

HALLBURTON

BOREHOLE
VOLUME

COMPANY WELL FIELD/BLOCK COUNTY STATE										BLACK HILLS EXPLORATION & PRODUCTION HOMER DEEP UNIT 9-41BH SOUTH SHALE RIDGE GARFIELD CO									
Permanent Datum Log measured from Drilling measured from										GL KB KB 25.0 ft above perm. Datum									
Date Run No. Depth - Driller Depth - Logger Bottom - Logged Interval Top - Logged Interval Casing - Driller Casing - Logger Bit Size Type Fluid in Hole Density PH Source of Sample Rm @ Meas. Temperature Rmf @ Meas. Temperature Rmc @ Meas. Temperature Source Rmf Rm @ BHT Time Since Circulation Time on Bottom Max. Rec. Temperature Equipment Recorded By Witnessed By										05-Jul-14 ONE 6550.00 ft 6547.0 ft 6517.0 ft 1130.0 ft 10.750 in @ 1132.0 ft 1130.0 ft 9.875 in @ Water Based Mud 9.3 ppg 9.30 pH MUD TANK 0.514 ohmm @ 85.20 degF 0.39 ohmm @ 83.00 degF 0.786 ohmm @ 83.20 degF MEASURED 0.28 ohmm @ 165.0 degF 9.9 hr 05-Jul-14 21:58 165.0 degF @ 6547.0 ft 11170614 B. NEALON K. HATFIELD									
Other Services: DSNT / SDLT / ACRT										Elev.: K.B. D.F. G.L. 5507.0 ft 5507.0 ft 5482.0 ft									

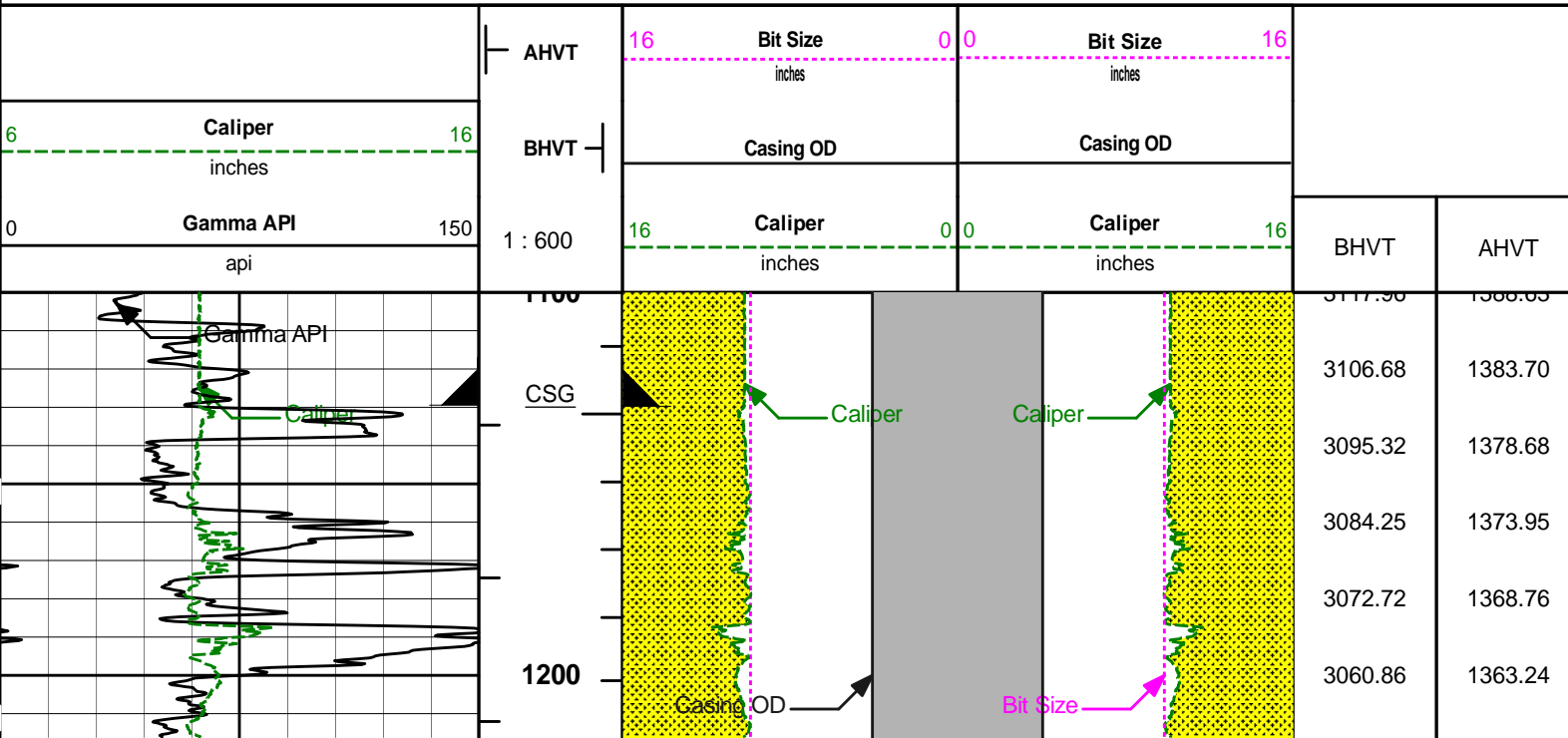
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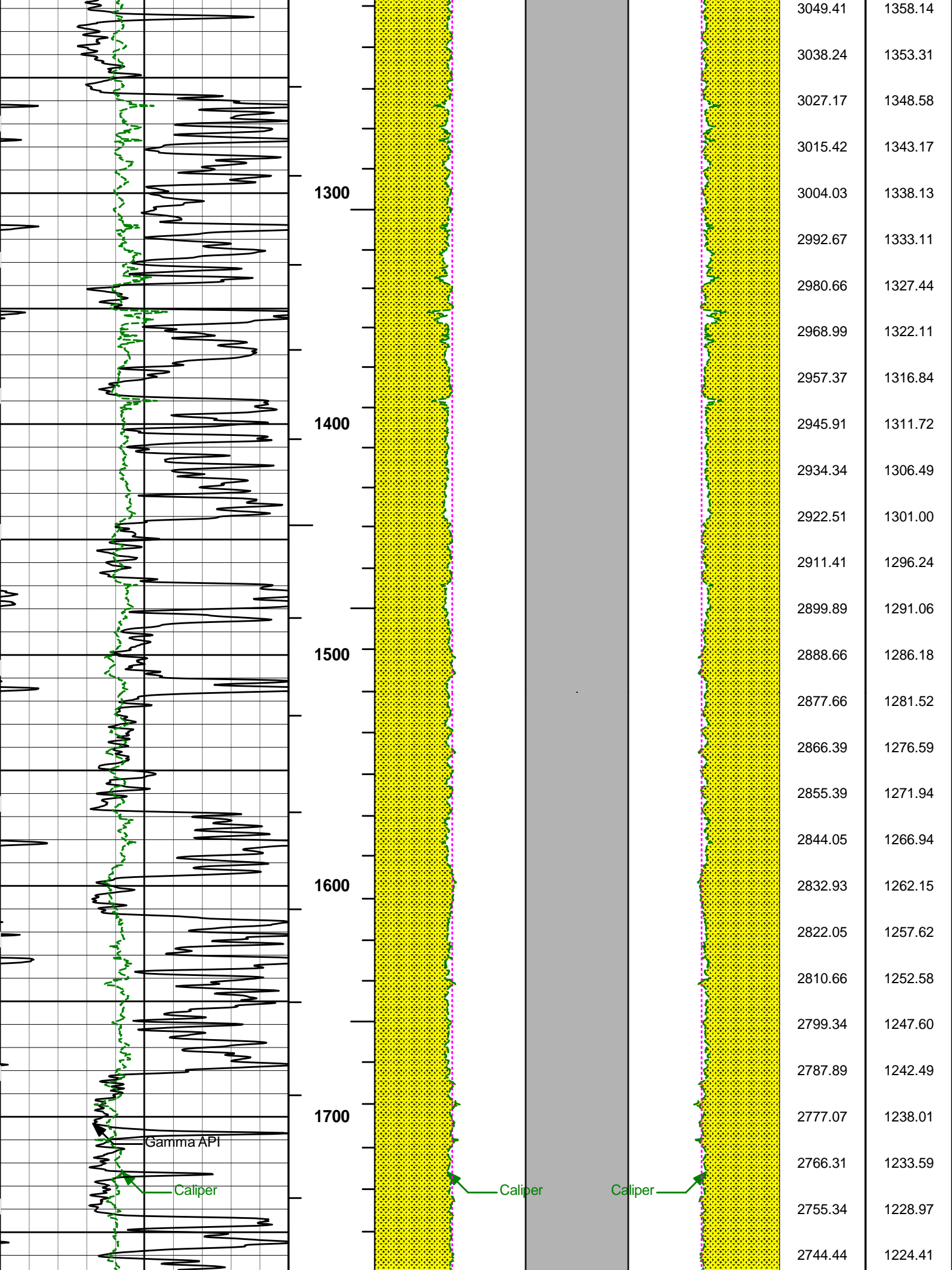
Service Ticket No.: 901469706										API Serial No.: 05-045-21934-00										PGM Version: WL INSITE R4.2.1 (Build 5)									
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE										RESISTIVITY SCALE CHANGES																			
Date		Sample No.								Type Log		Depth		Scale Up Hole		Scale Down Hole													
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.		@				@																							
Rmc @ Meas. Temp.		@				@																							
Source Rmf		Rmc																											
Rm @ BHT		@				@																							
Rmf @ BHT		@				@																							
Rmc @ BHT		@				@																							
EQUIPMENT DATA																													
GAMMA				ACOUSTIC				DENSITY				NEUTRON																	
Run No.		ONE		Run No.				Run No.				Run No.																	
Serial No.		11294346		Serial No.				Serial No.				Serial No.																	
Model No.		GTET		Model No.				Model No.				Model No.																	
Diameter		3.625"		No. of Cent.				Diameter				Diameter																	
Detector Model No.		GTET		Spacing				Log Type				Log Type																	
Type		SCINT						Source Type				Source Type																	
Length		8"		LSA [Y/N]				Serial No.				Serial No.																	
Distance to Source		10'		FWDA [Y/N]				Strength				Strength																	
LOGGING DATA																													

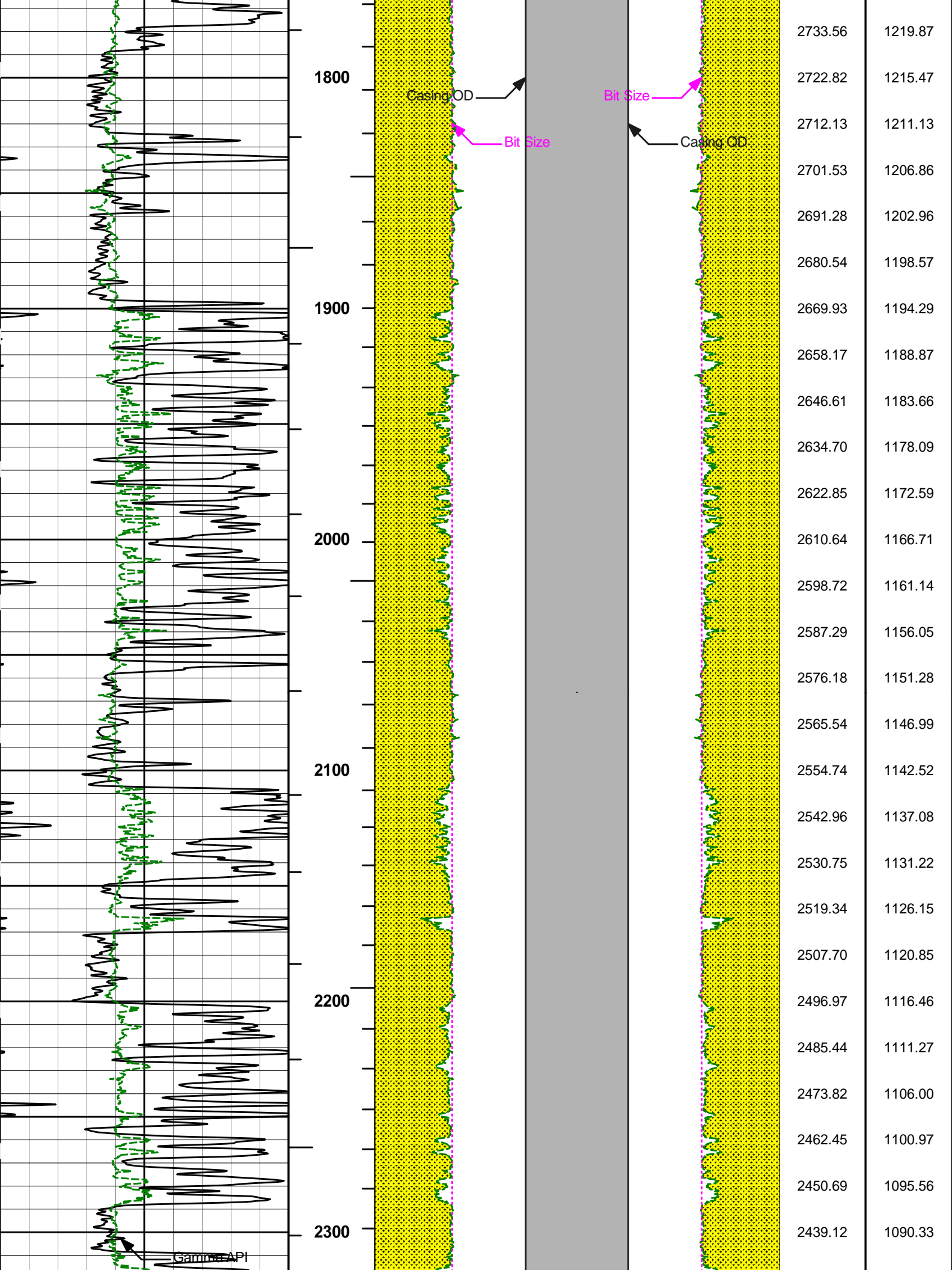
GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	6517'	1130'	REC	0 API	150 API									
DIRECTIONAL INFORMATION														
Maximum Deviation						@			KOP			@		
Remarks:														
ANNULAR HOLE VOLUME CALCUALTED FOR 7.625-INCH CASING														
BOREHOLE RUGOSITY, TENSION PULLS, AND WASHOUTS MAY AFFECT LOG QUALITY AND REPEATABILITY														
RIG: SST-66														
CREW: D. PIEGER, T. CHASE, M. SKINNER, T. PETERSON														
THANK YOU FOR USING HALLIBURTON: ROCK SPRINGS, WY 307-352-8600														
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

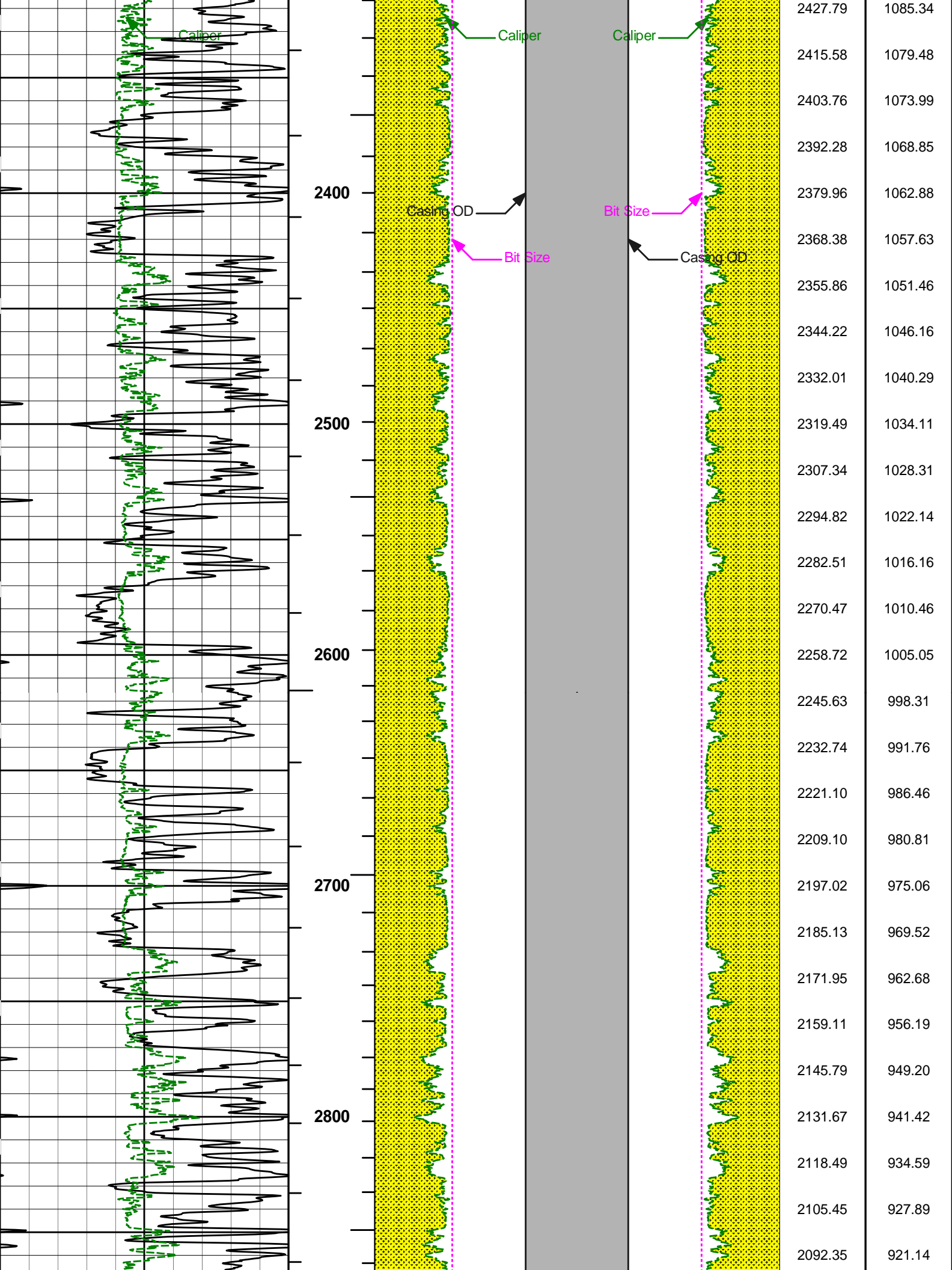
HALLIBURTON	Plot Time: 08-Jul-14 11:42:07 Plot Range: 1100 ft to 6552.17 ft Data: BH_HOMER_9-41AH\Well Based\DAQ-0001-004\ Plot File: \\BHV\IQ_BHV_SDL_RM
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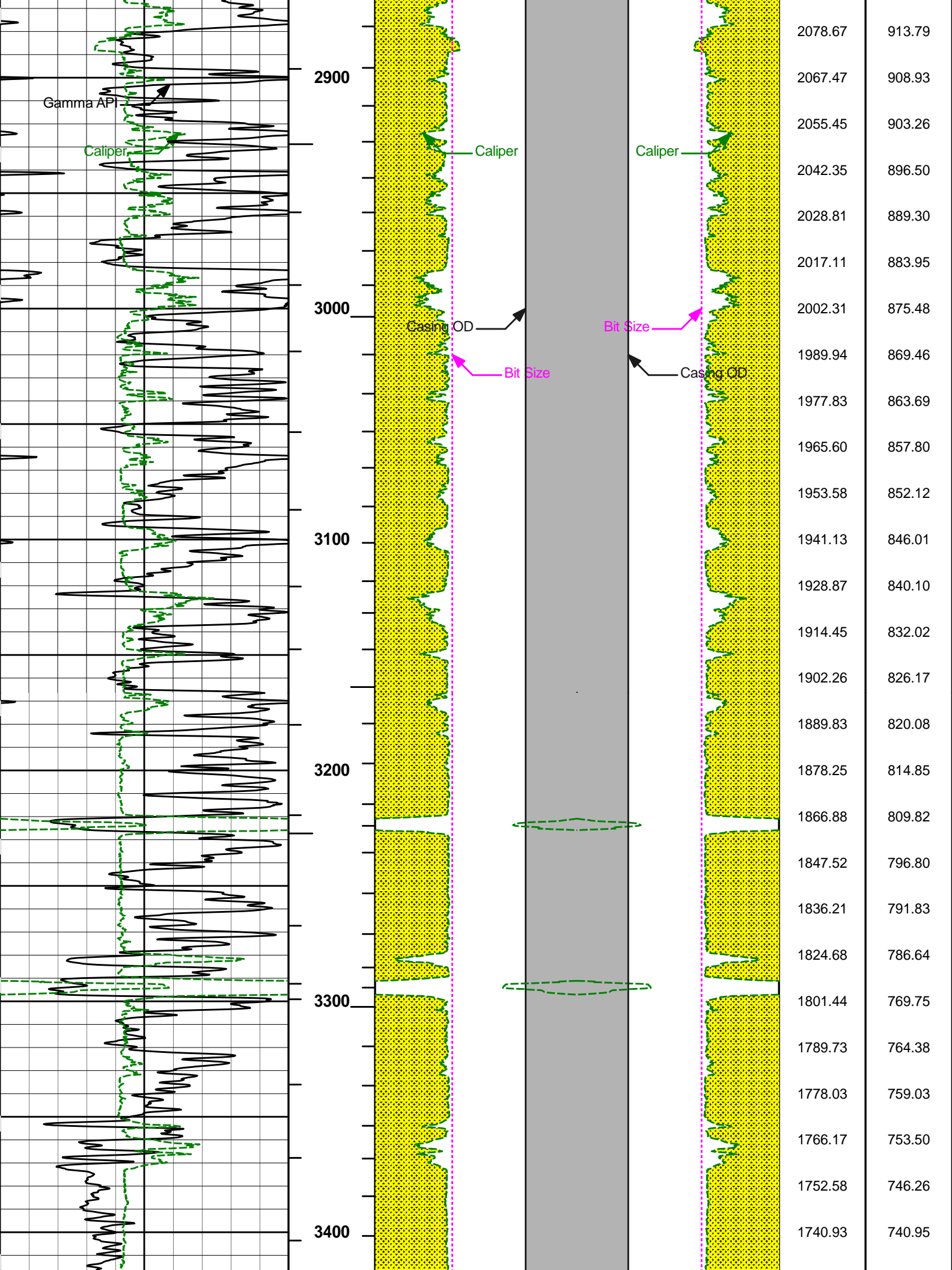
<div>AHV USES 7.625" CASING</div>														
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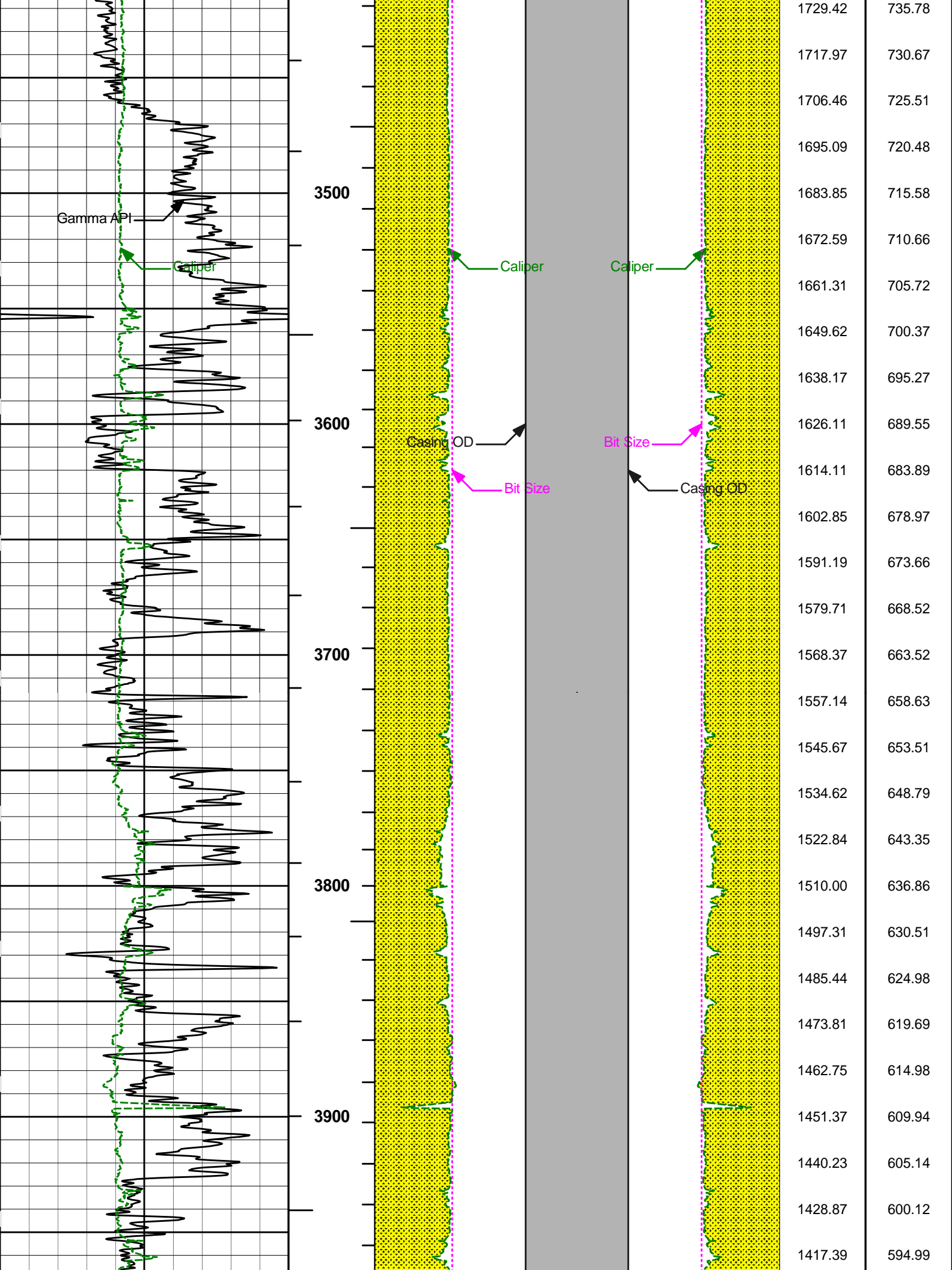


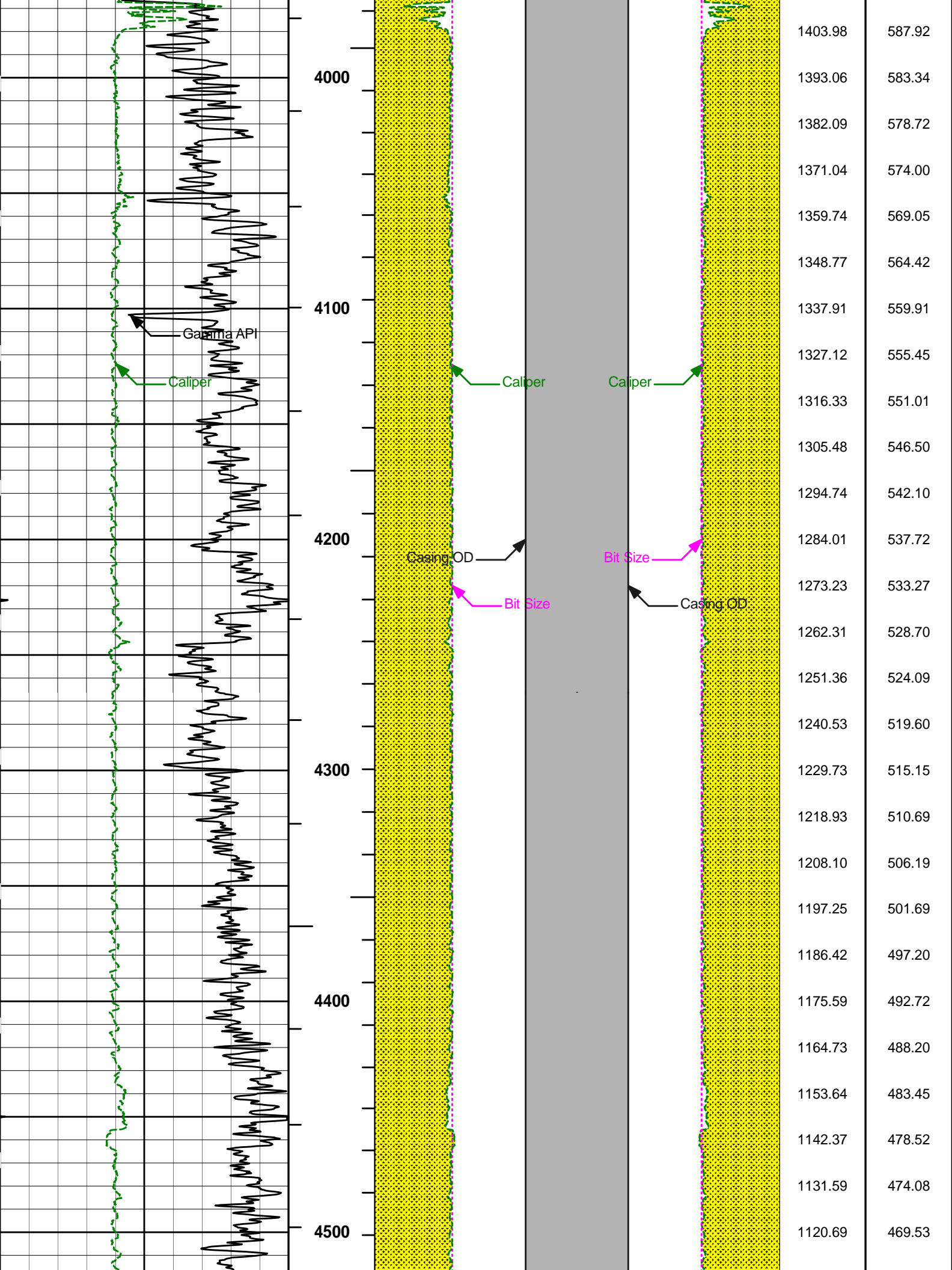


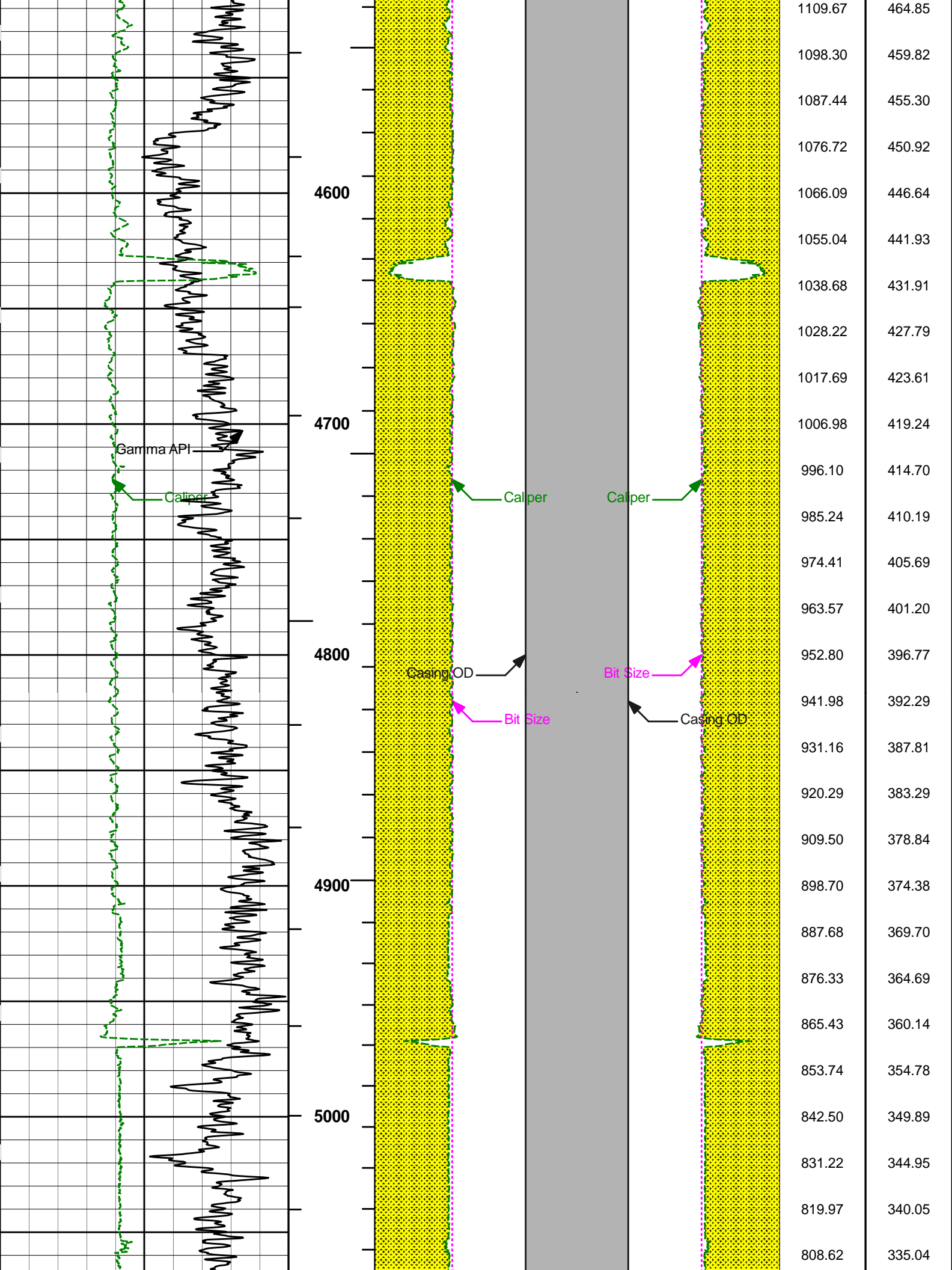


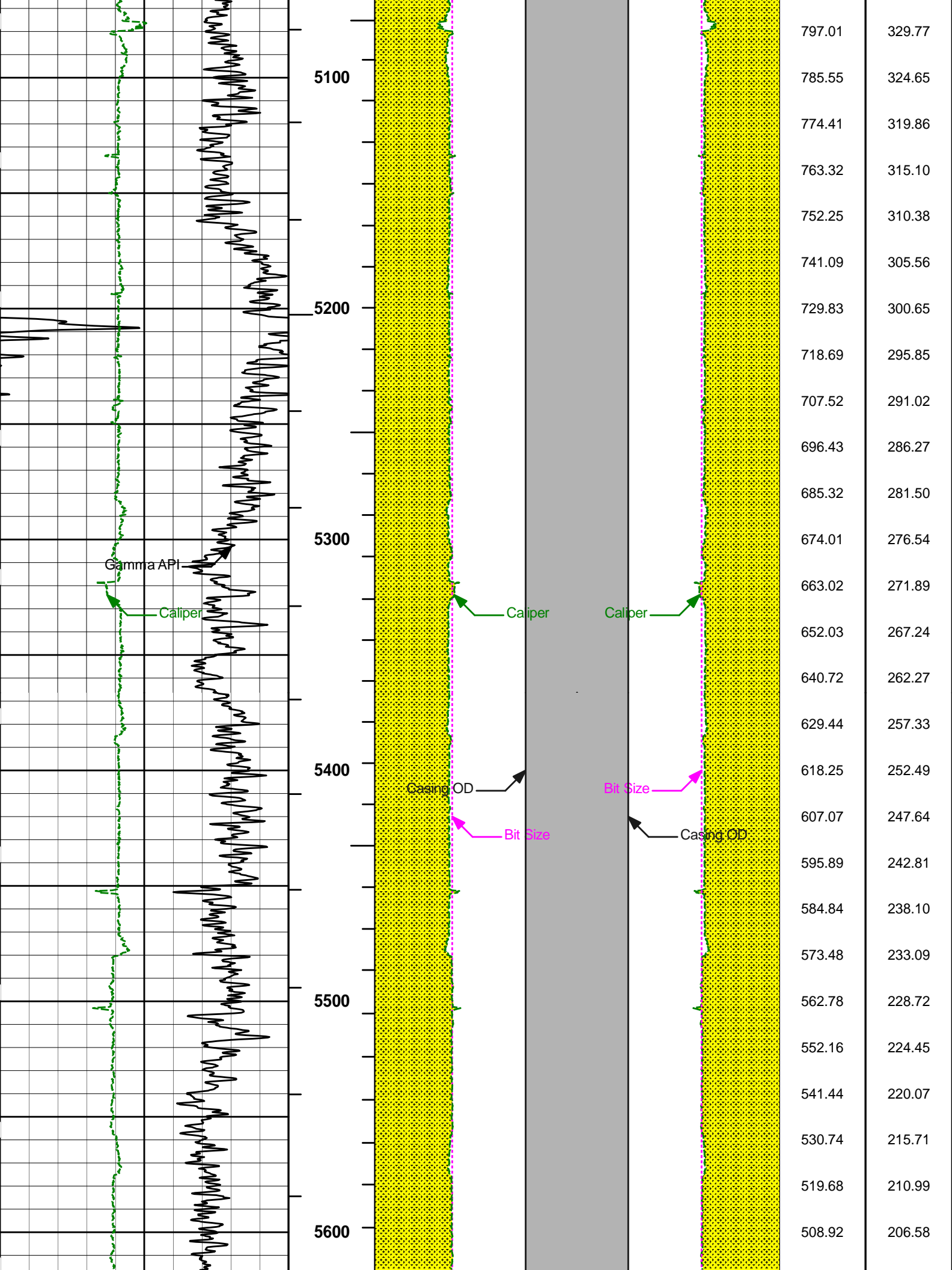


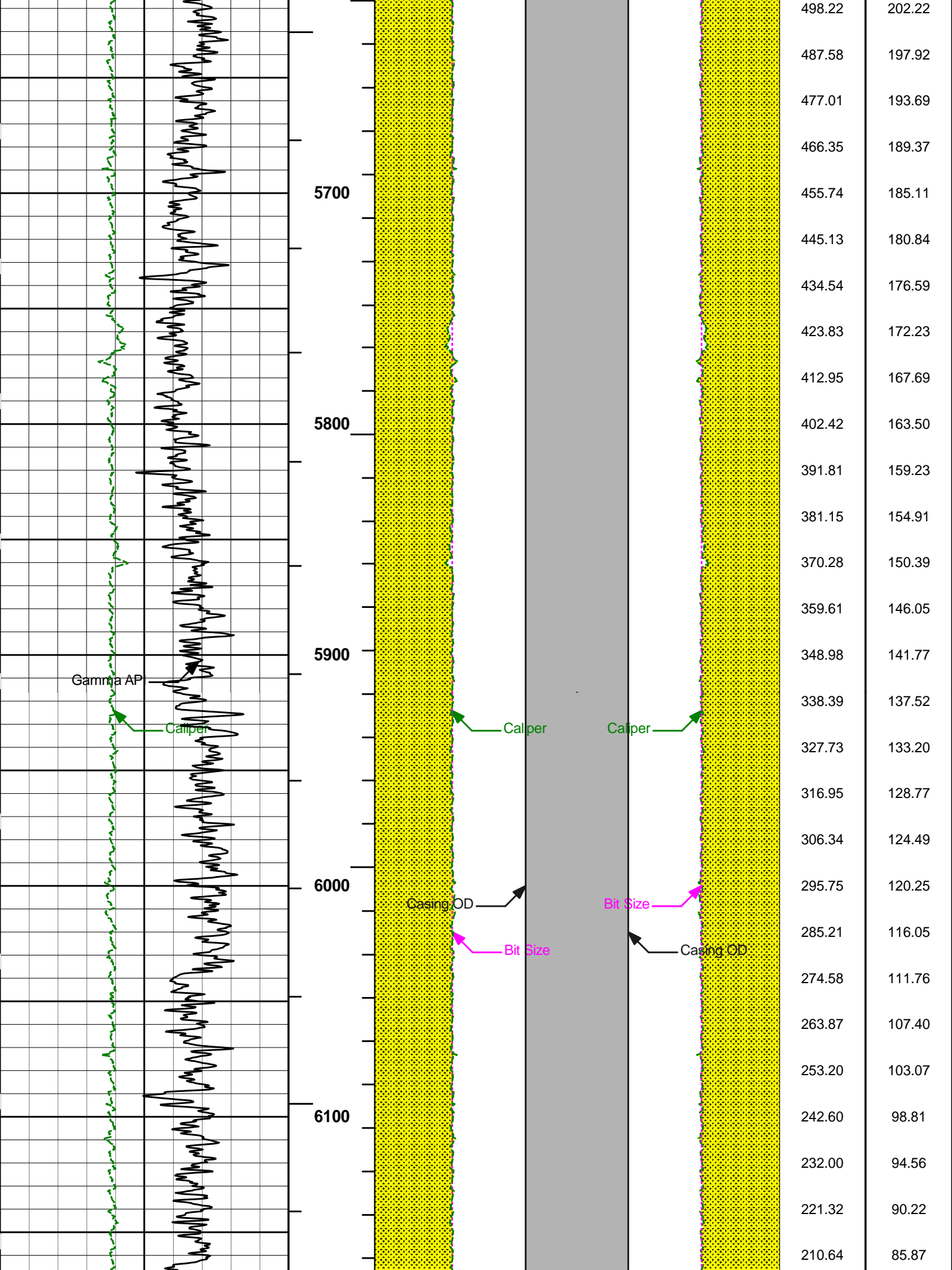












COMPANY	BLACK HILLS EXPLORATION & PRODUCTION		
WELL	HOMER DEEP UNIT 9-41BH		
FIELD	SOUTH SHALE RIDGE		
COUNTY	GARFIELD	STATE	CO
HALLIBURTON		BOREHOLE VOLUME	