

Casing Inspection

Company	Client Name
Well	Well #1
Field	Oilfield
County	Harris
State	Texas
API#	42-201-00000
Date Logged	07/07/2025
Top of Log	7.8'
Bottom of Log	6380.68'
ECCE Corrected	YES
Bad Fingers	NO
Logged by	T. Ogle
Witnessed by	Mr. Client
Location	Houston, TX
Processed by	JT3 DCS, Houston, TX
Contact	Tim Ogle



Casing	Size	Weight	From	To
Record	(in)	(lb/ft)	(Ft)	(Ft)
Surface			Surface	
Production	5.5"	17#	Surface	6370'
Tubing	Removed			

Any interpretation of logs or survey, either through optical or electronic processing means or otherwise, or any recommendation or description of any reservoir based on such interpretation of other data, are opinions based upon measurements, assumptions and empirical relationships, which inferences and assumptions are not incapable of error. We cannot and do not guarantee the accuracy, correctness or completeness of such interpretations, recommendations or descriptions and Company agrees that we shall not be liable or responsible for any loss, cost, damage or expense accrued or sustained by Company resulting directly or indirectly therefrom. Under no circumstances should any such interpretation, recommendation, or description be relied upon as the basis for any procedure conducted in or on a well which involves any risk to the safety of personnel, equipment or venture. Company shall always have full responsibility for such decisions and for all decisions concerning other procedures relating to drilling, completion or production operations.

Interpretation Summary

Internal inspection was carried out with the 40 Arm Caliper.

MFC

Depth interval processed: 10.8' - 6377.68'. Number of joints processed: 156 Joints.

147 joints of class 1 corrosion (0% - 12.5%),
5 joints of class 2 corrosion (12.5% - 20%),
2 joints of class 3 corrosion (20% - 40%),
0 joints of class 4 corrosion (40% - 60%),
1 joints of class 5 corrosion (60% - 80%)

The worst Penetration is 100.0% (0.345 in) in Joint 75 at a depth of 3093.25 Ft

The worst Showing Metal Loss is 10.8% in Joint 75

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The worst Penetrations and Projections are shown in the tables below

The Well Log, the corresponding charts, diagrams, and well trajectory, are shown below

Processing was done in CardLine software. Processed By: JT3 Data Consulting Services
Contact: Tim Ogle (346) 617-0639 JT3.DCS@gmail.com

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Measured Logs

This interpretation is based on Data Recorded with the use of a Multi-Finger Caliper Tool. The MFC is used to detect casing deformation, bending, fractures, holes, and inner wall corrosion by using independent measuring fingers. The logging data is processed to provide casing inner face imaging, circumferential profile imaging, and cylindrical three dimensional imaging to clearly reflect casing integrity. This approach enables inside casing wear or damage detection. The inside diameter of pipe is calculated based on multi-finger caliper measurement.

Before Interpretation, The MFC data is checked for Calibrations, Pre & Post Verifications, and Anomalies encountered during the logging process.

Critical Note: It is extremely important that we have all of the information available about the well and the problem that is being investigated, the data collected is critical and it is important that all of the Calibration and Verification steps be followed

Multi-Finger Caliper Logging

Multi-Finger Caliper (MFC) logging uses multiple measuring arms to record inner diameter of the casing wall. The arms independently measure radius between middle tool axis and casing wall. The MFC survey shows quantity of inside wall damage as well as position of damage. The Caliper survey will determine the extent of wear and corrosion, and detect holes inside casing or tubing string.

The Multi-Finger Caliper has 24, 40, 56 and 60 "measuring arms", upon number of arms depends tools diameter and maximum casing diameter. Calipers should be centralized during operation allowing all measuring fingers to be connected to inner casing wall. Some tool models themselves contain roller stabilizers, but the recommendation is to have at least two roller or spring centralizers in vertical holes and four in very deviated or horizontal well bores. Each caliper finger is connected to an independent non-contact displacement LVDT Sensor that features small sizes, long service life, and high measurement accuracy. The MFC transmits all arms independently over wireline, as well as head voltage, well inclination, azimuth and temperature. Data regarding minimum, maximum and average inner diameter are recorded in a database, in real time during operations.

Each measuring finger has a carbide tip to protect the area of greatest wear. As the caliper moves over casing, the measuring arms follow the contour of the casing inside wall. When measuring fingers are opened or closed, the mechanical actuating mechanism of the tool convert the radial movement of the measuring finger to axial displacement of the iron core of placement transducer. Displacement of inner core is converted to output electrical signal as a result of the axial iron core displacement of placement transducer. Signal is subsequently enter A/D converter and as telemetry signal sent to surface logging equipment.

Advances in technology has produced Multi-Finger Calipers capable of Memory Operations. This expands the calipers capability to Slickline and Coil Tubing operations. Typically the Memory Controller is programmed and powered by a high capacity lithium battery. The memory toolstring is run in hole in conjunction with a Time Depth Controller. Data vs. Time, and Time vs. Depth data are combined post logging to produce the Multi-Finger Caliper Log.

Data discrepancies can arise due to changes in logging methods, speed, or pipe properties because these factors directly influence how data is captured, processed, and interpreted. Here is a brief explanation:

1. Logging Method: Changes in the tools, sensors, or algorithms used to record data can alter the way information is collected, introducing variations.
2. Speed of Data Collection: If the speed at which data is logged changes (e.g., increasing sampling rates), it can capture more detailed variations in the system, which may not have been apparent before.
3. Pipe Properties: Variations in pipe material, size, roughness, or age can affect the data captured. These physical changes can lead to different data outputs, even under similar operating conditions.

Data inconsistencies in well logging using a Multi-Finger Caliper tool can arise due to several factors:

1. Tool Position in the Well: If the caliper tool is not centralized or is tilted within the wellbore, the measuring fingers may not accurately contact the wellbore wall. This leads to irregular or incomplete measurements, particularly in non-circular boreholes.
2. Tool Rotation: The caliper tool will rotate due to the forces applied by the wireline cable, this will effect the data collected as the measuring fingers may not follow the exact path as previous logging runs.
3. Distance Between Measuring Fingers: The spacing of the caliper fingers affects the resolution of the measurement. Wider spacing might miss small-scale irregularities, while closely spaced fingers may provide more detailed data. If the spacing is inconsistent, it can lead to gaps or overlaps in the recorded data.
4. Logging Speed: The speed at which the caliper tool moves through the well affects the frequency of data acquisition. If the logging speed is too fast, the tool might skip over subtle changes in the borehole geometry, leading to inaccurate or incomplete data. Conversely, slow logging speeds provide more detailed measurements but increase operation time and cost.

Together, these factors can result in data inconsistencies when comparing historical and current datasets.

Toolstring Diagram

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (l)
			TITAN_Cable_Head-1.43 Titan 1.43" Cone Type II (3916-022-030)	1.03	1.69	5.40
			WS_WTC-WTC51 (8060 WTC51_(REQUIRED)) Hunting WS 1 11/16" Telemetry	1.80	1.69	7.50
CRCCnt	11.40					
FrmCnt	11.40					
WTSTime	11.40					
WTSTemp	11.40					
CHV	11.40		WS_RCT-RCT14 (8070-RCT14) Hunting WS 2-3/8" Single Roller Centralizer (8-arm)	3.01	2.38	24.05
Meas	5.31		WS_MCT-MCT42 (8020-MCT42) Hunting WS 2 7/8" Multi-finger Caliper Tool-40 Finger	5.13	2.88	55.56
MFCBEAR	3.26					
MFCACCY	3.26					
MFCACCX	3.26					
Aux1	3.26		WS_RCT-RCT14 (RCT14-XXXXXXX) Hunting WS 2-3/8" Single Roller Centralizer (8-arm)	3.01	2.38	24.05
			WS_BWS-BWS16 Hunting WS 1-11/16" Bull Nose	0.25	1.69	1.00

Hunting Titan WS Logging Suite_35K: String length: 14.23 ft Weight: 117.56 lb Max. O.D.: 2.88 in

Help

Log Quality Control

Company	Client Name
Well	Well Name
Log Date	Date



Run 1:	Ran in hole with Gauge-Ring Junk Basket
Run 2:	Ran in hole with Multi-Finger Caliper

Grade	Wall Loss %
1	0-12.5%
2	12.5->20%
3	20->40%
4	40->60%
5	60->80%
6	80->100%

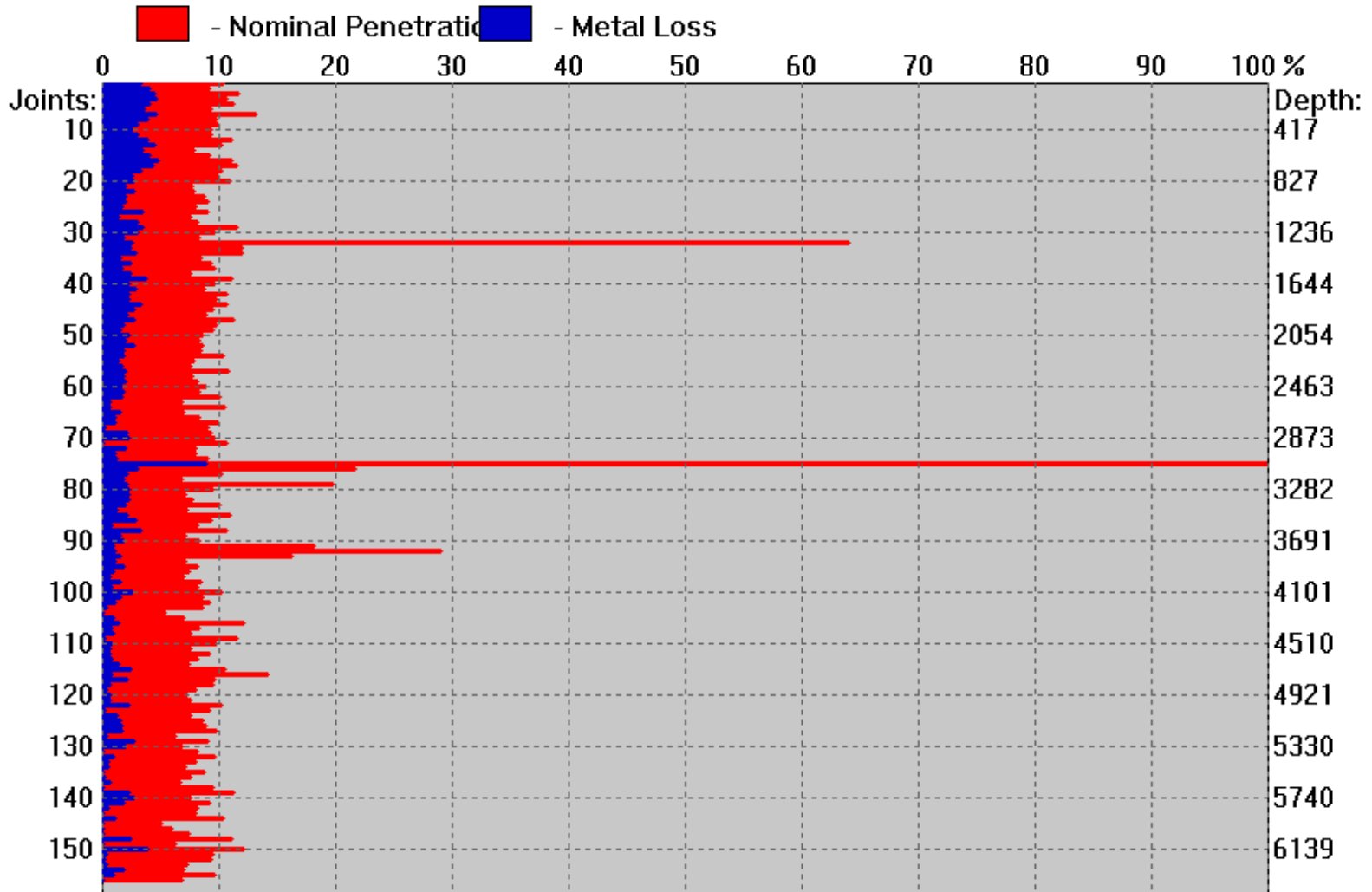
Client Supplied Data	Log Quality Control	Interpretation Parameters
Y .LAS File	Y Before Calibration	Y Default Grading
Y Field Print	Y After Calibration	N Client Specified Grading
Y Job Log	Y Collars Detected	N Data Merge
Y Wellbore Diagram	Y Acceptable Centralization	Y Depth Corrected
Y Completion Report	Y Excentralization Required	Y ECCE Corrected
N Cement Bond Log	N Bad Fingers	N Bad Fingers Corrected
Y Database .db	Y Tool Sticking	Y Data Filtering

Grade	Penetration %
1	0 > 10%
2	10 > 25%
3	25 > 50%
4	50 > 75%
5	75 > 100%

Gas Lift:	Reported	Detected	Perfs:	Reported	Detected
#1		-	#1		-
#2		-	#2		-
#3		-	#3		-
#4		-	#4		-
#5		-	#5		-
#6		-	#6		-
#7		-	#7		-
#8		-	#8		-

MFC Depth Profile

MFC Penetration and Metal Loss Depth Profile



Number of Joints: 156

5.5" 17# Casing

Graded Joints by Wall Loss %

5.5 in Casing OD
20 # Casing Weight
4.778 in Casing ID
0.361 in Wall Thickness
0.316 in MIN Wall Thickness API

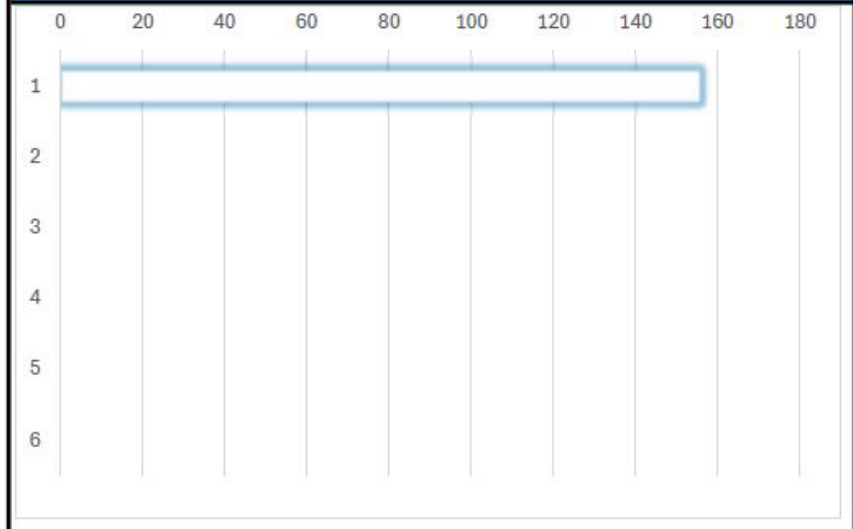
Grade	Wall Loss %
1	0->12.5%
2	0->20%
3	20->40%
4	40->60%
5	60->80%
6	80->100%

Grade	Joints
1	156
2	0
3	0
4	0
5	0

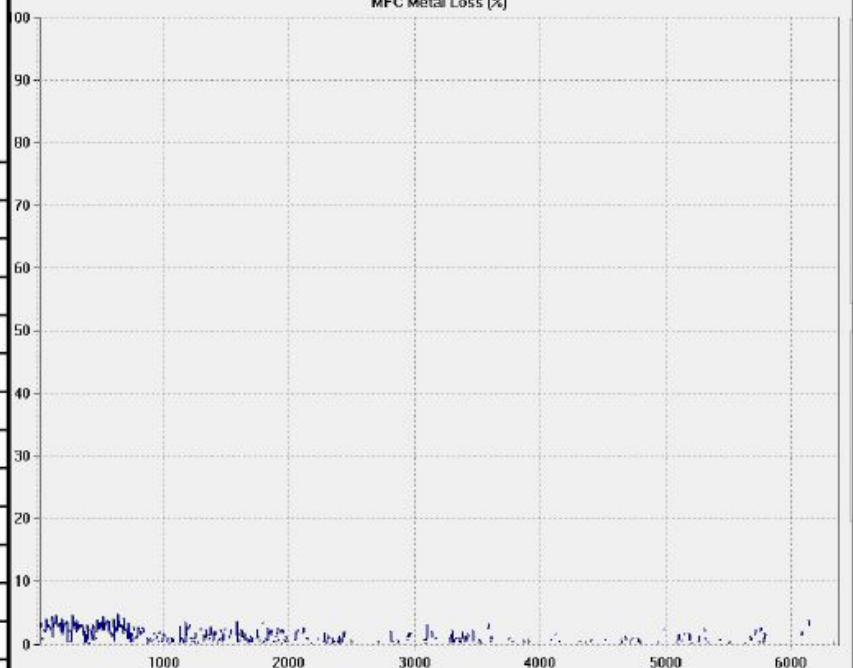
156

	Showing Metal Loss 10.8% in Joint 75
	Showing Metal Loss 4.8% in Joint 16
	Showing Metal Loss 4.7% in Joint 4
	Showing Metal Loss 4.7% in Joint 7
	Showing Metal Loss 4.5% in Joint 13
	Showing Metal Loss 4.5% in Joint 3
	Showing Metal Loss 4.3% in Joint 17
	Showing Metal Loss 4.1% in Joint 15
	Showing Metal Loss 4.0% in Joint 5
	Showing Metal Loss 4.0% in Joint 2
	Showing Metal Loss 3.9% in Joint 12
	Showing Metal Loss 3.9% in Joint 8
	Showing Metal Loss 3.8% in Joint 150
	Showing Metal Loss 3.7% in Joint 39
	Showing Metal Loss 3.7% in Joint 6

Graded Joints MFC - Wall Loss %



MFC Metal Loss (%)



5.5" 17# Casing

Graded Joints by Penetration %

5.5 in Casing OD
17 # Casing Weight
4.778 in Casing ID
0.361 in Wall Thickness
0.316 in MIN Wall Thickness API

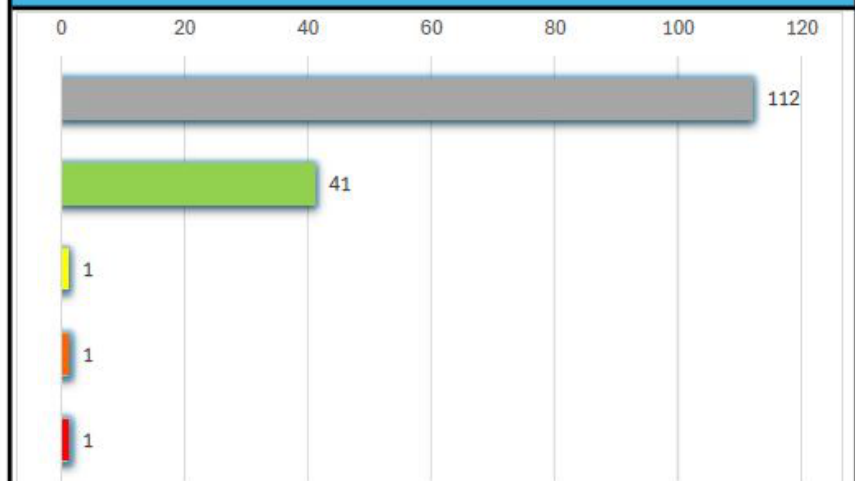
Grade	Penetration %
1	0->10%
2	10->25%
3	25->50%
4	50->75%
5	75->100%

Grade	Joints
1	112
2	41
3	1
4	1
5	1

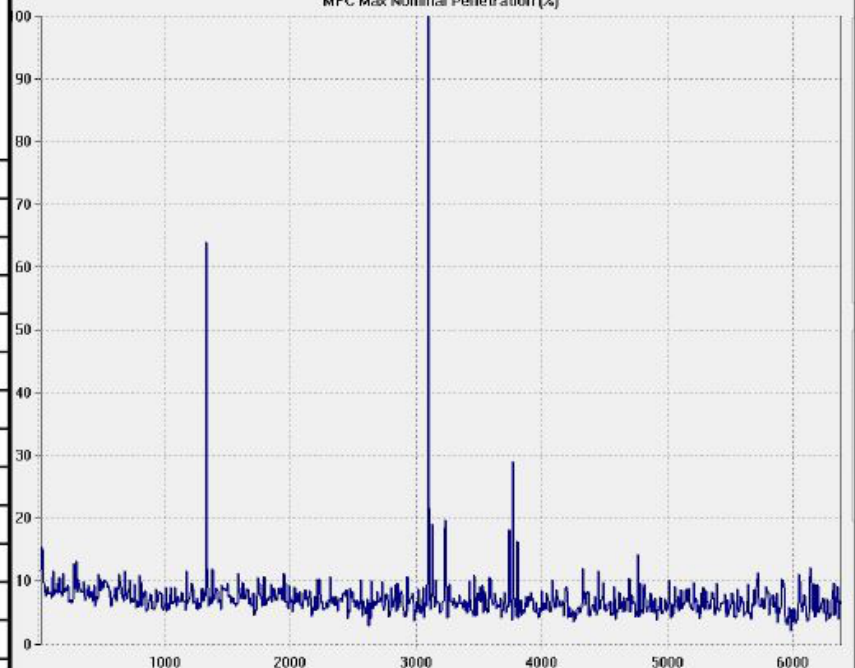
156

Penetration 100.0% (0.345 in) in Joint 75 at depth 3093.25 Ft
Penetration 64.0% (0.194 in) in Joint 32 at depth 1331.69 Ft
Penetration 29.0% (0.088 in) in Joint 92 at depth 3772.51 Ft
Penetration 21.8% (0.066 in) in Joint 76 at depth 3103.59 Ft
Penetration 19.8% (0.06 in) in Joint 79 at depth 3239.02 Ft
Penetration 18.1% (0.055 in) in Joint 91 at depth 3740.54 Ft
Penetration 16.3% (0.049 in) in Joint 93 at depth 3808.17 Ft
Penetration 14.2% (0.043 in) in Joint 116 at depth 4766.60 Ft
Penetration 13.2% (0.04 in) in Joint 7 at depth 295.94 Ft
Penetration 12.2% (0.037 in) in Joint 150 at depth 6139.81 Ft
Penetration 12.1% (0.037 in) in Joint 33 at depth 1339.28 Ft
Penetration 12.1% (0.037 in) in Joint 106 at depth 4327.80 Ft
Penetration 11.9% (0.036 in) in Joint 34 at depth 1380.26 Ft
Penetration 11.6% (0.035 in) in Joint 3 at depth 110.46 Ft
Penetration 11.6% (0.035 in) in Joint 109 at depth 4450.65 Ft

Graded Joints MFC - Penetration %

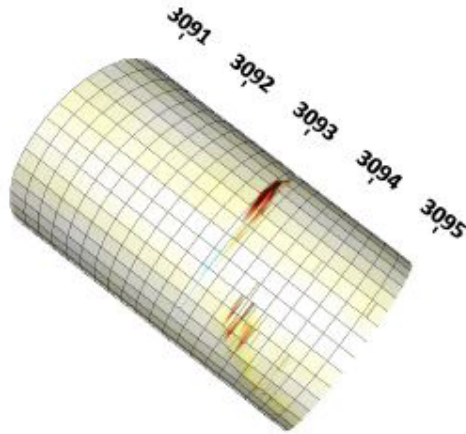


MFC Max Nominal Penetration (%)

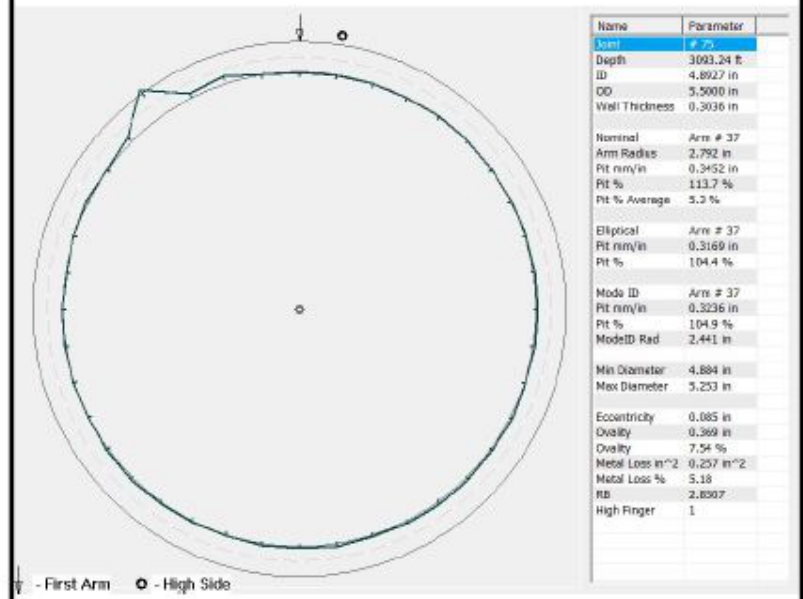


Joint 75 - 100% Penetration

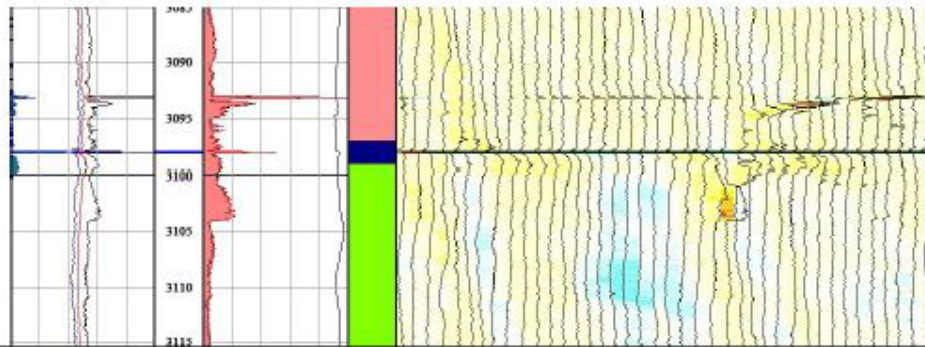
3D View



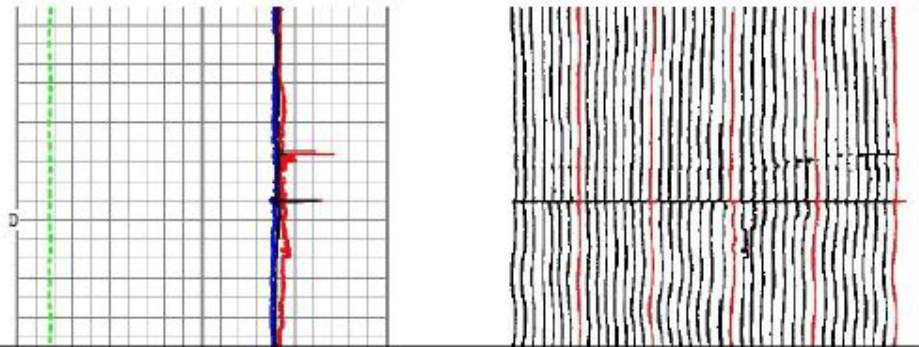
Cross Section



Processed Log

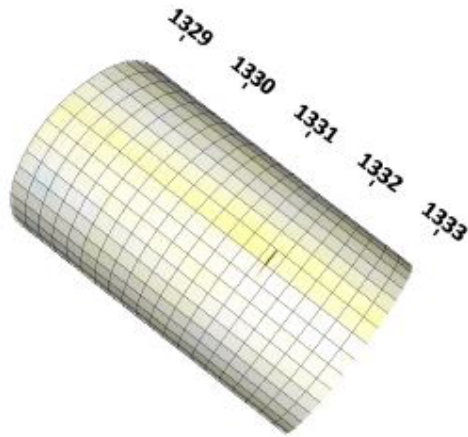


Field Log

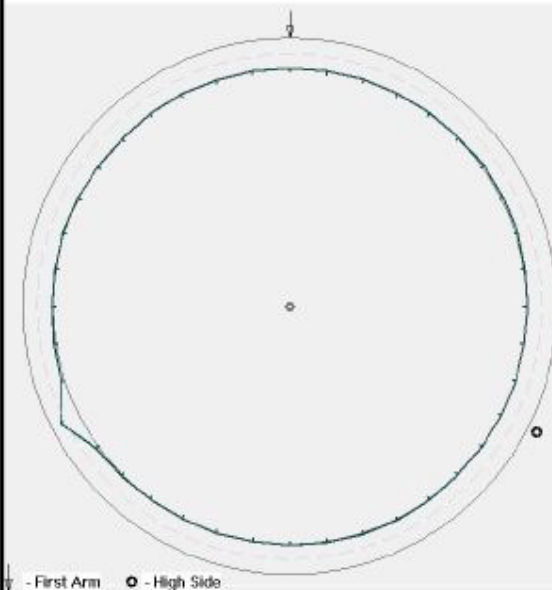


Joint 32 - 64% Penetration

3D View

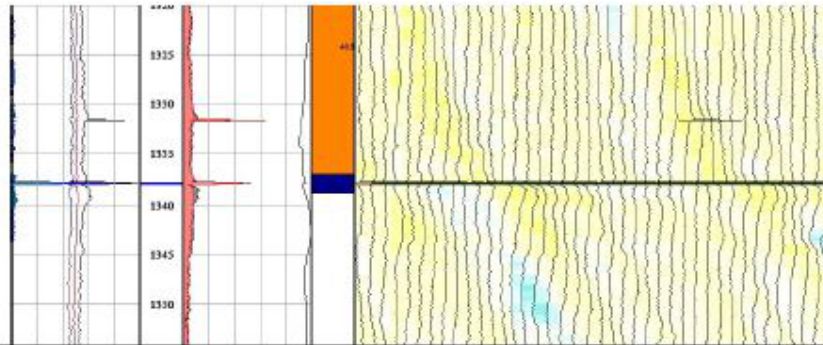


Cross Section

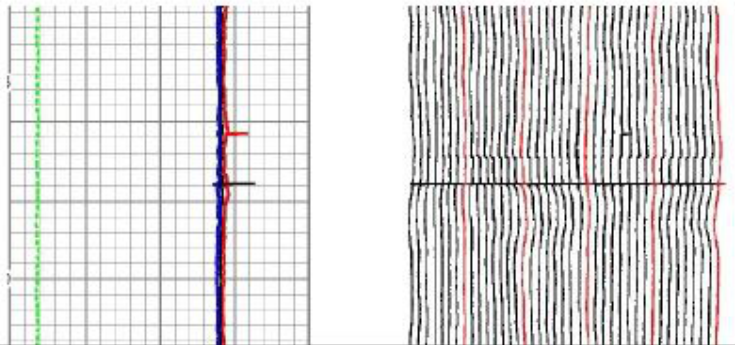


Name	Parameter
Joint	# 32
Depth	1331.68 ft
ID	4.8927 in
OD	5.5000 in
Wall Thickness	0.3036 in
Nominal	Arm # 28
Arm Radius	2.641 in
Pit mm/in	0.1943 in
Pit %	64.0 %
Pit % Average	1.7 %
Elliptical	Arm # 28
Pit mm/in	0.1791 in
Pit %	59.0 %
Mode ID	Arm # 28
Pit mm/in	0.1879 in
Pit %	61.7 %
ModelD Rad	2.445 in
Min Diameter	4.873 in
Max Diameter	5.102 in
Eccentricity	0.076 in
Ovality	0.228 in
Ovality	4.67 %
Metal Loss in ²	0.083 in ²
Metal Loss %	1.67
HB	184.189
High Finger	13

Processed Log



Field Log



Joint Summary

1	Class 1	0 - 12.5 %
2	Class 2	12.5 - 20 %
3	Class 3	20 - 40 %
4	Class 4	40 - 60 %
5	Class 5	60 - 80 %
6	Class 6	80 - 100 %

Joint	Depth	Depth	Joint	Corrosion	Max Pit	Max Pen	Max Pen	Metal	Metal	Ovality	Ovality	Min	Max	Min Diam	Burst
Number	From	To	Length	Class	Nominal	Nominal	Position	Loss	Loss Pos	Level	Position	Diameter	Diameter	Position	Pressure
#	Ft	Ft	Ft	#	%	in	Ft	%	Ft	in	Ft	in	in	Ft	psi
1	27.31	68.35	41.04	1	10.3	0.031	29.31	3.3	28.68	0.077	29.88	4.855	4.949	29.88	8711
2	68.35	109.18	40.83	1	9.2	0.028	70.52	4	69.83	0.059	106.23	4.86	4.945	106.62	8826
3	109.18	150.33	41.15	1	11.6	0.035	110.46	4.4	110.48	0.07	110.42	4.872	4.961	114.84	8586
4	150.33	191.19	40.86	1	10.6	0.032	161.95	4.7	151.81	0.055	189.54	4.867	4.944	185.19	8683
5	191.19	232.29	41.1	1	11.2	0.034	192.56	4	192.73	0.062	192.3	4.864	4.955	198.85	8630
6	232.29	273.3	41.01	1	9.4	0.028	233.91	3.6	233.77	0.059	242.54	4.859	4.945	241.82	8806
7	273.3	314.34	41.04	2	13.2	0.04	295.94	4.7	274.67	0.086	275.36	4.862	4.962	310.18	8435
8	314.34	355.04	40.7	1	9.7	0.03	318.9	3.8	315.72	0.062	321.07	4.862	4.946	320.69	8769
9	355.04	396.01	40.97	1	9.9	0.03	357.26	3.1	395	0.064	357.25	4.864	4.942	393.04	8752
10	396.01	437.15	41.14	1	9.4	0.028	397.7	2.5	436.13	0.061	415.13	4.862	4.939	403.68	8805
11	437.15	478.25	41.1	1	9.3	0.028	438.48	3.1	438.61	0.063	438.57	4.854	4.943	457.53	8808
12	478.25	519.17	40.92	1	11.1	0.034	479.91	3.9	479.57	0.056	485.83	4.867	4.952	512.73	8636
13	519.17	560.22	41.05	1	10.3	0.031	520.78	4.5	520.51	0.071	525.97	4.862	4.95	525.59	8718
14	560.22	601.04	40.82	1	7.9	0.024	600.07	3.4	561.43	0.055	599.99	4.856	4.938	597.11	8946
15	601.04	642.1	41.06	1	9.1	0.028	638.59	4.1	602.58	0.056	603.56	4.865	4.944	614.95	8828
16	642.1	683.45	41.35	1	11.1	0.034	643.58	4.8	643.66	0.054	644.72	4.869	4.95	679.92	8641
17	683.45	724.32	40.87	1	11.6	0.035	685.11	4.3	684.57	0.063	722.89	4.867	4.953	697.15	8589
18	724.32	765.37	41.05	1	10.2	0.031	725.77	3.4	725.8	0.071	725.77	4.859	4.945	758.92	8730
19	765.37	806.05	40.68	1	10	0.03	804.95	2.5	804.9	0.051	804.95	4.866	4.94	793.83	8746
20	806.05	847.01	40.96	1	10.9	0.033	807.29	2.8	807.25	0.07	807.08	4.854	4.952	815.48	8657
21	847.01	888.02	41.01	1	7.8	0.024	886.92	1.9	848.6	0.06	848.71	4.854	4.929	856.14	8962
22	888.02	929.07	41.05	1	7.9	0.024	889.43	2.7	889.48	0.05	896.66	4.857	4.936	922.53	8948
23	929.07	970.18	41.11	1	8.7	0.027	931.12	1.9	962.27	0.075	930.52	4.857	4.937	942.68	8867
24	970.18	1011.07	40.89	1	9.1	0.028	1008.11	1.9	971.64	0.072	976.4	4.848	4.934	975.63	8831
25	1011.07	1051.9	40.83	1	8	0.024	1050.33	1.7	1012.58	0.056	1012.7	4.855	4.933	1045.74	8939
26	1051.9	1093.07	41.17	1	9.1	0.028	1083.65	3.4	1053.02	0.068	1086.19	4.85	4.934	1086.19	8831
27	1093.07	1133.95	40.88	1	7.6	0.023	1108.25	1.4	1127.37	0.063	1117.45	4.85	4.929	1113.59	8977
28	1133.95	1174.2	40.25	1	8.2	0.025	1135.24	2.9	1135.4	0.061	1172.08	4.852	4.936	1168.5	8922
29	1174.2	1215.25	41.05	1	11.6	0.035	1175.63	3.5	1175.57	0.07	1175.35	4.867	4.953	1178.06	8588
30	1215.25	1256.29	41.04	1	9.6	0.029	1216.39	3	1216.67	0.066	1223.34	4.857	4.939	1243.09	8781
31	1256.29	1296.98	40.69	1	8.3	0.025	1293.96	1.8	1257.72	0.056	1294.14	4.852	4.931	1267.04	8905
32	1296.98	1337.78	40.8	5	64	0.194	1331.69	2.5	1298.3	0.228	1331.69	4.848	5.102	1307.18	3498
33	1337.78	1378.77	40.99	1	12.1	0.037	1339.28	2.4	1339.47	0.095	1339.31	4.854	4.963	1347.98	8544
34	1378.77	1419.39	40.62	1	11.9	0.036	1380.26	2.8	1380.11	0.083	1380.38	4.856	4.954	1390.59	8559
35	1419.39	1460.54	41.15	1	8.5	0.026	1421.64	1.5	1420.81	0.072	1423.13	4.849	4.927	1424.58	8895
36	1460.54	1501.52	40.98	1	9.3	0.028	1461.88	2.4	1494.8	0.073	1473.1	4.853	4.945	1473.39	8808

37	1501.52	1542.59	41.07	1	9.7	0.029	1502.92	1.7	1541.07	0.08	1503.84	4.848	4.937	1511.79	8778
38	1542.59	1583.24	40.65	1	7.5	0.023	1543.83	2.4	1544.18	0.059	1569.61	4.855	4.929	1560.78	8986
39	1583.24	1623.93	40.69	1	11.2	0.034	1584.45	3.7	1584.68	0.065	1589.49	4.858	4.956	1589.49	8631
40	1623.93	1664.93	41	1	9.7	0.029	1625.19	2.3	1625.35	0.07	1625.24	4.859	4.948	1632.76	8773
41	1664.93	1705.61	40.68	1	8.8	0.027	1666.97	2.9	1666.38	0.053	1700.62	4.85	4.934	1699.92	8862
42	1705.61	1746.68	41.07	1	10.6	0.032	1744.27	2.3	1707.21	0.066	1736.27	4.855	4.938	1723.1	8684
43	1746.68	1787.7	41.02	1	9.8	0.03	1752.92	2.3	1748.27	0.069	1759.28	4.857	4.938	1758.3	8769
44	1787.7	1828.64	40.94	1	10.7	0.033	1789.47	3.4	1789.33	0.067	1820.67	4.849	4.943	1806.64	8675
45	1828.64	1869.75	41.11	1	9.5	0.029	1846.37	2.7	1830.07	0.059	1864.68	4.86	4.937	1838.19	8793
46	1869.75	1910.76	41.01	1	8.9	0.027	1871.28	2.2	1871.05	0.072	1875.13	4.851	4.937	1874.41	8849
47	1910.76	1951.74	40.98	1	11.2	0.034	1950.29	2.7	1912.42	0.062	1916.78	4.856	4.947	1916.78	8626
48	1951.74	1992.43	40.69	1	9.7	0.03	1953.18	1.8	1953.2	0.065	1956.63	4.847	4.936	1959.43	8770
49	1992.43	2033.42	40.99	1	9.5	0.029	1993.41	1.4	2032.44	0.077	1993.76	4.844	4.942	2028.25	8796
50	2033.42	2074.53	41.11	1	8.6	0.026	2034.88	2.2	2067.72	0.066	2034.69	4.859	4.939	2037.61	8877
51	2074.53	2115.44	40.91	1	8.3	0.025	2075.98	2	2075.76	0.065	2076.61	4.854	4.935	2076.61	8909
52	2115.44	2156.23	40.79	1	8.6	0.026	2116.99	2.7	2116.99	0.065	2123.62	4.856	4.939	2124.68	8882
53	2156.23	2197.23	41	1	8.4	0.026	2157.38	1.9	2157.49	0.055	2172.38	4.853	4.938	2172.37	8898
54	2197.23	2238.22	40.99	1	10.4	0.031	2214.23	1.8	2198.56	0.062	2233.06	4.858	4.937	2220.69	8709
55	2238.22	2279.18	40.96	1	7.9	0.024	2239.63	1.4	2239.72	0.062	2250.38	4.848	4.934	2275.17	8949
56	2279.18	2319.86	40.68	1	7.6	0.023	2316.76	1.8	2280.4	0.064	2280.68	4.845	4.931	2288.19	8982
57	2319.86	2360.9	41.04	1	10.8	0.033	2321.27	2.1	2321.32	0.08	2333.84	4.839	4.931	2334.87	8666
58	2360.9	2401.94	41.04	1	7.7	0.023	2362.43	1.8	2362.21	0.069	2363.14	4.838	4.936	2367.2	8969
59	2401.94	2442.58	40.64	1	8.2	0.025	2432.66	1.9	2441.54	0.057	2403.57	4.856	4.933	2404.73	8920
60	2442.58	2483.33	40.75	1	8.9	0.027	2478.41	1.7	2444.07	0.065	2444.5	4.85	4.938	2447.88	8850
61	2483.33	2524.32	40.99	1	8.3	0.025	2499.52	1.8	2484.62	0.072	2486.6	4.84	4.931	2488.85	8908
62	2524.32	2565.3	40.98	1	10.1	0.031	2563.51	1.8	2525.86	0.067	2530.67	4.849	4.932	2530.67	8732
63	2565.3	2606.36	41.06	1	6.9	0.021	2584.71	0.7	2566.87	0.078	2581.01	4.838	4.925	2581.04	9047
64	2606.36	2647.31	40.95	1	10.6	0.032	2646.34	0.6	2646.32	0.077	2607.54	4.836	4.94	2614.15	8689
65	2647.31	2688.35	41.04	1	6.9	0.021	2666.79	1.6	2648.85	0.062	2657.19	4.843	4.929	2654	9043
66	2688.35	2729.22	40.87	1	8.4	0.025	2689.55	1.2	2727.54	0.067	2690	4.843	4.935	2693.52	8905
67	2729.22	2770.32	41.1	1	10	0.03	2730.52	1.1	2769.32	0.079	2730.53	4.839	4.936	2745.57	8747
68	2770.32	2811.3	40.98	1	9.1	0.028	2804.15	0.2	2771.68	0.07	2771.69	4.839	4.929	2774.99	8833
69	2811.3	2852.4	41.1	1	9.4	0.029	2836.24	2.1	2812.77	0.066	2815.17	4.843	4.935	2845.97	8803
70	2852.4	2893.33	40.93	1	9.7	0.029	2853.92	2.3	2853.82	0.071	2854.47	4.849	4.947	2856.67	8776
71	2893.33	2934.3	40.97	1	10.7	0.032	2933.2	0	2913.82	0.066	2904.49	4.837	4.931	2902.77	8676
72	2934.3	2975.14	40.84	1	7.9	0.024	2971.42	2.1	2936.03	0.057	2971.42	4.853	4.934	2937.39	8944
73	2975.14	3016.15	41.01	1	8	0.024	2976.59	1.1	2976.62	0.069	2976.76	4.84	4.936	2986.41	8935
74	3016.15	3057.12	40.97	1	9.1	0.028	3017.13	1.2	3017.59	0.096	3017.13	4.845	4.941	3017.13	8834
75	3057.12	3098.08	40.96	6	100	0.304	3093.24	0	3077.6	0.369	3093.24	4.852	-3.40E+38	3061.12	0
76	3098.08	3139.06	40.98	3	21.8	0.066	3103.59	3	3099.54	0.098	3103.19	4.842	4.963	3111.11	7602
77	3139.06	3179.98	40.92	1	10.2	0.031	3157.9	2.1	3140.53	0.062	3140.59	4.854	4.936	3157.47	8725
78	3179.98	3220.77	40.79	1	6.8	0.021	3213.06	1.9	3181.37	0.066	3213.96	4.846	4.926	3214.54	9059
79	3220.77	3261.74	40.97	2	19.8	0.06	3239.02	2.1	3222.22	0.096	3239.02	4.844	4.951	3243.71	7790
80	3261.74	3302.24	40.5	1	9.5	0.029	3263.41	2.3	3263.01	0.056	3299.45	4.856	4.932	3298.57	8794
81	3302.24	3343.28	41.04	1	7.1	0.022	3303.58	2.2	3303.64	0.062	3341.63	4.849	4.932	3314.86	9024
82	3343.28	3384.18	40.9	1	7.8	0.024	3344.58	2.2	3344.7	0.059	3344.83	4.86	4.933	3375.7	8960
83	3384.18	3425.21	41.03	1	10.1	0.031	3423.48	1.9	3385.69	0.06	3422.5	4.855	4.936	3412.26	8734
84	3425.21	3466.03	40.82	1	7.3	0.022	3426.74	1.2	3426.69	0.063	3427.74	4.843	4.926	3436.93	9011
85	3466.03	3506.6	40.57	1	11	0.033	3467.62	2.2	3467.53	0.084	3467.75	4.85	4.952	3500.66	8650

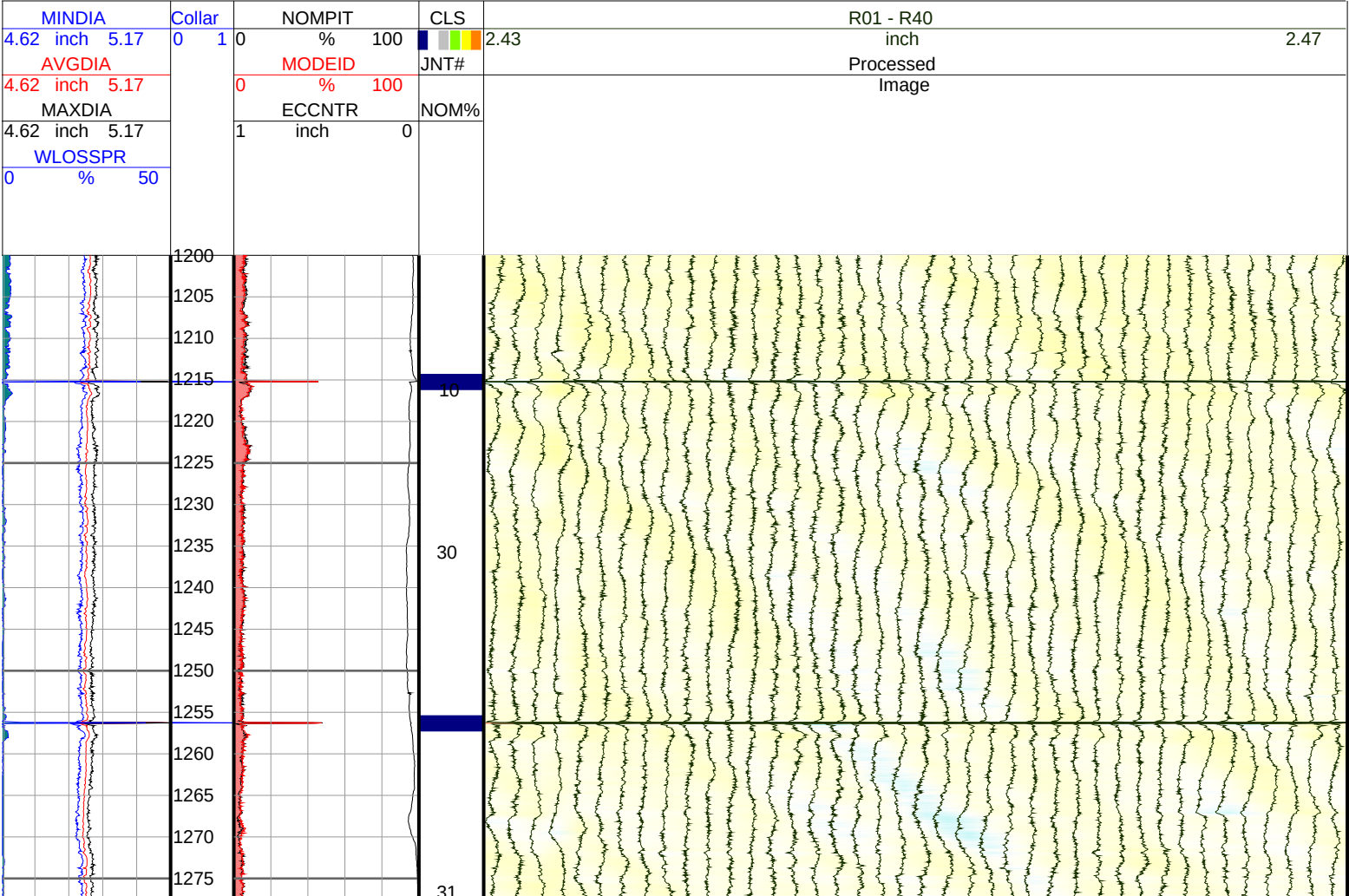
86	3506.6	3546.93	40.33	1	9.3	0.028	3525.32	2.9	3545.87	0.067	3525.31	4.85	4.943	3538.21	8810
87	3546.93	3587.87	40.94	1	8.1	0.025	3548.44	0.9	3548.48	0.062	3554.35	4.849	4.935	3556.43	8929
88	3587.87	3628.95	41.08	1	10.7	0.032	3589.04	3.3	3589.47	0.069	3589.09	4.842	4.944	3622.64	8681
89	3628.95	3670.14	41.19	1	7.1	0.022	3634.68	1.5	3630.51	0.059	3633.58	4.848	4.926	3633.58	9028
90	3670.14	3711.01	40.87	1	8.2	0.025	3704.12	1.8	3671.48	0.063	3704.71	4.849	4.93	3678.79	8915
91	3711.01	3751.19	40.18	2	18.1	0.055	3740.54	1	3712.47	0.086	3740.54	4.843	4.956	3720.49	7954
92	3751.19	3792.99	41.8	3	29	0.088	3772.51	1.1	3752.75	0.125	3772.51	4.854	4.994	3775.51	6899
93	3792.99	3834.26	41.27	2	16.3	0.049	3808.17	1.5	3794.45	0.069	3808.2	4.847	4.938	3827.67	8133
94	3834.26	3875.18	40.92	1	7.1	0.022	3835.48	1.2	3835.45	0.058	3872.13	4.85	4.929	3866.77	9026
95	3875.18	3915.86	40.68	1	8.2	0.025	3914.74	1.9	3876.44	0.066	3896.17	4.852	4.933	3896.17	8919
96	3915.86	3957.12	41.26	1	7.4	0.022	3923.84	1	3917.4	0.052	3953.74	4.851	4.927	3925.57	8997
97	3957.12	3998.2	41.08	1	7	0.021	3997.2	0.6	3958.29	0.052	3983.09	4.848	4.922	3988.47	9031
98	3998.2	4039.09	40.89	1	8.5	0.026	4000.02	1.5	3999.82	0.08	4000.08	4.842	4.935	4036.41	8892
99	4039.09	4080.26	41.17	1	8.1	0.025	4040.53	0.9	4040.89	0.069	4046.2	4.84	4.931	4046.91	8927
100	4080.26	4121.1	40.84	1	10.2	0.031	4081.49	2.6	4081.59	0.077	4081.49	4.85	4.937	4098.83	8721
101	4121.1	4162	40.9	1	8.6	0.026	4122.35	1.5	4122.49	0.061	4122.45	4.85	4.928	4157.98	8881
102	4162	4203.06	41.06	1	9.2	0.028	4195.67	1.1	4163.71	0.065	4195.1	4.84	4.925	4176.55	8827
103	4203.06	4244.06	41	1	8.5	0.026	4204.28	0.4	4204.67	0.059	4204.46	4.845	4.927	4237.8	8887
104	4244.06	4285.22	41.16	1	5.4	0.016	4283.72	0.1	4245.35	0.063	4250.27	4.841	4.916	4250.26	9188
105	4285.22	4325.96	40.74	1	7	0.021	4324.82	0.9	4324.94	0.058	4324.81	4.852	4.929	4289.31	9039
106	4325.96	4366.86	40.9	1	12.1	0.037	4327.8	1.5	4327.15	0.108	4327.83	4.844	4.955	4327.83	8544
107	4366.86	4408.16	41.3	1	8.4	0.025	4368.5	0.8	4407.15	0.086	4367.86	4.846	4.939	4367.92	8903
108	4408.16	4449.28	41.12	1	7.6	0.023	4424.86	0.9	4409.48	0.054	4445.11	4.842	4.925	4445.09	8977
109	4449.28	4489.88	40.6	1	11.6	0.035	4450.65	0.2	4468.87	0.125	4450.74	4.832	4.957	4450.75	8592
110	4489.88	4530.95	41.07	1	9.7	0.03	4491.34	0.8	4491.68	0.088	4491.08	4.846	4.938	4491.43	8771
111	4530.95	4572.09	41.14	1	7.6	0.023	4570.89	0.7	4532.65	0.066	4536.55	4.841	4.922	4536.16	8980
112	4572.09	4612.92	40.83	1	9.2	0.028	4573.94	0.6	4573.71	0.073	4573.78	4.846	4.934	4610.42	8825
113	4612.92	4653.92	41	1	8.2	0.025	4614.26	0.8	4652.9	0.073	4613.9	4.846	4.934	4617.11	8924
114	4653.92	4694.91	40.99	1	7.5	0.023	4654.92	1.5	4691.59	0.056	4654.92	4.856	4.933	4666.65	8989
115	4694.91	4736.25	41.34	1	10.5	0.032	4696.07	2.4	4696.57	0.083	4695.93	4.849	4.951	4729.63	8697
116	4736.25	4777.12	40.87	2	14.2	0.043	4766.6	0.9	4737.6	0.067	4766.61	4.846	4.935	4754.71	8336
117	4777.12	4818.01	40.89	1	9.6	0.029	4778.35	2.1	4778.44	0.063	4778.13	4.858	4.939	4815.23	8780
118	4818.01	4858.92	40.91	1	9.4	0.029	4819.35	0.7	4819.42	0.075	4818.99	4.856	4.944	4839.05	8799
119	4858.92	4900.05	41.13	1	8.1	0.024	4863.23	0.3	4860	0.065	4861.25	4.844	4.925	4897.04	8934
120	4900.05	4941.03	40.98	1	7.3	0.022	4901.48	0.7	4939.37	0.062	4901.64	4.848	4.927	4903.54	9005
121	4941.03	4982.11	41.08	1	7.5	0.023	4942.35	0.6	4942.48	0.06	4947.17	4.842	4.922	4947.17	8986
122	4982.11	5022.93	40.82	1	10.2	0.031	5015.39	2.3	4983.33	0.067	5014.83	4.854	4.936	5016.79	8729
123	5022.93	5063.87	40.94	1	9.2	0.028	5059.06	0.2	5057.28	0.065	5062.69	4.841	4.931	5046.35	8819
124	5063.87	5105.05	41.18	1	7.6	0.023	5087.54	1.3	5065.35	0.064	5103.31	4.847	4.928	5072.85	8974
125	5105.05	5145.88	40.83	1	8.6	0.026	5106.31	1.5	5106.32	0.066	5106.65	4.854	4.943	5143.26	8882
126	5145.88	5186.74	40.86	1	8.9	0.027	5171.89	1.7	5147	0.052	5174.55	4.855	4.927	5158.28	8848
127	5186.74	5227.95	41.21	1	9.8	0.03	5206.1	1.6	5188.25	0.068	5206.1	4.854	4.932	5205.21	8765
128	5227.95	5268.9	40.95	1	6.2	0.019	5247.21	0.4	5267.9	0.067	5230.16	4.837	4.922	5236.5	9115
129	5268.9	5309.85	40.95	1	9.1	0.028	5285.5	2.7	5308.87	0.065	5284	4.851	4.941	5303.81	8831
130	5309.85	5350.93	41.08	1	6.9	0.021	5349.96	2	5311.32	0.048	5331.48	4.86	4.931	5333.41	9049
131	5350.93	5391.55	40.62	1	8.2	0.025	5354.31	0	5371.24	0.069	5354.41	4.841	4.924	5362.09	8916
132	5391.55	5432.58	41.03	1	9.7	0.029	5392.91	1	5392.92	0.096	5392.62	4.848	4.949	5392.74	8777
133	5432.58	5473.67	41.09	1	8	0.024	5453.95	0.5	5434.02	0.075	5433.86	4.841	4.925	5434.97	8943
134	5473.67	5514.59	40.92	1	7.1	0.022	5475.3	0.5	5490.72	0.069	5474.99	4.851	4.922	5474.99	9027
135	5514.59	5555.59	41	1	8.8	0.027	5553.12	0	5535.09	0.097	5552.88	4.824	4.937	5552.74	8859

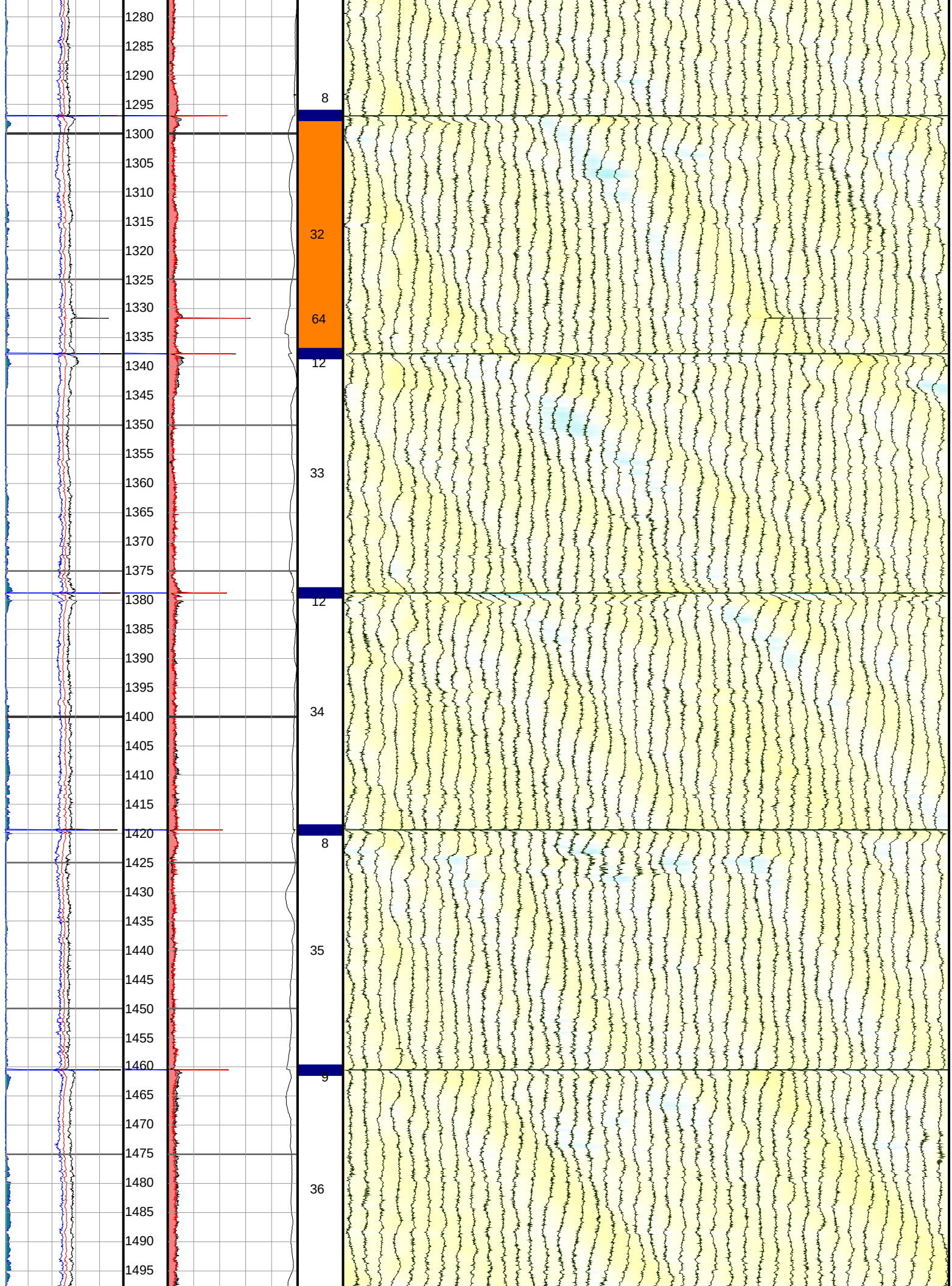
136	5555.59	5596.55	40.96	1	7.6	0.023	5582.46	0.2	5591.36	0.074	5558.09	4.843	4.936	5559.9	8975
137	5596.55	5637.52	40.97	1	6.7	0.02	5598.04	0.7	5635.81	0.071	5597.79	4.838	4.923	5602.66	9064
138	5637.52	5678.54	41.02	1	9.5	0.029	5642.31	0	5658.03	0.072	5638.52	4.842	4.928	5670.35	8795
139	5678.54	5719.42	40.88	1	11.3	0.034	5716.27	2.3	5716.22	0.07	5716.45	4.848	4.943	5697.04	8617
140	5719.42	5760.96	41.54	1	7.5	0.023	5720.5	2.6	5759.89	0.066	5720.46	4.843	4.93	5741.11	8985
141	5760.96	5801.42	40.46	1	9.3	0.028	5785.29	1.8	5785.1	0.057	5788.24	4.862	4.934	5770.35	8817
142	5801.42	5842.56	41.14	1	8.2	0.025	5803.91	0.5	5802.84	0.068	5808.23	4.841	4.931	5809.56	8920
143	5842.56	5883.61	41.05	1	8	0.024	5869.72	0	5843.98	0.082	5843.58	4.831	4.93	5880.79	8937
144	5883.61	5924.76	41.15	1	10.4	0.031	5911.64	1.1	5923.65	0.064	5884.72	4.851	4.934	5890.85	8708
145	5924.76	5965.75	40.99	1	5.1	0.016	5929.14	0	5945.26	0.071	5931.65	4.833	4.914	5927.02	9220
146	5965.75	6005.8	40.05	1	5.9	0.018	5967.35	0	5985.78	0.077	5967.32	4.825	4.915	5971.05	9142
147	6005.8	6046.95	41.15	1	7.5	0.023	6045.55	0	6026.38	0.066	6006.79	4.845	4.922	6040.82	8991
148	6046.95	6088.25	41.3	1	11.1	0.034	6049.18	2.4	6048.04	0.077	6049.43	4.852	4.948	6056.65	8642
149	6088.25	6128.67	40.42	1	6.3	0.019	6094.74	0	6108.46	0.061	6123.8	4.838	4.921	6122.59	9108
150	6128.67	6148.87	20.2	1	12.2	0.037	6139.81	3.8	6137.07	0.05	6147.02	4.881	4.94	6145.57	8534
151	6148.87	6190.03	41.16	1	9.4	0.029	6165.89	0.3	6188.99	0.055	6149.85	4.846	4.922	6151.82	8799
152	6190.03	6231.16	41.13	1	9.4	0.028	6194.24	0.2	6227.34	0.057	6194.24	4.851	4.92	6197.32	8805
153	6231.16	6271.63	40.47	1	7.3	0.022	6237.01	0.4	6232.46	0.064	6269.89	4.848	4.924	6265.58	9006
154	6271.63	6312.92	41.29	1	7	0.021	6311.9	1.8	6311.87	0.07	6309.7	4.839	4.934	6306.19	9036
155	6312.92	6353.57	40.65	1	9.6	0.029	6321.82	1	6347.32	0.063	6321.7	4.849	4.924	6315.87	8780
156	6353.57	6372.16	18.59	1	6.9	0.021	6370.39	0	6362.87	0.066	6359.29	4.832	4.911	6365.32	9048

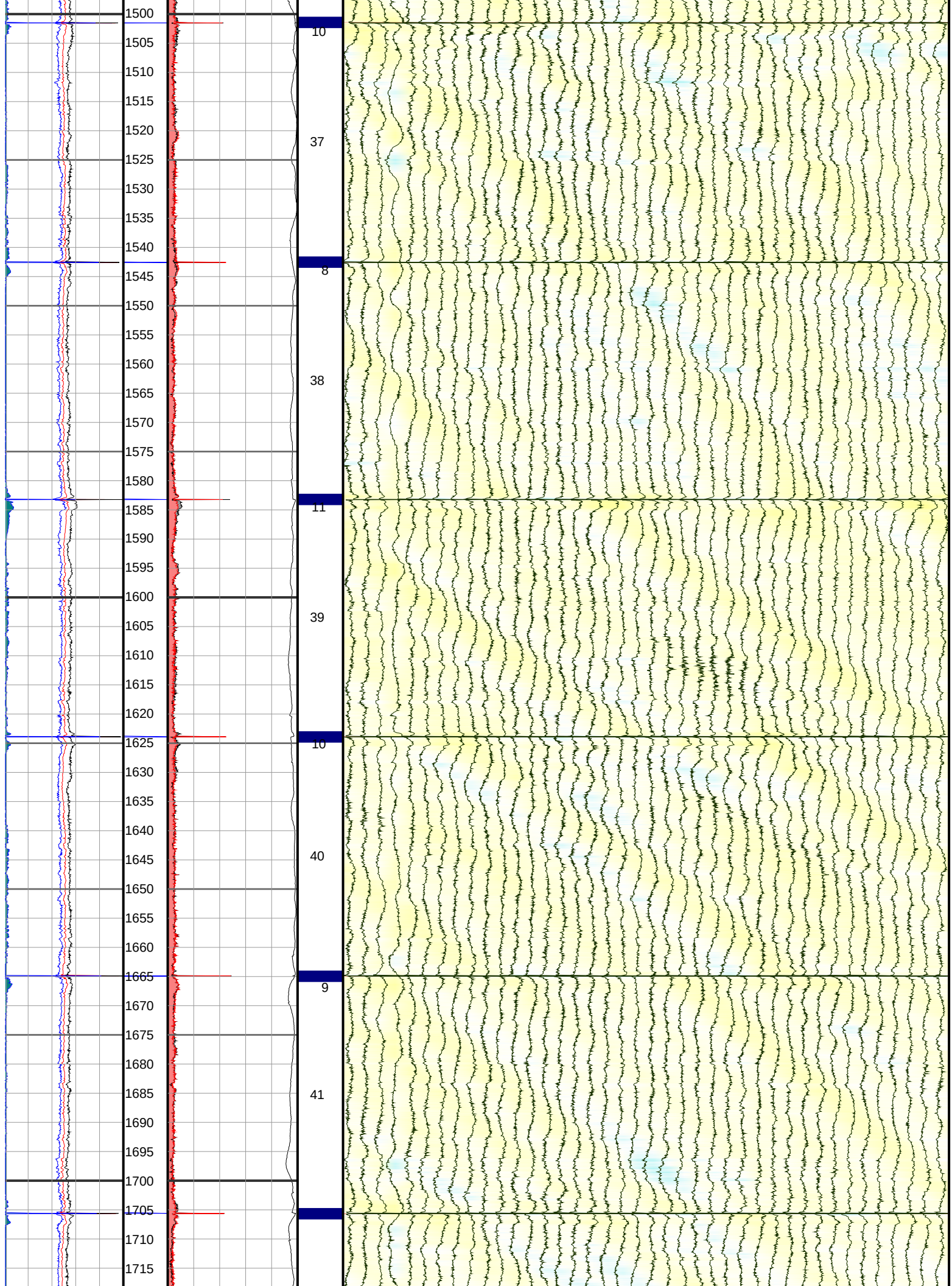
Curve Description

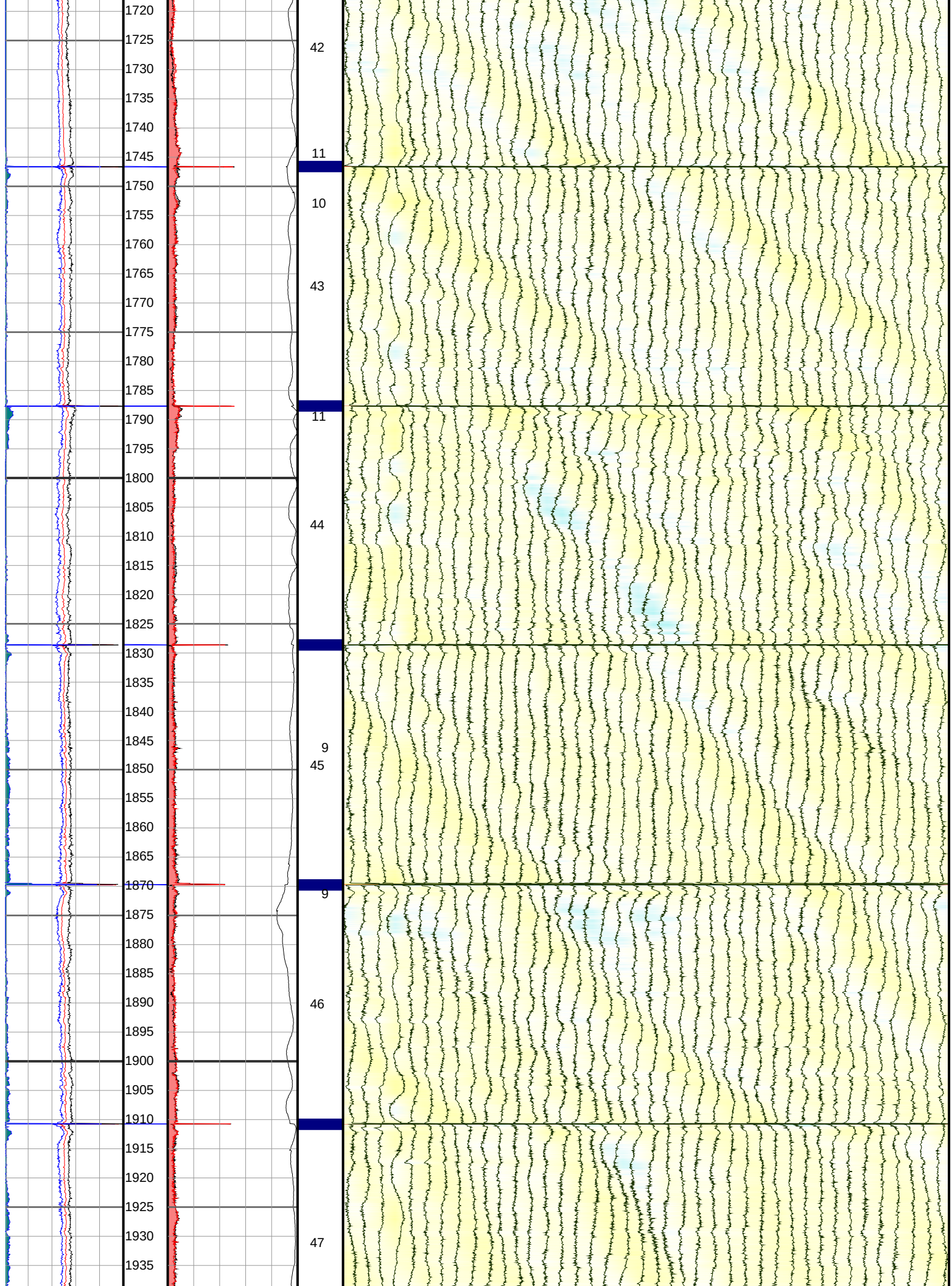
Curve	Discription	Track	Units
WLOSSPR	Wall Loss in prc for current cross section	A	%
MINDIA	Minimum Diameter	A	in
AVGDIA	Average Diameter	A	in
MAXDIA	Maximum Diameter	A	in
Collar	Collar position	B	
NOMPIT	Nominal corrosion pit	C	%
MODEID	ModelD corrosion Pit (according to opt. radius)	C	%
ESSNTR	Essentricity (Deformation parameter)	C	in
Ovality	Ovalization curve relative ovality	N	%
RAW	Corrosion Class in Color: Gray Green Yellow Brown Red	D	Grade
JNT#	Joint Number in the mid of track	D	#
NOM%	Value of nominal Corrosion against max in Joint	D	%
R01-R60	60 Caliper Curves	E	%
Processed	Corrosion Image (Centralized and Filtered)	E	
LOG	MDT measure spectr Image Map in Logarithmic Scale	H	

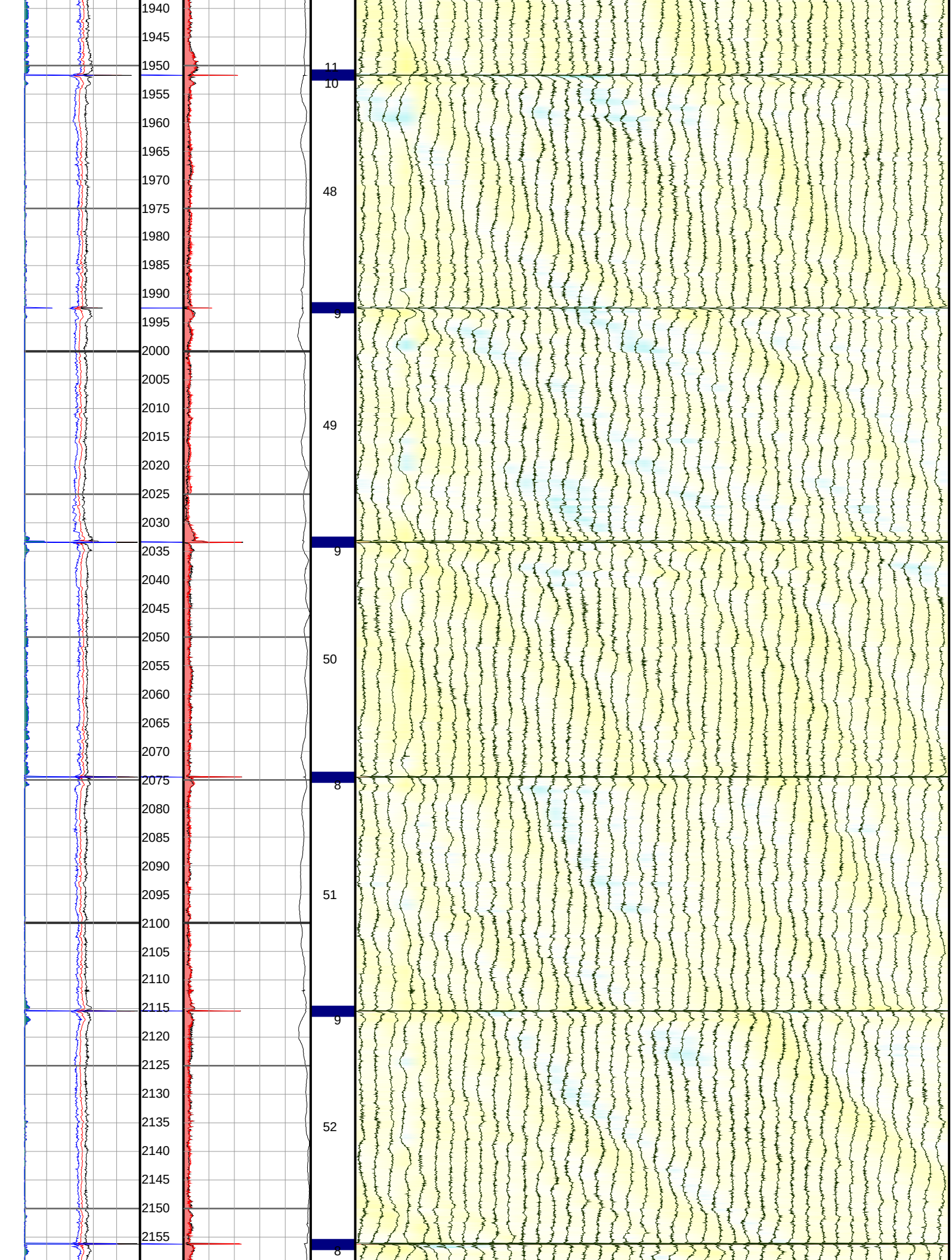
Well Log. Scale 1 : 240

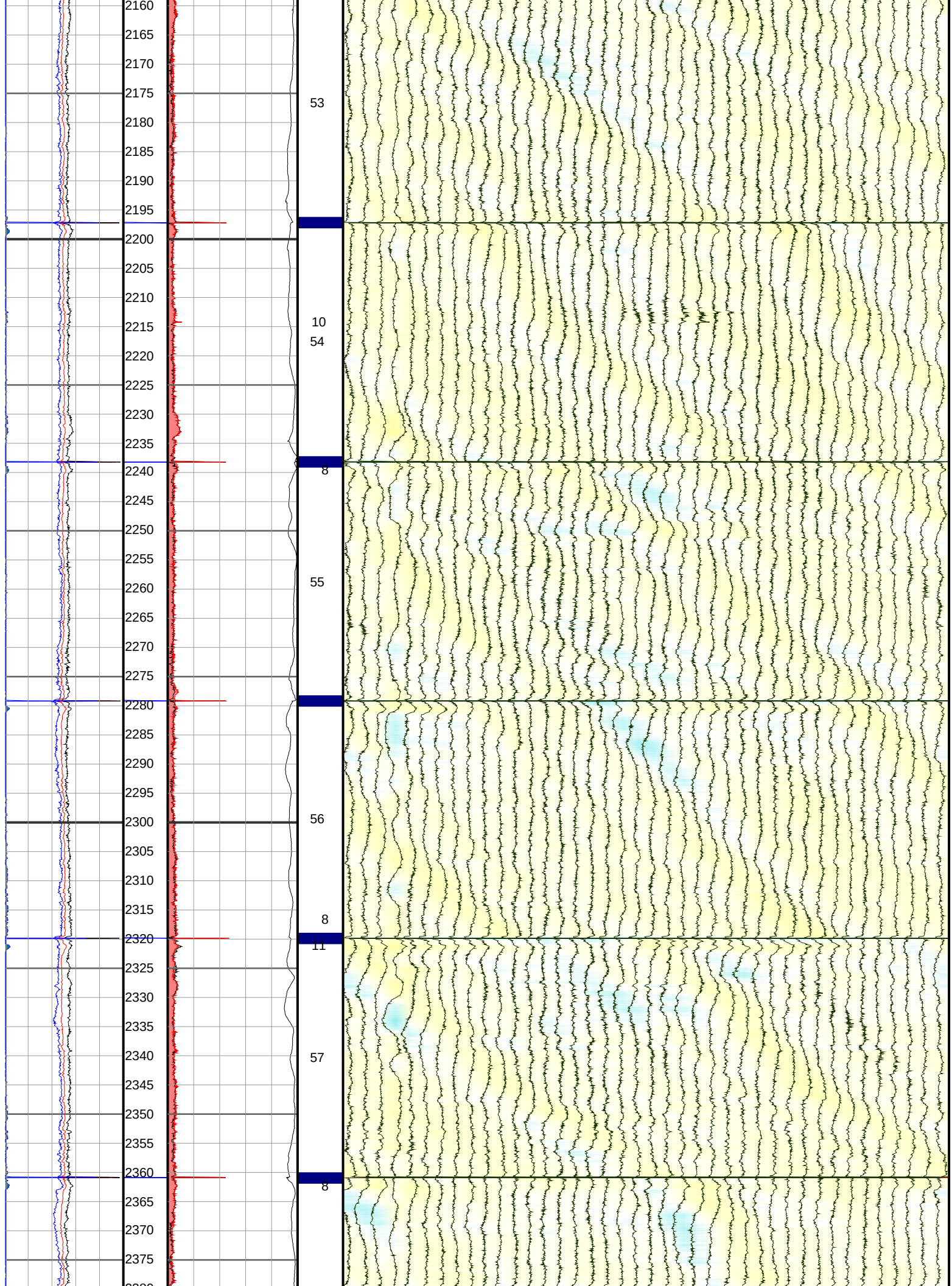


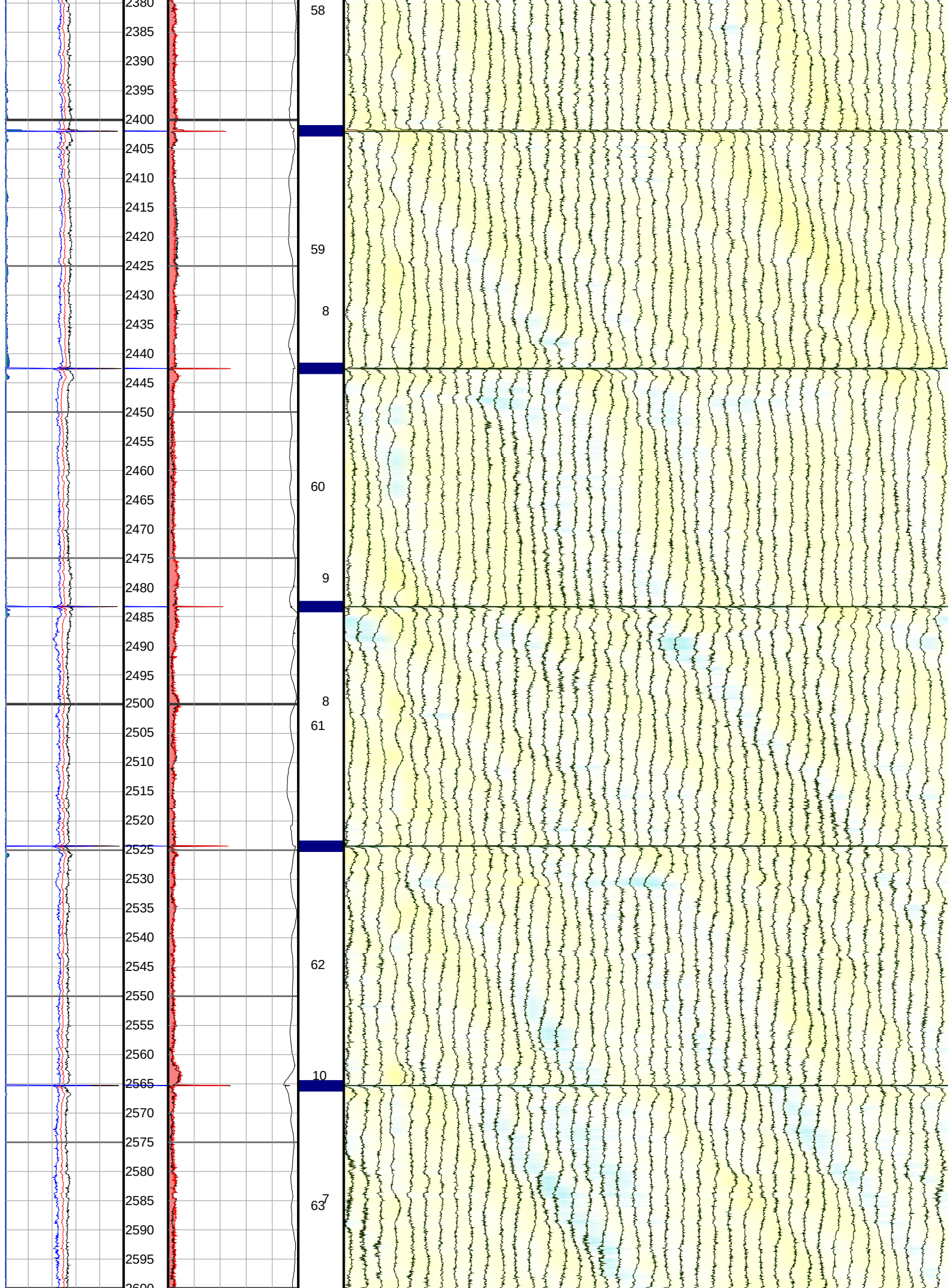


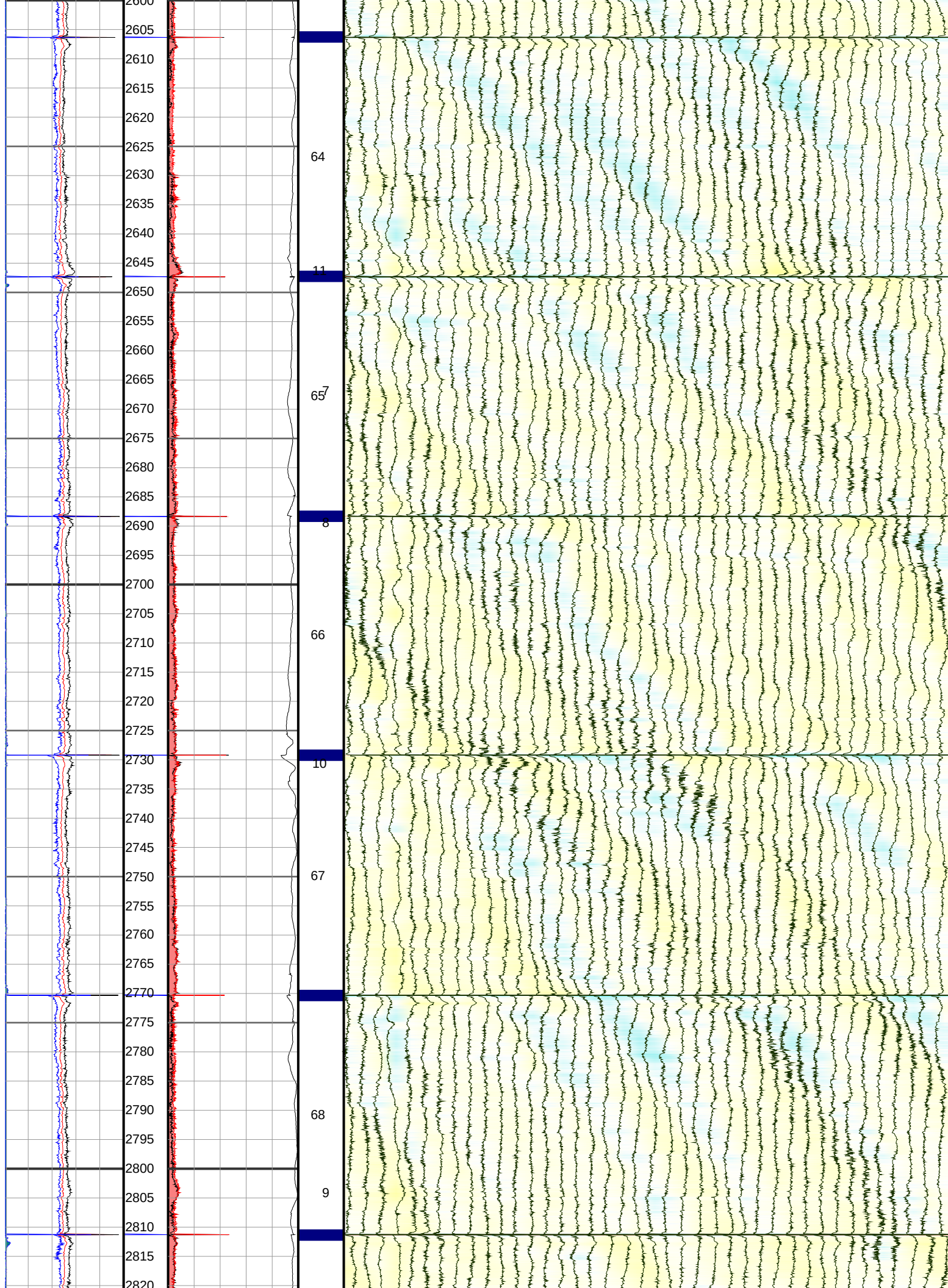


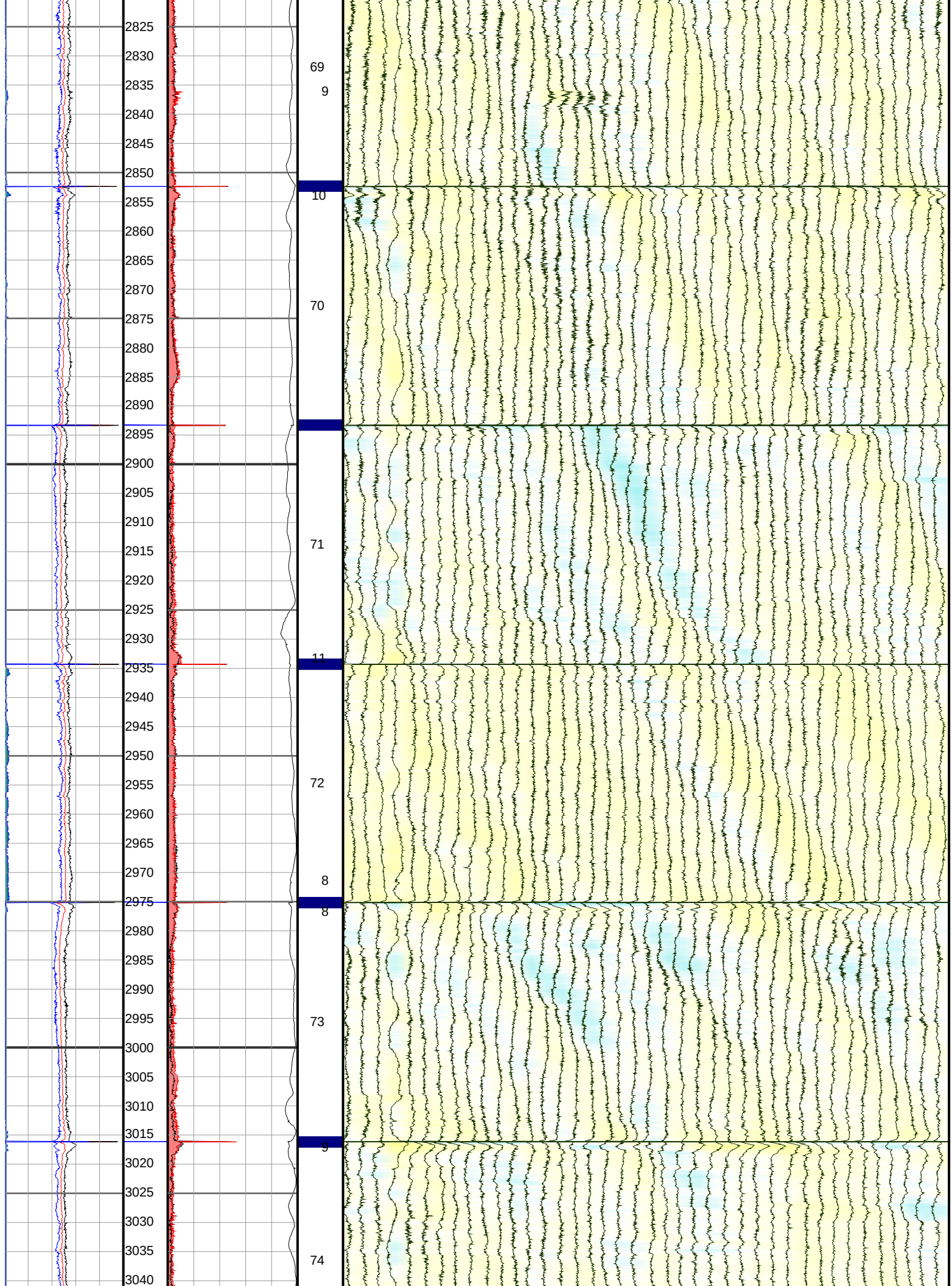


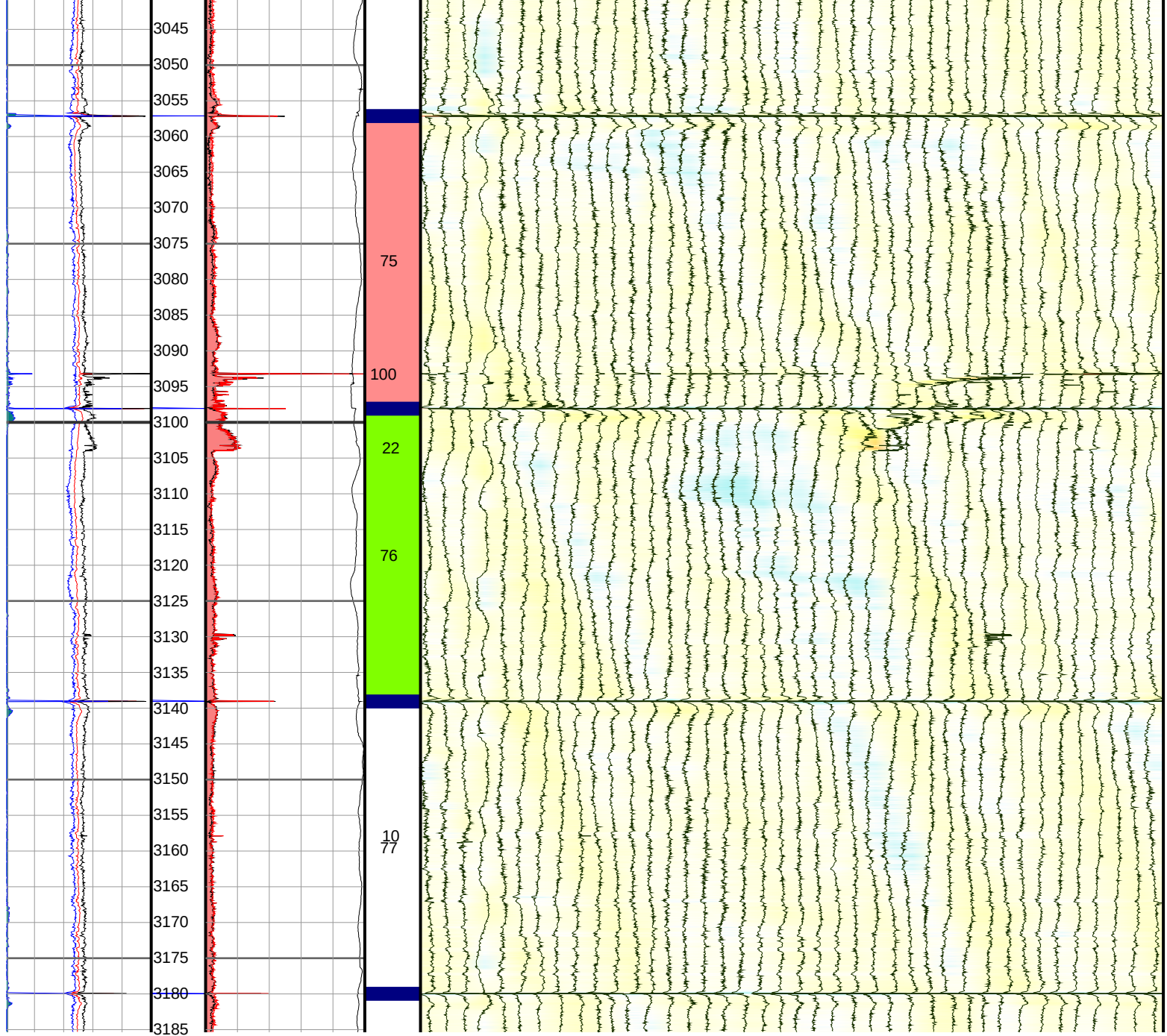








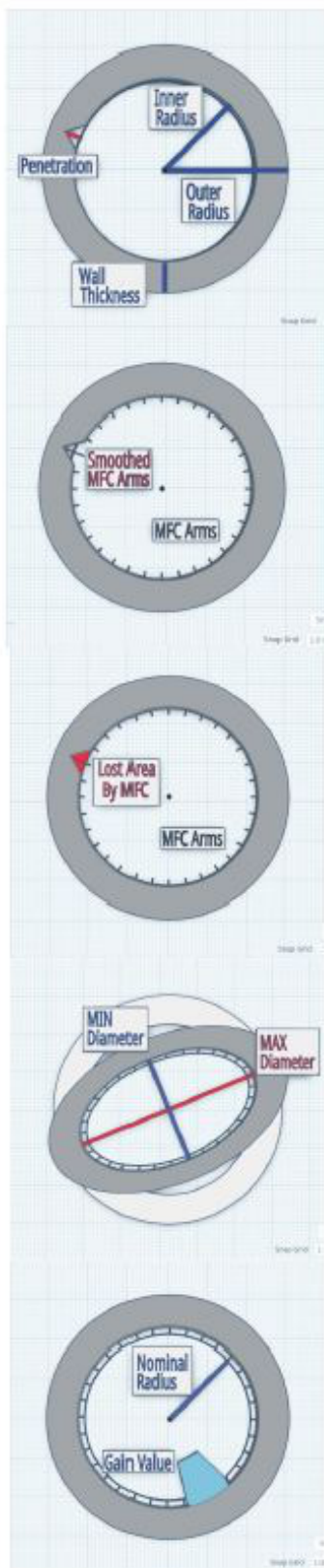




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Appendix A - Report Terms



Nominal Penetration (NP)

Penetration (P)

$$NP = \frac{P}{WT} \times 100\%$$

Wall Thickness (WT)

$$(NP = P / WT \times 100\%)$$

ModelD Penetration (MP%)

MFC Arm (MA)

$$MP\% = \frac{MA}{WT} \times 100\%$$

Wall Thickness (WT)

$$(MP\% = MA / WT \times 100\%)$$

Wall Loss % (WL%)

Lost Area (LA)

$$WL\% = \frac{LA}{WTA} \times 100\%$$

Wall Thickness Area (WTA)

$$(WL\% = LA / WTA \times 100\%)$$

Ovality % (O%)

Max Diameter—Min Diameter

$$O\% = \frac{\text{Max Diameter} - \text{Min Diameter}}{\text{Nominal Diameter}} \times 100\%$$

$$O\% = \text{MinD} - \text{MaxD} \times 100\%$$

Projection % (P%)

Gain Value (GV)

$$P\% = \frac{GV}{NRIR} \times 100\%$$

Nominal Radius IR (NRIR)

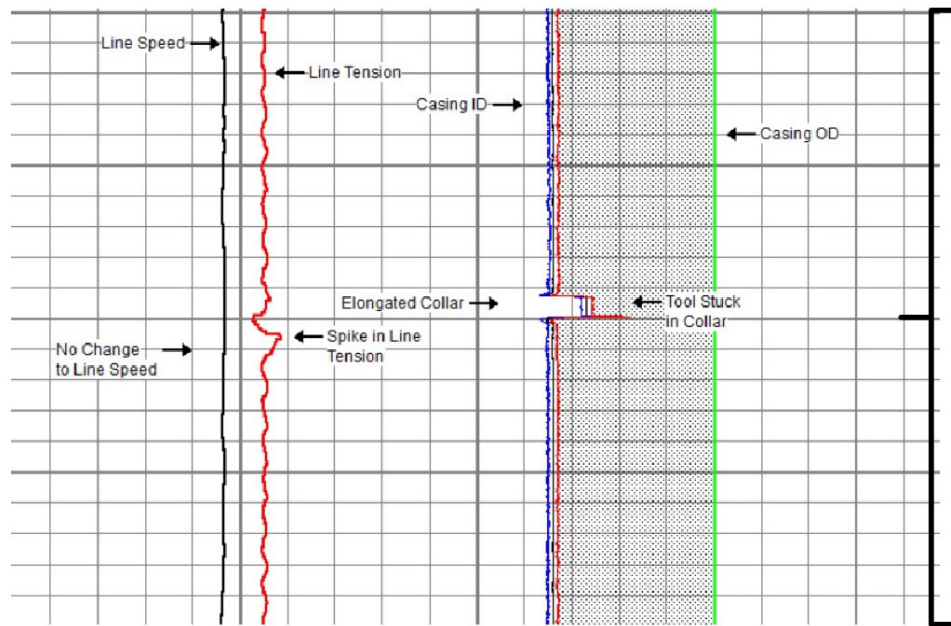
$$(P\% = GV / NRIR \times 100\%)$$

*ModelD Penetration is the most optimistic penetration calculation. It takes into account ovality and pipe tolerance. ModelD Penetration always less than

Wall Thickness Area is between Inner Radius and Outer Radius (OR)

*Gain Value—Min Radius less than Internal Radius (IR)

Appendix B - Elongated Collars



Elongated Collar

An Elongated Collar occurs when logging conditions are just right that the Multi-Finger Caliper Measuring Finger tips "Stick" the tool in the collar. This is explained away by the constant Line Speed and the Spike in Line Tension. To Avoid, The Logging Engineer should adjust logging speed.