

# CEMENT BOND LOG

[illegible]

Fold here

[illegible]

DIRECTIONAL INFORMATION									
Maximum Deviation @						KOP	@		
Remarks: RWCH-CCL-GR-CBL-CASTF RAN IN COMBINATION.									
LOG SPLICED AT 8140', 8160' AND 8190' FOR THE GR, CBL, AND CAST-V RESPECTIVELY.									
TODAY'S CREW: D. GIROUX & R. JOHNSON .					RIG: BASIC #1541.				
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, FARMINGTON , NM.									
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## 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	MDWT	Borehole Fluid Weight	9.400	ppg
	SHARED	RMUD	Mud Resistivity	2.000	ohm m
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	OBM	Oil Based Mud System?	No	
	SHARED	CSD	Logging Interval is Cased?	Yes	
	SHARED	CSOD	Inner Casing OD size	7.000	in
	SHARED	CSWT	Inner Casing Weight	29.00	lbpf
	SHARED	ISOC	Is Outer Casing Present?	No	
	SHARED	CSCM	Casing Cemented	Yes	
	SHARED	CMWT	Cement Weight	16.500	ppg
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	10000.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	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	ohm m
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohm m
	CCLD4	CLOK	Process CCL?	Yes	

CCLD4	CCLS	CCL Processing Selection	Raw	
NGRT	GROK	Process Gamma Ray?	Yes	
NGRT	GRSO	Gamma Tool Standoff	0.000	in
NGRT	GEOK	Process Gamma Ray EVR?	No	
CBL-M305	TTLV	Travel Time threshold.	5.0	mV
CBL-M305	TTOF	CBL Travel Time Offset from Calibration.	0	us
CBL-M305	ISFM	Is foam cement type?	No	
CBL-M305	CSTR	Compressive Strength	1000.00	psia
CBL-M305	BIOK	Calculate Bond Index?	Yes	
CBL-M305	ISMD	Is borehole fluid Mud?	No	
CBL-M305	SHGT	Show Gate on VDL?	No	
CBL-M305	OGOF	Override CBL Gain and Offset?	No	
CASTSCAN	CASO	Compute CAST Results	Yes	
CASTSCAN		Cast Advanced features flag	No	
CASTSCAN		Cast Cased Hole applications	CementInsp	
CASTSCAN	INHT	Cast Inhibit Time In Samples of 0.2 us Increments	150	
CASTSCAN		Cast shots number of shots per scan ( revolution)	SHOTS90	
CASTSCAN		Cast sample interval in us	0.4uS	
CASTSCAN	WFM	Cast Waveform Length in microsecond	WAVE_LEN_32uS	
CASTSCAN		Scans per ft for Imaging application	36	
CASTSCAN		Scans per ft for Pipe\Corrosion Inspection application	12	
CASTSCAN		Scans per ft for Cement Inspection application	4	
CASTSCAN		CAST cased hole Data Alignment Method	RELBEARING	
CASTSCAN		Cast Effective Head radius, Transducer location	1.81	in
CASTSCAN		Cast Transducer Head Diameter	4.37	in
CASTSCAN		Cast Xducer resonance frequency	BROWN350	
CASTSCAN	USTT	Use Fixed Value For Fluid TT	No	
CASTSCAN	MCUR	Max Motor Current	1.5000	amps

BOTTOM

Data: KM\_DOE5\_castv0001 D4TS-NGRT-CASTVHI015 11-Jan-08 16:18 Up @8196.0f

Date: 11-Jan-08 16:56:16

**HALLIBURTON**

Plot Time: 12-Jan-08 00:29:08

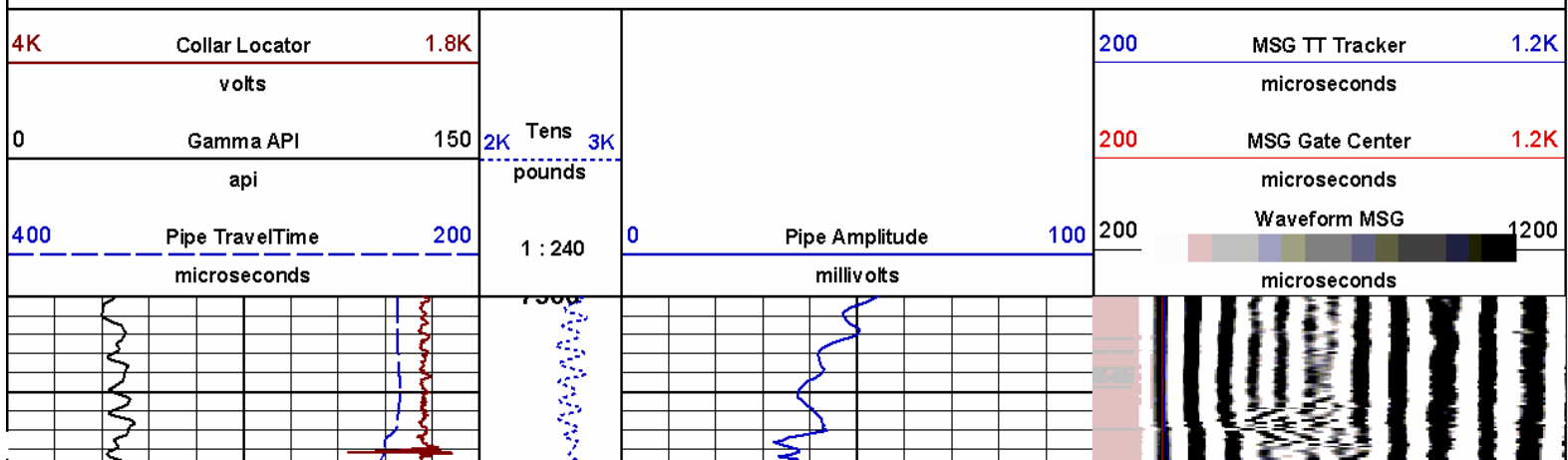
Plot Range: 7500 ft to 8500 ft

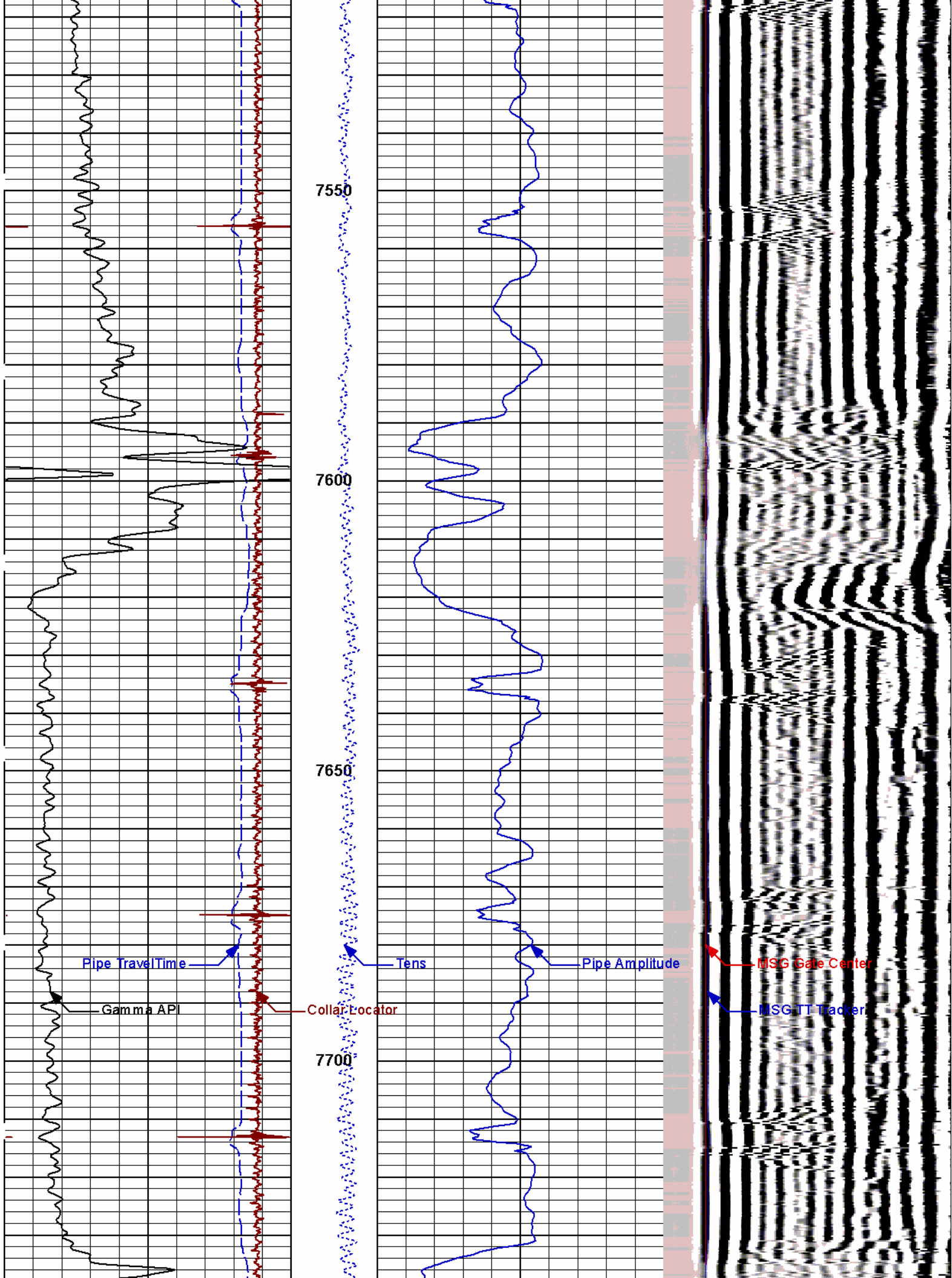
Data: {ActiveWell}-Well Based-".

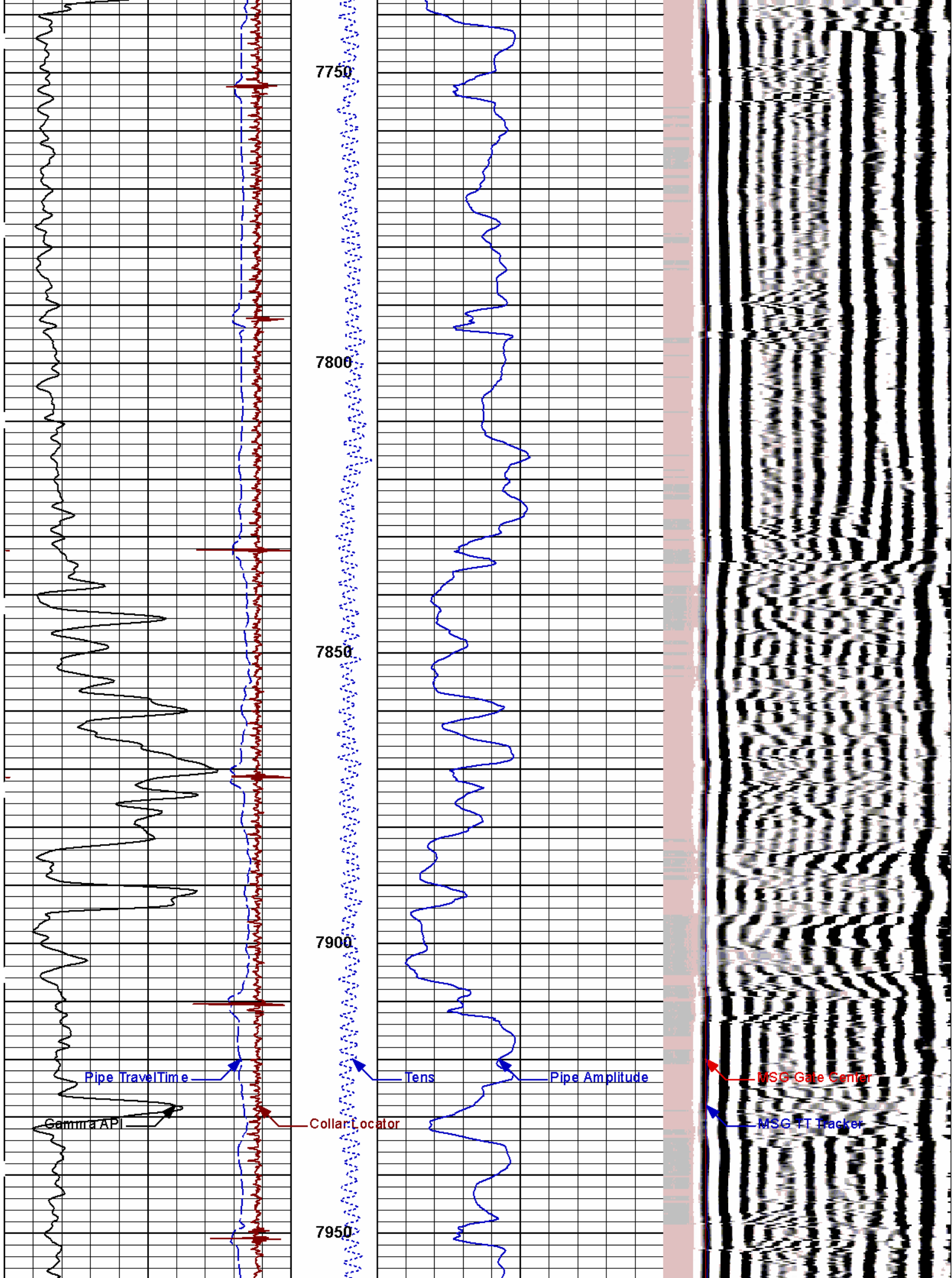
Plot File: \\CBLIFWS CBL 1\_240

## MAIN PASS

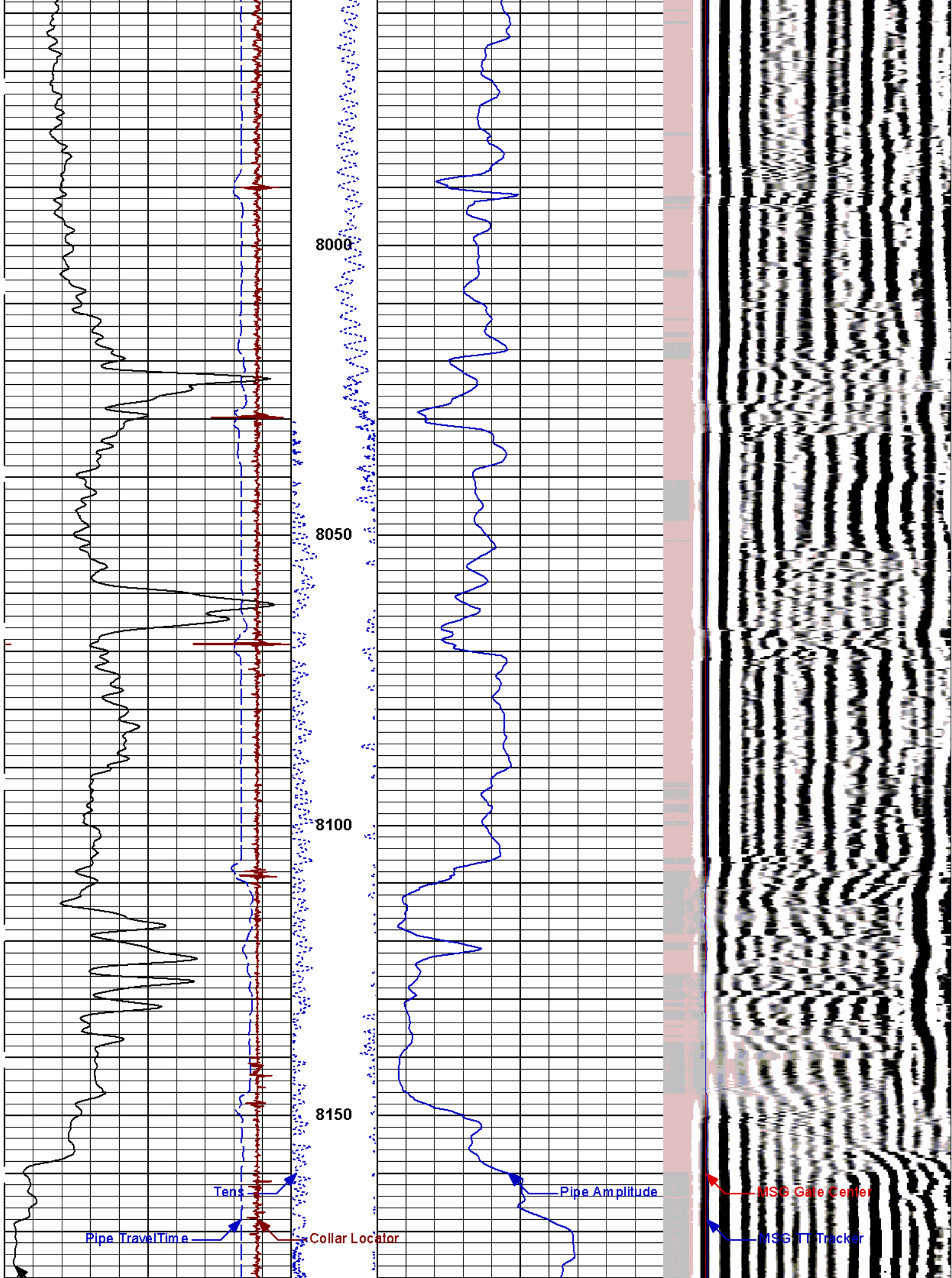
5" = 100'

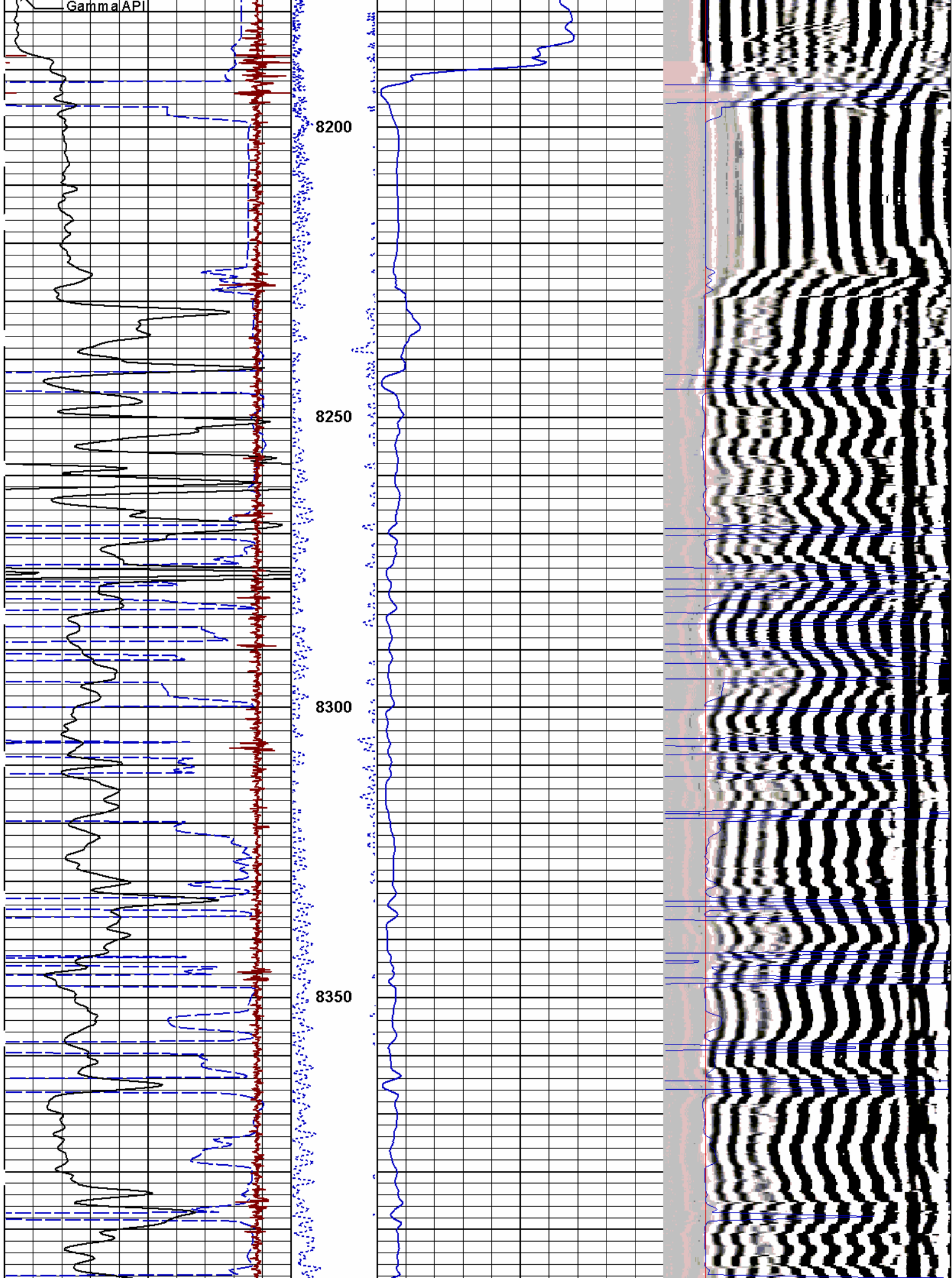


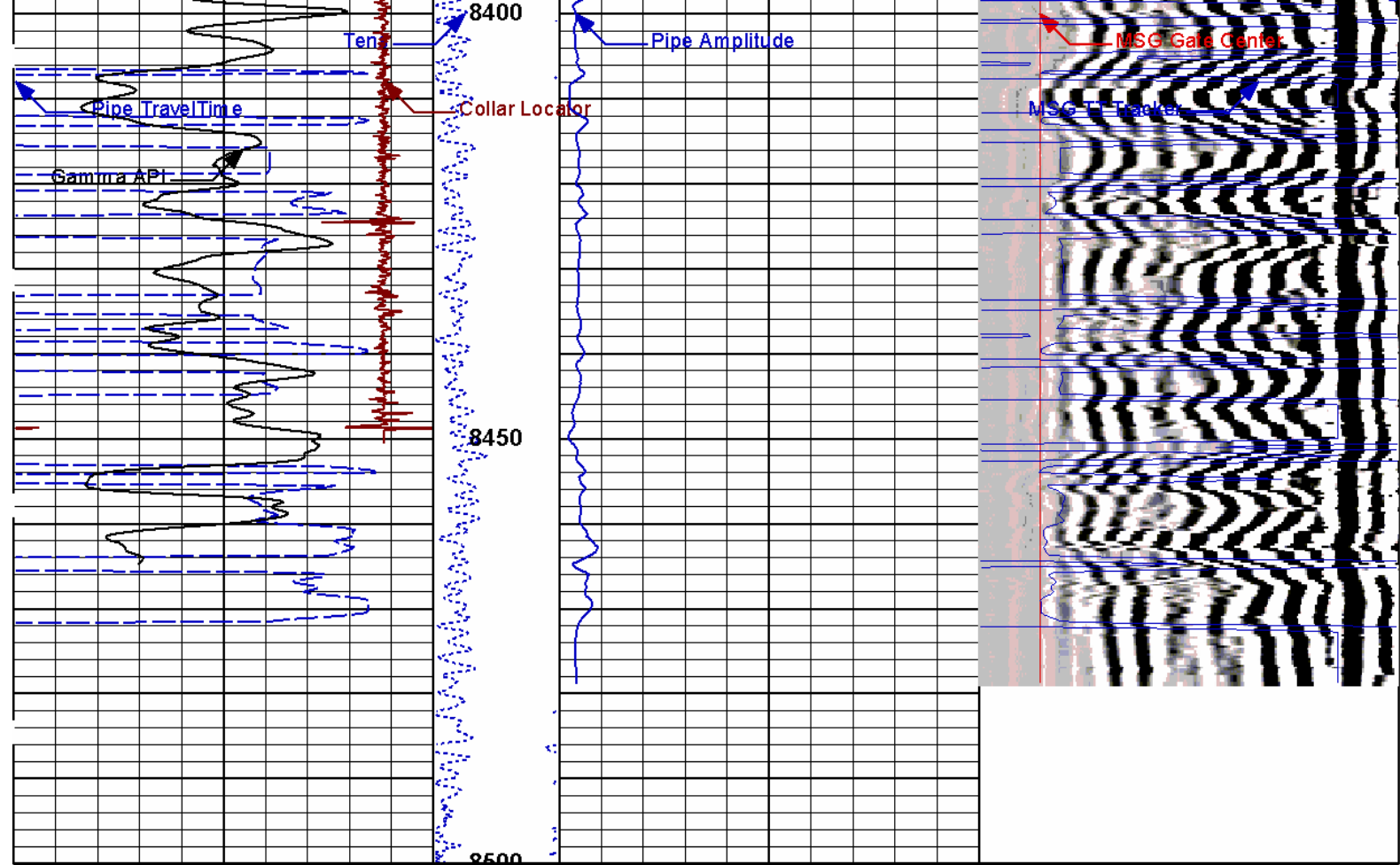












400	Pipe TravelTime	200	1 : 240	0	Pipe Amplitude	100	200	Waveform MSG	1200
	microseconds				millivolts			microseconds	
0	Gamma API	150	2K Tens 3K				200	MSG Gate Center	1.2K
	api		pounds					microseconds	
4K	Collar Locator	1.8K					200	MSG TT Tracker	1.2K
	volts							microseconds	

**HALLIBURTON**

Plot Time: 12-Jan-08 00:29:12  
Plot Range: 7500 ft to 8500 ft  
Data: {ActiveWell}-Well Based-\*.  
Plot File: \\CBLIFWS CBL 1\_240

MAIN PASS  
5" = 100'

**HALLIBURTON**

## CALIBRATION REPORT

### ACCELEROMETER SHOP CALIBRATION

Tool Name: D4TS - B080

Reference Calibration Date: 07-Nov-07 14:58:24

Engineer: L. SMITH

Calibration Date: 08-Dec-07 17:06:07

Software Version: WL INSITE R1.9 (Build 24)

Calibration Version: 1

Horizontal-1  
Telemetry

Horizontal-2  
Telemetry

Vertical  
Telemetry

Units



Coefficient	Coefficient Value	Tolerance
Gain	-0.000244	-0.0100 - 0.0100
Offset	3.834	-----

Orientation	Measured	Calibrated
Horizontal	0.01	0.00
Vertical	1.01	1.00

### NATURAL GAMMA RAY TOOL SHOP CALIBRATION

**Tool Name:** NGRT - A070 **Reference Calibration Date:** 06-Jan-08 09:51:58  
**Engineer:** M. BIERY **Calibration Date:** 08-Jan-08 12:33:31  
**Software Version:** WL INSITE R1.9 (Build 24) **Calibration Version:** 1

Calibrator Source S/N: TB-334

Calibrator API Reference:232.00 api

Measurement	Measured	Calibrated	Units
Background	48.9	50.0	api
Background + Calibrator	275.6	282.0	api
Calibrator	233.1	232.0	api

### NATURAL GAMMA RAY TOOL FIELD CALIBRATION

**Tool Name:** NGRT - A070 **Reference Calibration Date:** 08-Jan-08 12:33:31  
**Engineer:** L. SMITH **Calibration Date:** 11-Jan-08 11:08:39  
**Software Version:** WL INSITE R1.9 (Build 24) **Calibration Version:** 1

Calibrator Source S/N: TB-334

Calibrator API Reference:232.00 api

Field Verification	Shop	Field	Units
Background	50.0	19.6	api
Background + Calibrator	282.0	254.3	api
Calibrator	232.0	234.6	api

Shop	Field	Difference	Tolerance
232.0	234.6	-2.6	+/- 9.0

### NATURAL GAMMA RAY TOOL POST CALIBRATION

**Tool Name:** NGRT - A070 **Reference Calibration Date:** 11-Jan-08 11:08:39  
**Engineer:** L. SMITH **Calibration Date:** 11-Jan-08 18:26:18  
**Software Version:** WL INSITE R1.9 (Build 24) **Calibration Version:** 1

Calibrator Source S/N: TB-334

Calibrator API Reference:232.00 api

Post Verification	Field	Post	Units
Background	19.6	19.2	api
Background + Calibrator	254.3	257.0	api
Calibrator	234.6	237.8	api

Shop	Field	Post	Difference	Tolerance
232.0	234.6	237.8	-3.2	+/- 9.0

### CBL-M305 SHOP CALIBRATION

**Tool Name:** CBL-M305 - FWSS0096 **Reference Calibration Date:** 11-Jan-08 12:00:31  
**Engineer:** L. SMITH **Calibration Date:** 11-Jan-08 12:39:25

Software Version:	WL INSITE R1.9 (Build 24)	Calibration Version:	1
Calibration Type:	Well @ 6022.78 ft	Calibration Depth:	6022.78 ft
Casing Weight:	29.00 lbp	Casing OD:	7.000 in

Sensor	Measured	Calibrated	Difference	Units
Amplitude Tx1	59.10	62.20	3.10	mV
Pipe Reference TT	----	234.00	----	us
Sensor	Raw Value	Units		
Amplitude Tx1	7,349.90	mV		
Pipe TT from Tx1	338.00	us		

CBL-M305 FIELD CALIBRATION			
Tool Name:	CBL-M305 - FWSS0096	Reference Calibration Date:	11-Jan-08 12:39:25
Engineer:	L. SMITH	Calibration Date:	11-Jan-08 12:39:54
Software Version:	WL INSITE R1.9 (Build 24)	Calibration Version:	1
Calibration Type:	Well @ 6022.78 ft	Calibration Depth:	6022.78 ft
Casing Weight:	29.00 lbp	Casing OD:	7.000 in

Sensor	Measured	Calibrated	Difference	Tolerance	Units	Pass/Fail
Amplitude Tx1	62.20	62.20	0.00	+/- 5.00	mV	Passed
Sensor	Raw Value	Units				
Amplitude Tx1	7,349.00	mV				
Pipe TT from Tx1	338.00	us				

CBL-M305 POST CALIBRATION			
Tool Name:	CBL-M305 - FWSS0096	Reference Calibration Date:	11-Jan-08 12:39:54
Engineer:	L. SMITH	Calibration Date:	11-Jan-08 17:51:48
Software Version:	WL INSITE R1.9 (Build 24)	Calibration Version:	1
Calibration Type:	Well @ 2782.30 ft	Calibration Depth:	2782.30 ft
Casing Weight:	29.00 lbp	Casing OD:	7.000 in

Sensor	Measured	Calibrated	Difference	Tolerance	Pass/Fail	Units
Amplitude Tx1	62.10	62.20	0.10	+/- 5.00	mV	Passed
Sensor	Raw Value	Units				
Amplitude Tx1	7,345.20	mV				
Pipe TT from Tx1	336.00	us				

CASTNAV SHOP CALIBRATION			
Tool Name:	CASTNAV - 7477	Reference Calibration Date:	01-Jan-70 00:00:00
Engineer:	L. SMITH	Calibration Date:	06-Jan-08 08:21:03
Software Version:	WL INSITE R1.9 (Build 24)	Calibration Version:	1

Orientation	Measured	Calibrated	Difference	Tolerance	Units	Pass/Fail
Rotate AccX Min	-1.0058	-1.0	5.80000000000003E-03	0.10	g	Pass
Rotate AccX Max	1.0076	1.0	7.60000000000005E-03	0.10	g	Pass
Rotate AccY Min	-1.0039	-1.0	3.90000000000001E-03	0.10	g	Pass
Rotate AccY Max	0.9964	1.0	3.60000000000005E-03	0.10	g	Pass

Sensor	Gain	Offset
Accel X	0.0003015682	-0.0012062726
Accel Y	0.0003036284	0.0001518142

Circumferential Acoustic-Scanning Tool - F Shop Calibration			
Tool Name:	CASTSCAN - 0346	Reference Calibration Date:	11-Jan-08 12:06:40
Engineer:	L. SMITH	Calibration Date:	11-Jan-08 12:45:27
Software Version:	WL INSITE R1.9 (Build 24)	Calibration Version:	1
Transducer Type:	BROWN	Transducer S/N:	?????

Time and Amplitude					
Measurement	Reference Shop	Shop	Difference	Tolerance	Units
Mud Cell TT	37.60	37.20	0.4000		us
Mud Cell AMP	690.63	782.98	-92.3500		
Mud Cell Offset	-0.57	-0.50	-0.0700	+/- 5	us

Wave Form					
Measurement	Reference Shop	Shop	Difference	Tolerance	Units
Mud Cell TT	41.61	41.52	0.0900		us
Mud Cell AMP	696.65	806.21	-109.5600		
Mud Cell Offset	3.44	3.82	-0.3800	+/- 5	us

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
D4TS-B080						
AccZ Horizontal	0.00	-----	-----	0.00	-----	g
AccZ Vertical	1.00	-----	-----	0.00	-----	g
NGRT-A070						
Gamma Ray Calibrator	232.0	234.6	237.8	-3.2	+/- 9.0	api

Data: KM_DOE5_castv0001 D4TS-NGRT-CASTVHIDLE	Date: 11-Jan-08 18:26:33
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HALLIBURTON

CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	11-Jan-08 11:26:53	1009.75	Logging 001 11-Jan-08 11:26 Dn @1009.8f
	11-Jan-08 11:54:22	3861.17	Halting 001 11-Jan-08 11:26 Dn @1009.8f
	11-Jan-08 12:08:19	3467.75	Logging 002 11-Jan-08 12:08 Dn @3467.8f
	11-Jan-08 12:36:02	6098.58	Halting 002 11-Jan-08 12:08 Dn @3467.8f
	11-Jan-08 12:46:51	5979.25	Logging 003 11-Jan-08 12:46 Dn @5979.3f
	11-Jan-08 12:53:21	6694.51	Halting 003 11-Jan-08 12:46 Dn @5979.3f
	11-Jan-08 12:54:27	6735.00	Logging 004 11-Jan-08 12:54 Dn @6735.0f
	11-Jan-08 13:23:04	8500.76	Halting 004 11-Jan-08 12:54 Dn @6735.0f
	11-Jan-08 13:23:27	8501.75	Logging 005 11-Jan-08 13:23 Up @8501.8f
	11-Jan-08 13:40:33	8231.89	Halting 005 11-Jan-08 13:23 Up @8501.8f
	11-Jan-08 13:44:51	8325.50	Logging 006 11-Jan-08 13:44 Up @8325.5f
	11-Jan-08 14:40:57	7436.63	Halting 006 11-Jan-08 13:44 Up @8325.5f
	11-Jan-08 14:53:26	8240.25	Logging 007 11-Jan-08 14:53 Up @8240.3f
	11-Jan-08 15:02:52	8149.55	Halting 007 11-Jan-08 14:53 Up @8240.3f
	11-Jan-08 15:04:58	8205.00	Logging 008 11-Jan-08 15:04 Up @8205.0f
	11-Jan-08 15:12:04	8155.55	Halting 008 11-Jan-08 15:04 Up @8205.0f

11-Jan-08 15:12:51	7435.98	Halting 005 11-Jan-08 15:12 Up @7435.9f
11-Jan-08 15:16:20	8325.50	Relogging 006.01 11-Jan-08 15:16 Up
11-Jan-08 15:21:25	7435.98	Halting 006.01 11-Jan-08 15:16 Up
11-Jan-08 15:27:15	6680.50	Logging 009 11-Jan-08 15:27 Up @6680.5f
11-Jan-08 15:30:28	6474.44	Halting 009 11-Jan-08 15:27 Up @6680.5f
11-Jan-08 15:31:39	6406.75	Logging 010 11-Jan-08 15:31 Up @6406.8f
11-Jan-08 15:34:13	6375.92	Halting 010 11-Jan-08 15:31 Up @6406.8f
11-Jan-08 15:36:43	6568.25	Logging 011 11-Jan-08 15:36 Dn @6568.3f
11-Jan-08 15:37:50	6769.86	Halting 011 11-Jan-08 15:36 Dn @6568.3f
11-Jan-08 15:38:42	6820.50	Logging 012 11-Jan-08 15:38 Dn @6820.5f
11-Jan-08 15:42:36	7365.34	Halting 012 11-Jan-08 15:38 Dn @6820.5f
11-Jan-08 15:57:21	8500.00	Logging 013 11-Jan-08 15:57 Up @8500.0f
11-Jan-08 16:13:04	8178.23	Halting 013 11-Jan-08 15:57 Up @8500.0f
11-Jan-08 16:14:32	8203.50	Logging 014 11-Jan-08 16:14 Up @8203.5f
11-Jan-08 16:16:26	8192.21	Halting 014 11-Jan-08 16:14 Up @8203.5f
11-Jan-08 16:18:20	8196.00	Logging 015 11-Jan-08 16:18 Up @8196.0f

Data: KM\_DOE5\_castv10001 D4TS-NGRT-CASTVHIHWI0378

Date: 11-Jan-08 17:06:02

**HALLIBURTON**

## TOOL STRING DIAGRAM REPORT

Description	OD/Sensors	Diagram	Sensors	Tool Length	Accumulated Length
RWCH-A10681688 135.00 lbs	O.D. = 3.63 in		Load Cell @ 57.58 ft BH Temperature @ 57.01 ft	6.25 ft	61.26 ft
CCL-115000 15.00 lbs	O.D. = 3.68 in		CCL @ 54.30 ft	2.00 ft	55.01 ft
D4TS-B080 100.00 lbs	O.D. = 3.63 in			6.50 ft	53.01 ft
NGRT-A070 176.00 lbs	O.D. = 3.63 in		GammaRay @ 39.84 ft	8.00 ft	46.51 ft
					38.51 ft

CBL-M305-FWSS0096  
475.00 lbs

O.D. = 3.63 in

20.50 ft

← Tx1 Amp & TT @ 25.25 ft

← Tx1 MSG @ 24.25 ft

✕ 18.01 ft

CAST-M-0350  
190.00 lbs

O.D. = 3.63 in

10.25 ft

✕ 7.76 ft

NAV-7477  
38.00 lbs

O.D. = 3.63 in

3.00 ft

← CASTNAV @ 5.13 ft

O.D. = 3.63 in

✕ 4.76 ft

CASTSCAN-0346  
78.00 lbs

O.D. = 3.63 in

4.76 ft

← CASTSCANNER @ 0.16 ft

O.D. = 3.63 in

✕ 0.00 ft

Tool Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Length Accumulation (ft)	Max Logging Speed (fpm)
RWCH	RWCH		A10681688	135.00	6.25	55.01	300.00
CCL	CCLD4		115000	15.00	2.00	53.01	300.00
D4TS	D4TS		B080	100.00	6.50	46.51	300.00
NGRT	NGRT		A070	176.00	8.00	38.51	60.00
CBL-M305	CBL-M305		FWSS0096	475.00	20.50	18.01	60.00
CAST-M	CAST-M		0350	190.00	10.25	7.76	45.00
NAV	CASTNAV		7477	38.00	3.00	4.76	300.00
CASTSCAN	CASTSCAN		0346	78.00	4.76	0.00	300.00
Total				1,207.00	61.26		45.00
Data: KM_D0E5_castv10001 D4TS-NGRT-CASTVHIDLE							Date: 11-Jan-08 10:59:50

COMPANY      KINDER MORGAN CO2 COMPANY, L.P.

WELL            DOE CANYON No. 5

FIELD          WILDCAT

COUNTY        DOLORES

STATE

CO



