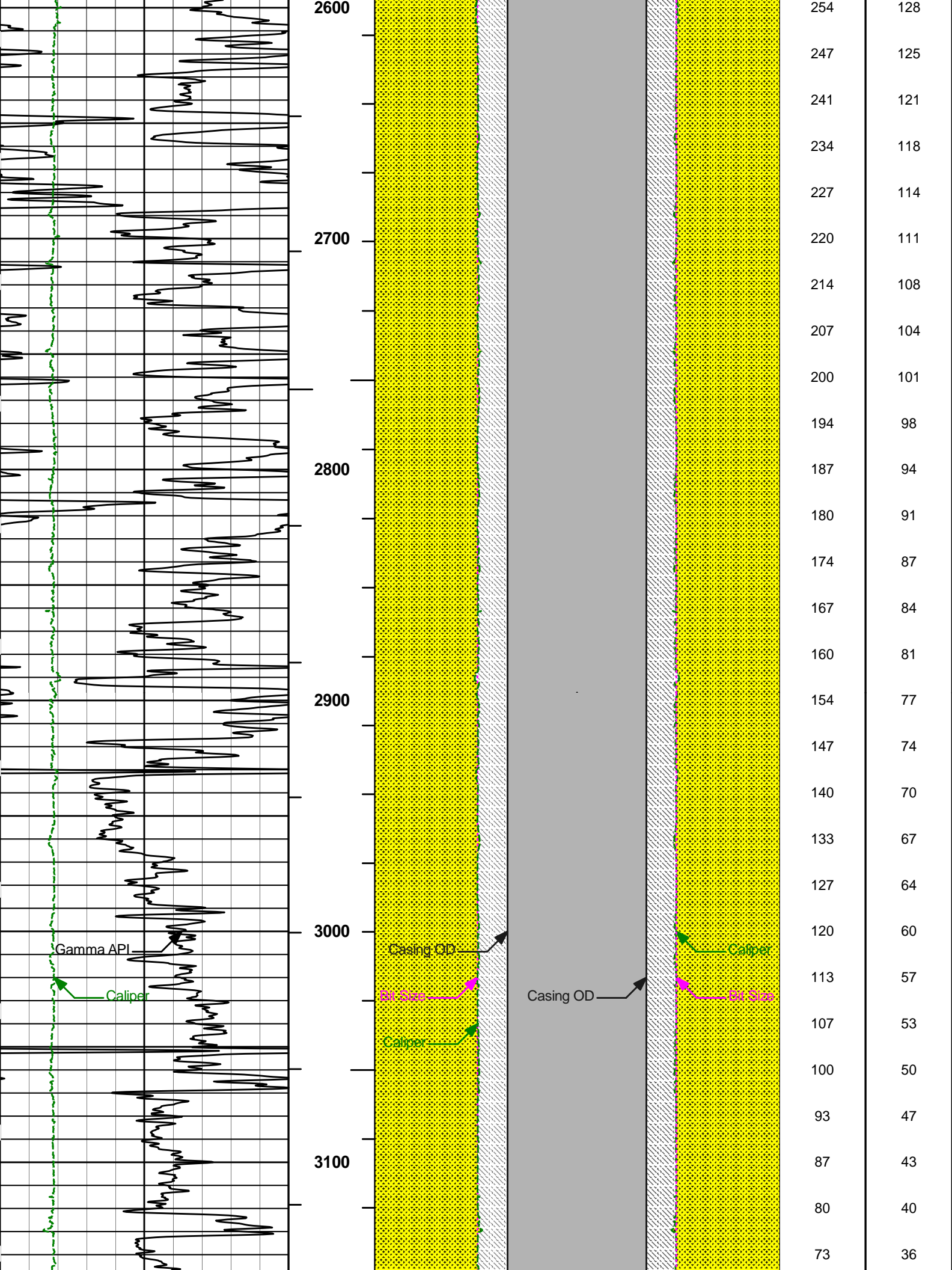
Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.250	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
GTET	BHSM	Borehole Size Source Tool	SDLT	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Sandstone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.650	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	

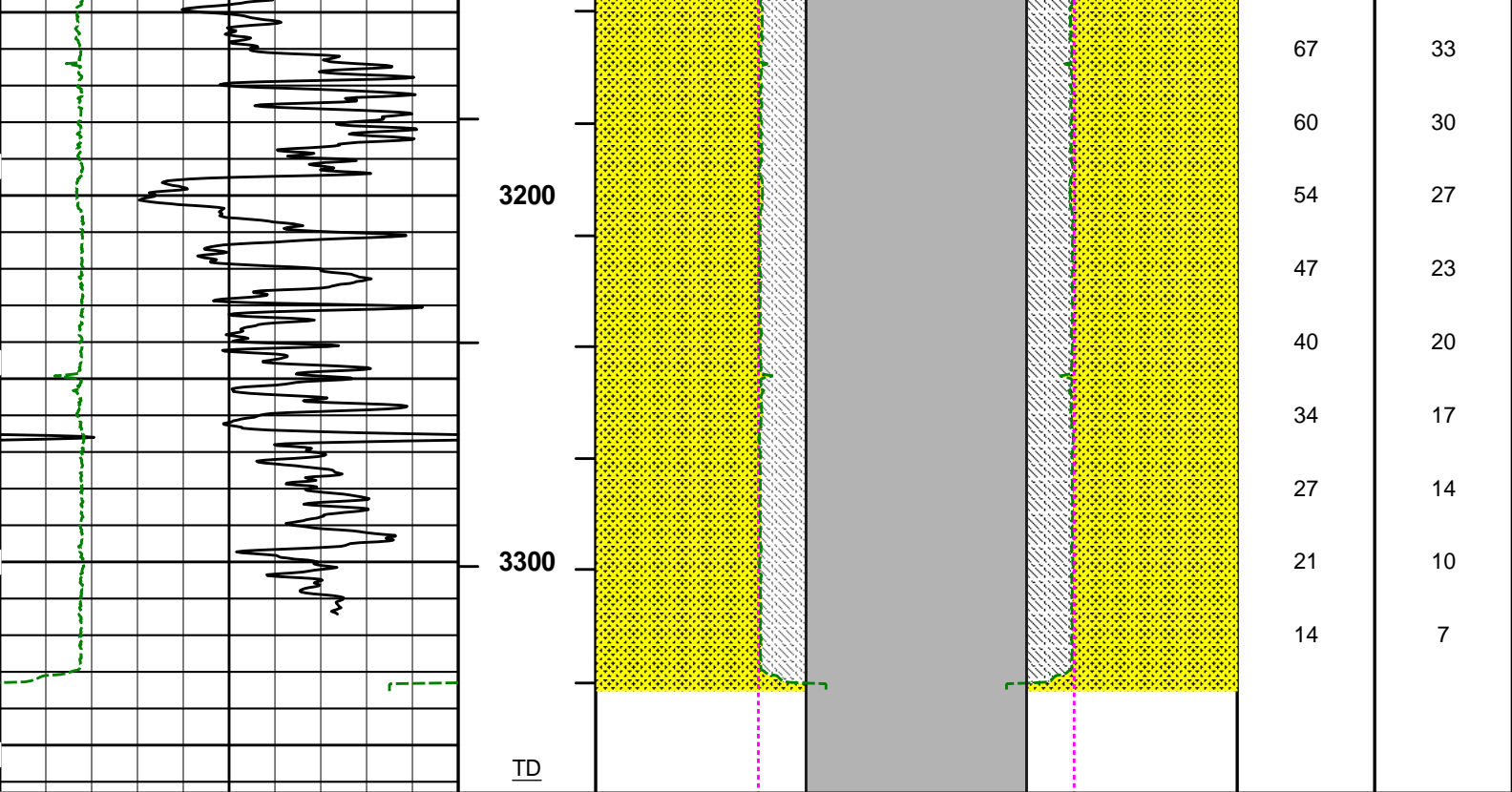












0	Gamma API	150	1 : 600	16	Caliper	0 0	Caliper	16	BHVT	AHVT
	api				inches		inches			
6	Caliper	16	BHVT		Casing OD		Casing OD			
	inches									
			AHVT	16	Bit Size	0 0	Bit Size	16		
					inches		inches			


HALLIBURTON

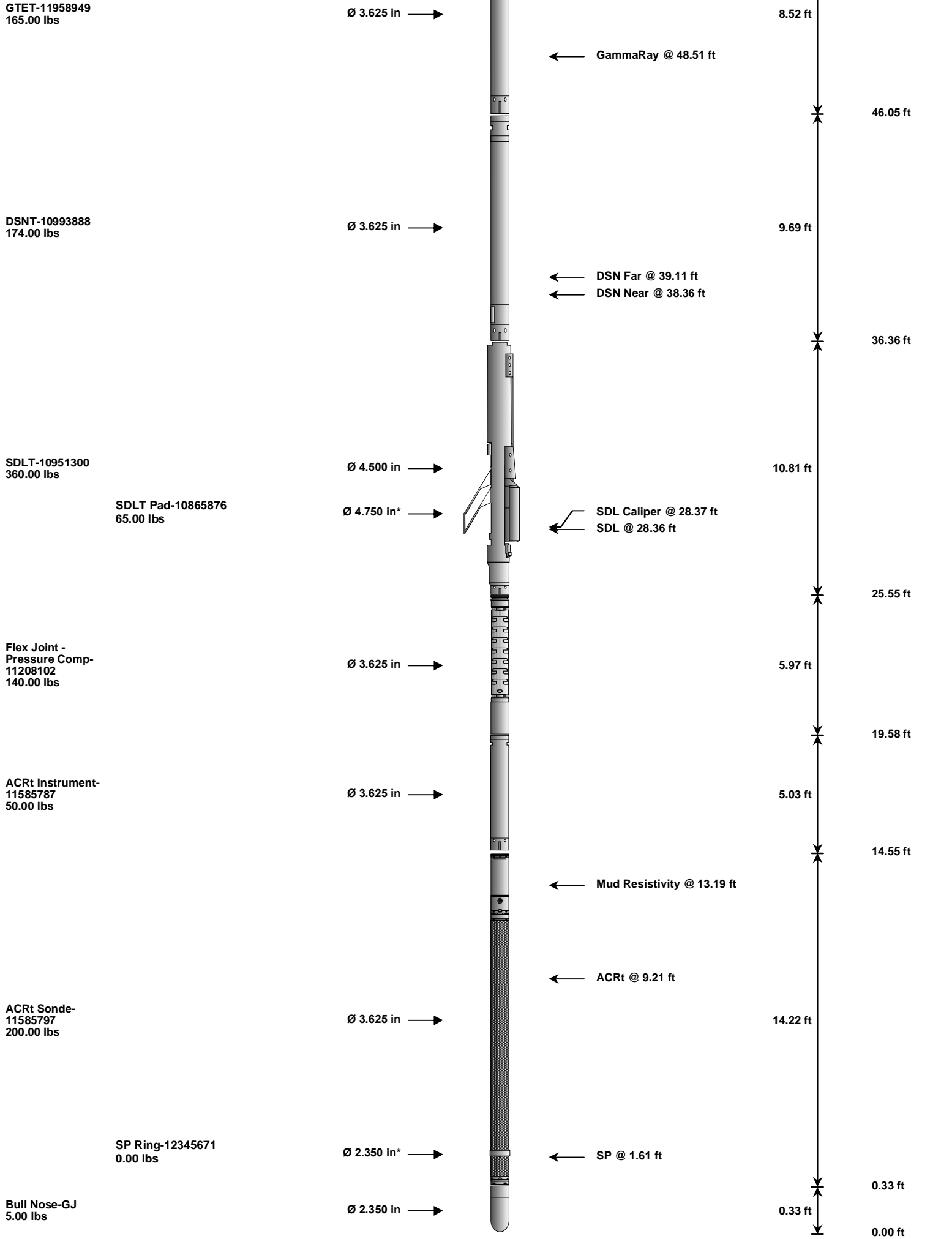
Plot Time: 20-Jul-14 18:14:08
 Plot Range: 500 ft to 3363.08 ft
 Data: ELM_IGE_129\Well Based\MAIN*
 Plot File: \\BHV\IQ_BHV_SDL_RM

AHV USES 5.5" CASING

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-A032 135.00 lbs		Ø 3.625 in →		← Load Cell @ 57.14 ft ← BH Temperature @ 56.57 ft	6.25 ft	60.82 ft
					54.57 ft	54.57 ft



Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head		A032	135.00	6.25	54.57	300.00
GTET	Gamma Telemetry Tool		11958949	165.00	8.52	46.05	60.00
DSNT	Dual Spaced Neutron		10993888	174.00	9.69	36.36	60.00
SDLT	Spectral Density Tool		10951300	360.00	10.81	25.55	60.00
SDLP	Density Insite Pad		10865876	65.00	2.55	* 27.76	60.00
FLEX	Flex Joint - Pressure Compensated		11208102	140.00	5.97	19.58	300.00
ACRt	Array Compensated True Resistivity Instrument Section		11585787	50.00	5.03	14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section		11585797	200.00	14.22	0.33	120.00
SP	SP Ring		12345671	0.00	0.25	* 1.61	300.00
BLNS	Bull Nose		GJ	5.00	0.33	0.00	300.00
Total				1,294.00	60.82		
* Not included in Total Length and Length Accumulation.							
Data: ELM_IGE_129\0001 TRIPLEIDLE							
Date: 20-Jul-14 15:43:19							

COMPANY	ELM RIDGE EXPLORATION CO LLC		
WELL	IGE 129		
FIELD	IGNACIO BLANCO		
COUNTY	LA PLATA	STATE	CO
HALLIBURTON		BOREHOLE VOLUME PLOT	