Well Data Sheet

cenovus ENERGY

Well Name: CVE WEYBURN UNIT 4-30-5-13

Bottom Hole UWI	Surface Legal Location	Pad	License #	Spud Date	Rig Release Date
101/04-30-005-13W2/00	LSD 4-30-5-13W2		62L036	1962-12-17	1962-12-30

Well Type	Fluid Type	Sour Status	Sour Status Date	Profile Type	Total Depth (mKB)
PRODUCER	OIL			VERTICAL	

Original KB Elevation (m)	Working GLE (m)	Casing Flange Elevation (m)	Tubing Head Elevation (m)	KB-Ground Distance (m)	KB-CF (m)	KB-TH (m)
583.40	580.30	580.20		3.10	3.20	

Directions To Well

Wellheads

Type	Make	WP (kPa)

Wellbores

Wellbore Name	Parent Wellbore	Profile Type	Kick Off Point (mKB)	Directional Survey
ORIGINAL HOLE	ORIGINAL HOLE	VERTICAL	0.00	

Deepest Wellbore Section

Section	Size (mm)	Top (mKB)	Btm (mKB)	Act Top (TVD) (mKB)	Act Btm (TVD) (mKB)

Last PBTD

Date	PBTD Depth (mKB)	Type	Method	Comment
	1,479.80			

Zones

Zone Name	Alt Zone	Comment

Casing Strings

Casing Description	Run Date	String OD (mm)	String ID (mm)	String Wt (kg/m)	String Grade	Set Depth (mKB)
SURFACE CASING	1962-12-18	219.1	205.7	35.720	J-55	127.90
PRODUCTION CASING	1962-12-30	114.3	103.9	14.140	J-55	1,488.90

Cement

Description	Type	Cementing Start Date	Cementing End Date

Top (mKB)	Bottom (mKB)	Full Return?	Cement Volume Return (m³)
		No	

Fluid Description	Fluid Type	Amount (tonnes)	Class

Add	Type	Amount

Other In Hole

Description	Make	Model	Top (mKB)	Btm (mKB)	Run Date
CEMENT RETAINER			1,459.24	1,460.24	1995-02-01

Perforations

Date	Type	Top (mKB)	Btm (mKB)	Zone	Chg Sz (g)	Shot Dens (shots/m)	Phasing (°)	Current Status
1963-02-04	HOLLOW STEEL CARRIER CSG. GUN	1,470.10	1,471.00			0.0	0	OPEN

Stimulations & Treatments

Date	Zone	Stim Type & Mode	Min Top Depth (mKB)	Max Btm Depth (mKB)	V (pumped) (m³)	V (recov) (m³)

Comment

Logs

Date	Top (mKB)	Btm (mKB)	Type	Cased Hole Log?
2011-10-08	307.00	1,459.00	Noise-Temp-GR-CCL	
2011-10-09	0.00	1,459.00	GR-CBL-CCL	
2011-10-10	0.00	1,459.00	Not in List - Please Add	
2011-10-11	0.00	1,459.00	Casing Inspection	

Tubing Strings

Tubing Description	Run Date	Bottom or Set Depth (mKB)

Item Description	Make	Model	OD (mm)	ID (mm)	Wt (kg/m)	Grade	Jts	Len (m)	Top (mKB)	Btm (mKB)

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Well Name: CVE WEYBURN UNIT 4-30-5-13

Rods

Rod Description	Run Date	Set Depth (mKB)

Item Description	Make	Model	OD (mm)	Wt (kg/m)	Grade	Joints	Length (m)	Top (mKB)	Bottom (mKB)

Well Tests

Date	Zone	Type	SubType

Pressure Survey Tests

Date	Zone	Type	SubType

Equipment Pressure Tests

Date	Type	Test Fluid Type	Failed?
			No

Fluid Analysis Tests

Date	Tested By	Zone	Oil Density (kg/m³)	Gas Density (kg/1...	Water Density (kg...	H2S (ppm)	Salinity (ppm)

Comment

General Notes

Date	Comment
1962-12-28	Reason: LOGS INDUCTION ELECTRICAL LOG N/A GAMMA RAY LOG N/A
1963-02-04	Reason: STIMULATIONS (1 470.1 - 1 471.0) SPOTTED 2 273 LITRES 15% NE ACID.
1973-11-21	Reason: HISTORY BROKEN 19MM ROD 1 ROD DOWN.
1977-08-16	Reason: HISTORY BROKEN 19MM PIN ON POLISHED ROD.
1978-06-01	Reason: HISTORY BROKEN COLLAR ON PONY ROD.
1981-12-30	Reason: HISTORY BROKEN 19MM PONY.
1984-11-21	Reason: HISTORY PUMP CHANGE.
1987-08-06	Reason: HISTORY REPLACED LINER.
1991-03-15	Reason: HISTORY PUMP CHANGE.
1991-05-10	Reason: HISTORY REPLACED LINER.
1991-09-27	Reason: HISTORY PUMP CHANGE.
1992-05-15	Reason: HISTORY TUBING LEAK. FOUND HOLE IN JOINT ABOVE PSN, CHANGED OUT PSN AND RAN A NEW TK-99 JOINT.
1994-01-11	Reason: INFORMATIVE TUBING AND RODS ORIGINAL.

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Well Name: CVE WEYBURN UNIT 4-30-5-13

General Notes

Date	Comment
1995-01-31	Reason: HISTORY SUSPENDED WELL. BAKER MODEL I-AA K1 CEMENT RETAINER @ 1459.24 MKB. ANNULUS INHIBITED.
1999-12-01	Reason: INFORMATIVE PERMANENT RIG ANCHORS INSTALLED.
2003-06-05	Reason: INFORMATIVE RIG ANCHORS PULL TESTED
2005-08-08	TVD: 1488.9
2011-10-08	Reason: Well integrity logging
2011-10-20	Logging with Weatherford
2011-10-21	Complete a 3D URS log, with a repeat of 1100m to btm.Rig out
2011-10-22	Complete a noise temp log

Attachments

Description

Summary Interpretation Report

Company	CENOVUS ENERGY
Well Name	CVE Weyburn Unit 04-30-005-13W2
Location	101/04-30-005-13W2/00
Survey Date	October 20, 2011.
Interpreted By	Munir Sharar
Interpretation Date	October 21, 2011.

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Background

The subject well is a vertical oil producer that is not producing and is suspended. The well was drilled in 1962 and was perforated in the Midale limestone formation. Due to the age of the well a program was developed to run multiple logging surveys to evaluate both casing and cement integrity. A Multi-sensor Caliper and a Casing Imaging Tool was run to assess casing integrity. A Sector Bond Tool and an Ultrasonic Radial Scanner was run to evaluate cement quality – the URS also provided an assessment of casing thickness. In addition, a Noise/Temperature survey was run to detect surfacing casing vent flow issues and to locate potential sources.

Well Configuration

Casing Record.

Casing	Size (mm)	Wt (kg/m)	Grade	Wall (mm)	ID (mm)	From (mKB)	To (mKB)
String 1	219.1	35.72	J55	205.64	205.64	SURFACE	127.9
String 2	114.3	14.14	J55	5.207	103.886	SURFACE	1488.9
String 3							

Cement Record.

Surface casing cemented with 250 sacks of 1:1 Pozmix + 2% CaCl2.
Production casing was run with 50' of Roto_wall scratchers across pay with 3 centralizers. Production casing was cemented with 275 sacks of 1:1 Pozmix- slurry density 14.6 lbs/g or 1750 kg/m3.

Summary of Results

Casing Integrity.

Casing Imaging Tool. The casing imaging tool response indicates multiple single isolated pits (SIP) from surface to 950mKB. The defect codes range from Class 1 to Class 5. A detailed list of these defects is tabulated in the Joint Table (Table 1). Class 5 defects are at the logged depths of 485.6, 820.2, 835.7, 850.2, 875.2 & 878.7 mKB (visualizations of these anomalies are presented as Figures 4-9). The corresponding joints to these defects are 52, 89, 90, 92, 94 & 95 respectively. Accuracy of CIT, like most MFL tools is +/- 10%. The casing was successfully pressure tested to 7 MPa indicating that joint number 95 is not a through hole. The casing below 878.7 m to PBTD appears to be in relatively good shape with defect codes ranging from Class 1 to Class 3.

Multi-sensor Caliper. The caliper results indicate a non-symmetrical internal diameter across the complete logged interval (surface to PBTD). There is a small ovality and helical buckling due to a lack of cement support and a 10mm casing offset at approximately 1062 m (Figures 1-3). The caliper tool does not see the isolated pitting as observed on the CIT due to the 8 mm spacing between feeler arms on the caliper. Build-up of foreign material on the casing wall or nonsymmetrical casing effects are clearly visible on included X-section images captured from the TVision visualization software.

Cement Integrity.

A Sector Bond Tool and Ultrasonic Radial Scanner were logged to evaluate cement quality. Cementing data indicates that a Class "G" cement (1750 kg/m^3) was run. There was no mention of cement returns to surface.

Sector Bond Tool. The SBT was logged with both pressured and unpressured passes to indicate the severity and/or presence of a micro-annulus. Analysis of the SBT log indicates the presence of a very small micro-annulus. The log clearly indicates poor cement circumferential coverage and a lack of zonal isolation from surface to 270 m. From 270 - 700 m cement quality improves with better circumferential coverage but no areas with zonal isolation (bond and/or quality is not capable of providing hydraulic isolation). From 700 - 1160 m the cement quality is poor with patchy cement but with a few zones of full circumferential coverage. The zone of interest from 1160 m to PBTD has excellent cement. Low amplitude (high attenuation), low energy levels from all sectors throughout this zone indicates full circumferential coverage of cement around pipe. Strong formation arrivals and

some fast formation arrivals in this zone indicate that the cement is bonded to both casing and formation. The complete interval is capable of zonal isolation with a few isolated channels. A detailed summary of the interpretation is located in Table 4.

Ultrasonic Radial Scanner. The URS tool run on this well was adversely affected by wellbore conditions. The URS spinning head for 114.3mm casing is 96.5mm and is susceptible to casing ID changes, tool eccentricity, and build-up of foreign material the casing inner wall. As a result the URS data acquired on this well was found not to be reliable.

Vent Flow – Channel Detection.

The well has a very small liquid vent flow problem. A Noise-Temperature survey was run to check for fluid or gas movement behind casing. An interpretation of this data showed no clear evidence of surface casing vent flow problems on this well. Noise and temperature tool have difficulty to pinpoint sources of small fluid flow behind pipe.

Noise Log. The profile of the noise survey presents low amplitude readings on all frequency curves. The noise observed appears to be related to background noise. Near surface an increase in noise amplitude is likely associated with surface equipment sound that fails to indicate small fluid flow between the two strings.

Temperature Log. The temperature response through the entire logged interval follows a smooth gradient with no cooling deflection associated with a pressure drop resulting from gas flow within a channel. The temperature response does not indicate any anomaly related to fluid movement behind pipe.

Logging Services

Casing Imaging Tool. The Casing Imaging Tool (CIT) enables the quantification of internal and external corrosion defects. High magnetic flux density levels are produced within the casing wall using powerful rare earth magnets. Hall Effect flux leakage sensors mounted on deployment pads are positioned on the casing wall to detect localized flux field disturbances caused by internal or external defects in the casing. An equal number of discriminator sensors, mounted next to the flux leakage sensors, differentiate internal from external defects.

The gathered data is post-processed using 3D visualization and pattern-matching analysis software – the tool has been fully modeled which enables the ability to distinguish between general corrosion and isolated pitting and to estimate the penetration depths of detected anomalies. The final log product includes a joint-by-joint summary that identifies the worst defects and summarizes the percentage of missing material.

Multi-sensor Caliper. The Multi-sensor Caliper (MSC) tool provides casing integrity assessment when concerns exist about casing impairment due to installation, operational or geotechnical problems. The tool is run with TVision™ visualization software to provide high-resolution color depictions of the inside surface of casing cross sections.

The MSC tool provides accurate internal casing profiles using independent measurements from feeler arms. Real-time monitoring of tool response and multipoint calibration allows anomalies to be identified and repeated, increasing accuracy and saving rig time. The tool is available in 40-arm and 60-arm models. Each of the tool arms resolves dimensional variations of the casing inside surface down to 0.010 in. (0.25 mm).

Sector Bond Tool. The Sector Bond Tool measures cement bond quality laterally around the casing circumference as well as performing traditional vertical extent measurement. With a transducer resonance frequency between 80 and 120 kHz, the Sector Bond tool has successfully detected cement channels as small as 6°. The Sector Bond tool also withstands eccentralization in small-diameter casing.

Tool measurements include eight individual sector energies, gathered from around the tool. The eight transmitter-receiver array is spaced 2 ft longitudinally and 45° circumferentially. Standard 3-ft or 5-ft amplitude, travel time, and full-waveform display measurements also are collected in a single logging pass.

Ultrasonic Radial Scanner. The URS uses two ultrasonic transducers. The primary measurement transducer located in the rotating scanning head provides 360° coverage and can identify channels in the cement map as

small as 5°. The fluid transducer located in the tool body of the sonde section continuously monitors acoustic velocity and impedance of the wellbore fluid.

The tool design incorporates an advanced, high-speed measure-on-position DC motor to rotate the primary measurement transducer. With this technology, the primary measurement transducer fires upon arriving at a precise point in its rotation instead of relying on time and a constant rotating speed, which could overlook important features.

Noise & Temperature Tool. The noise tool utilizes a microphone to detect fluid movement downhole. Fluid movement is characterized by pressure drops associated with flow. If these factors are adequately large, turbulence is generated and the flow can be detected even if it is outside the casing. Therefore, noise logs are useful for detection of channels behind casing.

Noise logs are most often run in combination with a temperature tool. The combination of the noise and temperature surveys can detect events occurring both inside and outside of the casing string. The noise log is not run continuously since tool and cable noise due to tool movement would dominate the measurement. When run in combination, the temperature log is run continuously before performing the noise log station measurements. Noise logs are very sensitive, and in shallow wells even surface equipment must be shut down where possible to avoid sound from non-downhole sources. Noise measurements are stationary so it is important to wait for about a minute after stopping the tool to stabilize tool movement before recording the sound signal.

Casing Integrity Results

Table 1. Joint Classification summary map.

Joint Classification	Color	Percent Penetration
Class 1		0 - 20%
Class 2		21 - 40%
Class 3		41 - 60%
Class 4		61 - 80%
Class 5		81 - 100%

Table 2. Summary of joints by classification number.

No. of Unclassed Joints	0
No. Class 1 Joints	24
No. Class 2 Joints	85
No. Class 3 Joints	37
No. Class 4 Joints	6
No. Class 5 Joints	6

Table 3. Joint table generated from the analysis of the Casing Imaging Tool.

Joint No.	From	To	Length	Max. Pen.	OD/ID	Position	Class	Type	Comments
1	9.16	11.06	1.9	30%	ID	10.0	C2	SIP	
2	11.06	20.63	9.6	32%	ID	12.9	C2	SIP	
3	20.63	30.03	9.4	38%	ID	21.0	C2	SIP	
4	30.03	39.81	9.8	39%	ID	30.5	C2	GENA1	
5	39.81	49.01	9.2	31%	ID	41.4	C2	SIP	
6	49.01	58.31	9.3	40%	ID	50.7	C3	SIP	
7	58.31	67.65	9.3	21%	ID	65.2	C2	SIP	
8	67.65	77.27	9.6		--		C1	SIP	
9	77.27	86.32	9.0		--		C1	SIP	
10	86.32	95.50	9.2	25%	ID	88.0	C2	GENA1	
11	95.50	104.64	9.1	25%	ID	102.6	C2	SIP	
12	104.64	113.52	8.9		--		C1	SIP	
13	113.52	123.20	9.7	35%	ID	113.8	C2	GENA1	
14	123.20	132.55	9.4	36%	ID	131.7	C2	SIP	
15	132.55	142.21	9.7	62%	ID	135.4	C4	SIP	
16	142.21	151.78	9.6	50%	ID	145.0	C3	GENA6	
17	151.78	161.06	9.3	21%	ID	152.2	C2	SIP	
18	161.06	170.40	9.3	36%	ID	168.8	C2	SIP	

Joint No.	From	To	Length	Max. Pen.	OD/ID	Position	Class	Type	Comments
19	170.40	180.03	9.6	28%	ID	174.8	C2	GENA4	
20	180.03	189.78	9.8	26%	ID	180.5	C2	GENA2	
21	189.78	199.19	9.4	31%	ID	191.8	C2	GENA2	
22	199.19	208.76	9.6	47%	ID	205.5	C3	SIP	
23	208.76	217.72	9.0	33%	ID	210.2	C2	GENA1	
24	217.72	226.60	8.9	28%	OD	218.9	C2	SIP	
25	226.60	236.08	9.5	30%	ID	233.2	C2	SIP	
26	236.08	245.47	9.4	34%	ID	244.0	C2	GENA3	
27	245.47	255.00	9.5	27%	ID	247.6	C2	SIP	
28	255.00	264.25	9.2	26%	ID	263.6	C2	SIP	
29	264.25	273.14	8.9	26%	ID	271.7	C2	GENA4	
30	273.14	282.47	9.3	37%	ID	281.1	C2	SIP	
31	282.47	292.09	9.6	28%	ID	284.6	C2	SIP	
32	292.09	301.05	9.0	43%	ID	293.5	C3	GENA3	
33	301.05	310.27	9.2	48%	ID	308.8	C3	SIP	
34	310.27	320.03	9.8	29%	ID	316.3	C2	SIP	
35	320.03	329.71	9.7	25%	ID	320.5	C2	SIP	
36	329.71	339.25	9.5	34%	ID	337.2	C2	GENA1	
37	339.25	348.23	9.0	57%	ID	346.7	C3	SIP	
38	348.23	357.52	9.3	35%	ID	350.2	C2	GENA1	
39	357.52	366.74	9.2	35%	ID	364.1	C2	SIP	
40	366.74	375.67	8.9	50%	ID	374.2	C3	GENA2	
41	375.67	385.23	9.6	37%	ID	380.1	C2	GENA10	
42	385.23	394.78	9.5	30%	ID	391.6	C2	SIP	
43	394.78	404.43	9.7	45%	ID	401.2	C3	GENA1	
44	404.43	413.22	8.8	28%	OD	410.3	C2	GENA2	
45	413.22	422.09	8.9	41%	ID	421.0	C3	SIP	
46	422.09	431.47	9.4	31%	ID	430.6	C2	SIP	
47	431.47	440.23	8.8	40%	ID	432.9	C3	GENA5	
48	440.23	449.15	8.9	35%	ID	447.6	C2	SIP	
49	449.15	458.93	9.8	43%	ID	457.5	C3	SIP	
50	458.93	468.50	9.6	49%	ID	465.0	C3	GENA1	
51	468.50	478.00	9.5	39%	ID	476.6	C2	GENA1	
52	478.00	486.89	8.9	86%	ID	485.6	CP	SIP	Figure 4
53	486.89	495.81	8.9	60%	ID	488.5	C4	GENA5	
54	495.81	504.65	8.8	49%	ID	497.4	C3	GENA3	
55	504.65	513.84	9.2	38%	ID	505.1	C2	SIP	
56	513.84	522.97	9.1	36%	ID	521.3	C2	SIP	
57	522.97	531.91	8.9	42%	ID	531.1	C3	SIP	
58	531.91	540.71	8.8	47%	ID	534.0	C3	SIP	
59	540.71	550.28	9.6	65%	ID	543.6	C4	GENA7	
60	550.28	559.73	9.4	36%	ID	553.3	C2	GENA1	
61	559.73	568.99	9.3	50%	ID	560.5	C3	GENA2	
62	568.99	578.52	9.5	43%	ID	571.0	C3	GENA4	
63	578.52	587.33	8.8	34%	ID	586.5	C2	SIP	
64	587.33	596.97	9.6	38%	ID	587.5	C2	GENA1	
65	596.97	605.85	8.9	31%	OD	600.4	C2	SIP	
66	605.85	615.28	9.4	35%	ID	610.2	C2	SIP	
67	615.28	623.72	8.4	47%	ID	622.9	C3	GENA3	
68	623.72	632.99	9.3	35%	ID	630.0	C2	SIP	
69	632.99	641.97	9.0	51%	ID	641.2	C3	SIP	
70	641.97	650.79	8.8	46%	ID	644.1	C3	GENA8	

Joint No.	From	To	Length	Max. Pen.	OD/ID	Position	Class	Type	Comments
71	650.79	659.60	8.8	34%	OD	653.7	C2	GENA2	
72	659.60	668.87	9.3	30%	ID	667.3	C2	SIP	
73	668.87	677.83	9.0	46%	ID	675.7	C3	SIP	
74	677.83	687.22	9.4	43%	ID	679.8	C3	GENA1	
75	687.22	697.13	9.9	44%	ID	691.4	C3	GENA2	
76	697.13	706.52	9.4	31%	ID	703.3	C2	SIP	
77	706.52	715.50	9.0	43%	ID	714.7	C3	SIP	
78	715.50	724.81	9.3	29%	ID	722.3	C2	GENA1	
79	724.81	733.71	8.9	37%	ID	728.6	C2	GENA3	
80	733.71	743.51	9.8	39%	ID	736.7	C2	GENA4	
81	743.51	752.98	9.5	33%	ID	747.0	C2	GENA3	
82	752.98	762.16	9.2	46%	ID	761.1	C3	SIP	
83	762.16	771.73	9.6	53%	ID	764.0	C3	SIP	
84	771.73	781.41	9.7	37%	ID	773.0	C2	GENA10	
85	781.41	791.28	9.9	67%	ID	788.7	C4	SIP	
86	791.28	800.69	9.4	53%	ID	796.5	C3	SIP	
87	800.69	810.41	9.7	44%	ID	803.7	C3	GENA8	
88	810.41	819.10	8.7	74%	ID	812.3	C4	GENA4	
89	819.10	828.59	9.5	93%	ID	820.2	CP	GENA5	Figure 5
90	828.59	838.30	9.7	80%	ID	835.7	CP	GENA8	Figure 6
91	838.30	847.23	8.9	44%	ID	844.7	C3	SIP	
92	847.23	856.90	9.7	80%	ID	850.2	CP	SIP	Figure 7
93	856.90	866.37	9.5	66%	ID	864.8	C4	GENA1	
94	866.37	876.12	9.7	83%	ID	875.2	CP	SIP	Figure 8
95	876.12	885.37	9.3	100%	--	878.7	CP	GENA5	Figure 9
96	885.37	893.79	8.4	39%	ID	890.8	C2	SIP	
97	893.79	903.23	9.4	60%	ID	896.6	C4	GENA8	
98	903.23	912.86	9.6	36%	ID	904.1	C2	GENA4	
99	912.86	922.30	9.4	47%	ID	920.5	C3	SIP	
100	922.30	931.87	9.6	37%	ID	929.3	C2	SIP	
101	931.87	941.88	10.0	36%	ID	940.3	C2	SIP	
102	941.88	951.28	9.4	50%	ID	950.1	C3	GENA1	
103	951.28	960.48	9.2	38%	ID	951.9	C2	GENA4	
104	960.48	969.97	9.5	32%	ID	969.3	C2	SIP	
105	969.97	979.53	9.6	32%	ID	971.0	C2	GENA10	
106	979.53	989.17	9.6	24%	ID	981.3	C2	SIP	
107	989.17	998.12	8.9	23%	ID	989.6	C2	GENA3	
108	998.12	1007.92	9.8	25%	ID	1005.1	C2	SIP	
109	1007.92	1017.66	9.7	22%	ID	1014.0	C2	SIP	
110	1017.66	1027.10	9.4	28%	ID	1022.9	C2	GENA1	
111	1027.10	1036.80	9.7	24%	ID	1036.4	C2	SIP	
112	1036.80	1045.79	9.0	31%	ID	1045.1	C2	GENA2	
113	1045.79	1055.27	9.5	38%	ID	1052.5	C2	SIP	
114	1055.27	1064.91	9.6	41%	ID	1057.3	C3	GENA4	
115	1064.91	1074.46	9.5	22%	ID	1071.2	C2	GENA1	
116	1074.46	1083.48	9.0	21%	ID	1078.2	C2	GENA2	
117	1083.48	1093.18	9.7	32%	ID	1086.4	C2	GENA5	
118	1093.18	1102.89	9.7	26%	ID	1093.5	C2	GENA1	
119	1102.89	1112.04	9.2	26%	ID	1109.4	C2	SIP	
120	1112.04	1121.27	9.2	37%	ID	1115.0	C2	SIP	
121	1121.27	1130.74	9.5	24%	ID	1127.7	C2	SIP	
122	1130.74	1139.43	8.7	25%	ID	1135.5	C2	SIP	

Joint No.	From	To	Length	Max. Pen.	OD/ID	Position	Class	Type	Comments
123	1139.43	1148.70	9.3		--		C1	SIP	
124	1148.70	1157.95	9.3		--		C1	SIP	
125	1157.95	1166.95	9.0		--		C1	SIP	
126	1166.95	1175.83	8.9	21%	ID	1175.5	C2	SIP	
127	1175.83	1184.28	8.5	22%	ID	1176.2	C2	SIP	
128	1184.28	1193.80	9.5	21%	ID	1193.1	C2	SIP	
129	1193.80	1203.50	9.7	21%	ID	1196.2	C2	SIP	
130	1203.50	1212.89	9.4	27%	ID	1212.7	C2	SIP	
131	1212.89	1221.76	8.9	23%	ID	1221.4	C2	SIP	
132	1221.76	1231.14	9.4		--		C1	SIP	
133	1231.14	1240.06	8.9	26%	ID	1235.0	C2	SIP	
134	1240.06	1249.00	8.9	21%	ID	1240.5	C2	SIP	
135	1249.00	1258.44	9.4	24%	ID	1249.5	C2	SIP	
136	1258.44	1268.05	9.6		--		C1	SIP	
137	1268.05	1277.10	9.0		--		C1	SIP	
138	1277.10	1286.52	9.4	21%	ID	1277.3	C2	SIP	
139	1286.52	1296.04	9.5	24%	ID	1293.5	C2	SIP	
140	1296.04	1305.29	9.2		--		C1	SIP	
141	1305.29	1314.54	9.3		--		C1	SIP	
142	1314.54	1323.81	9.3	22%	ID	1316.3	C2	SIP	
143	1323.81	1333.24	9.4		--		C1	SIP	
144	1333.24	1342.44	9.2		--		C1	GENA1	
145	1342.44	1351.86	9.4	24%	ID	1350.7	C2	GENA1	
146	1351.86	1361.72	9.9	22%	ID	1352.4	C2	GENA1	
147	1361.72	1370.90	9.2	21%	ID	1362.0	C2	SIP	
148	1370.90	1380.59	9.7	23%	ID	1377.7	C2	SIP	
149	1380.59	1389.75	9.2		--		C1	SIP	
150	1389.75	1399.22	9.5	21%	ID	1394.5	C2	SIP	
151	1399.22	1408.04	8.8	33%	ID	1403.3	C2	SIP	
152	1408.04	1417.06	9.0	41%	ID	1415.5	C3	GENA1	
153	1417.06	1426.49	9.4		--		C1	SIP	
154	1426.49	1435.70	9.2		--		C1	SIP	
155	1435.70	1445.31	9.6		--		C1	SIP	
156	1445.31	1454.53	9.2	23%	ID	1451.7	C2	SIP	
157	1454.53	1456.40	1.9	26%	ID	1455.1	C2	GENA3	
158	1456.40	1456.53	0.1		--		C1	SIP	

Casing Integrity Results

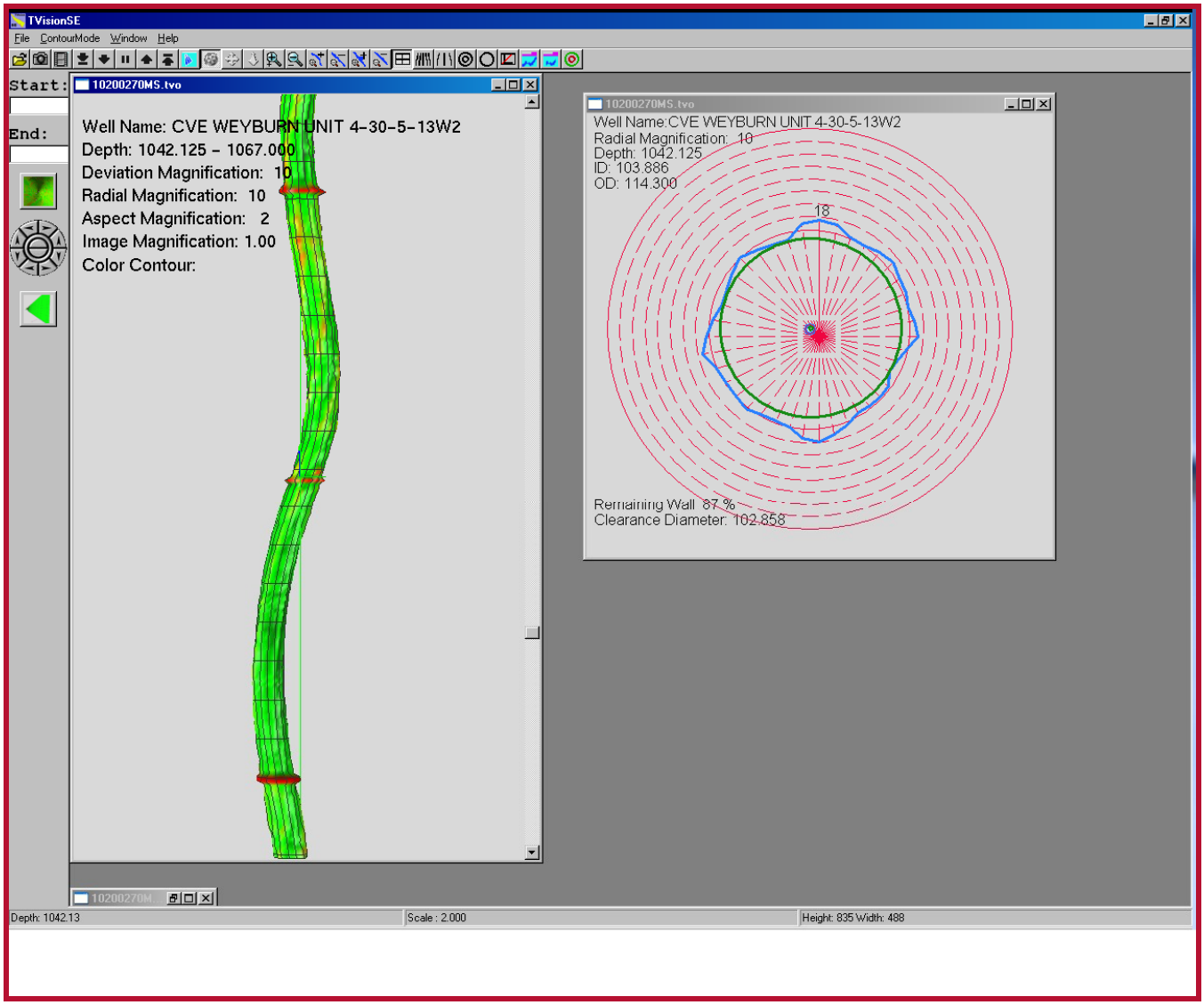

Figure 1 3D picture of Casing Offset and nonsymmetrical ID (view 1)

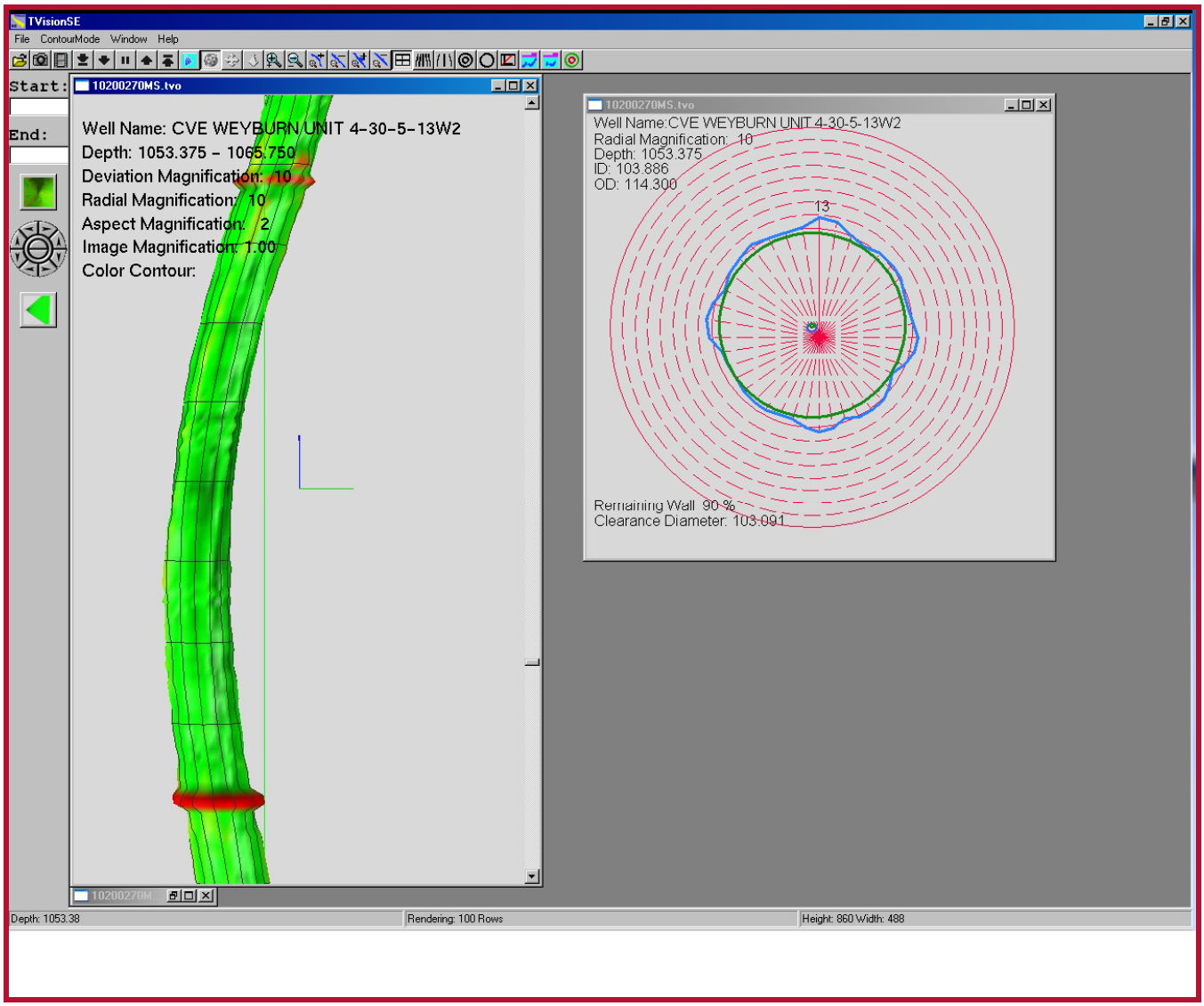

Figure 2 3D of Casing Offset and nonsymmetrical ID (view 2)

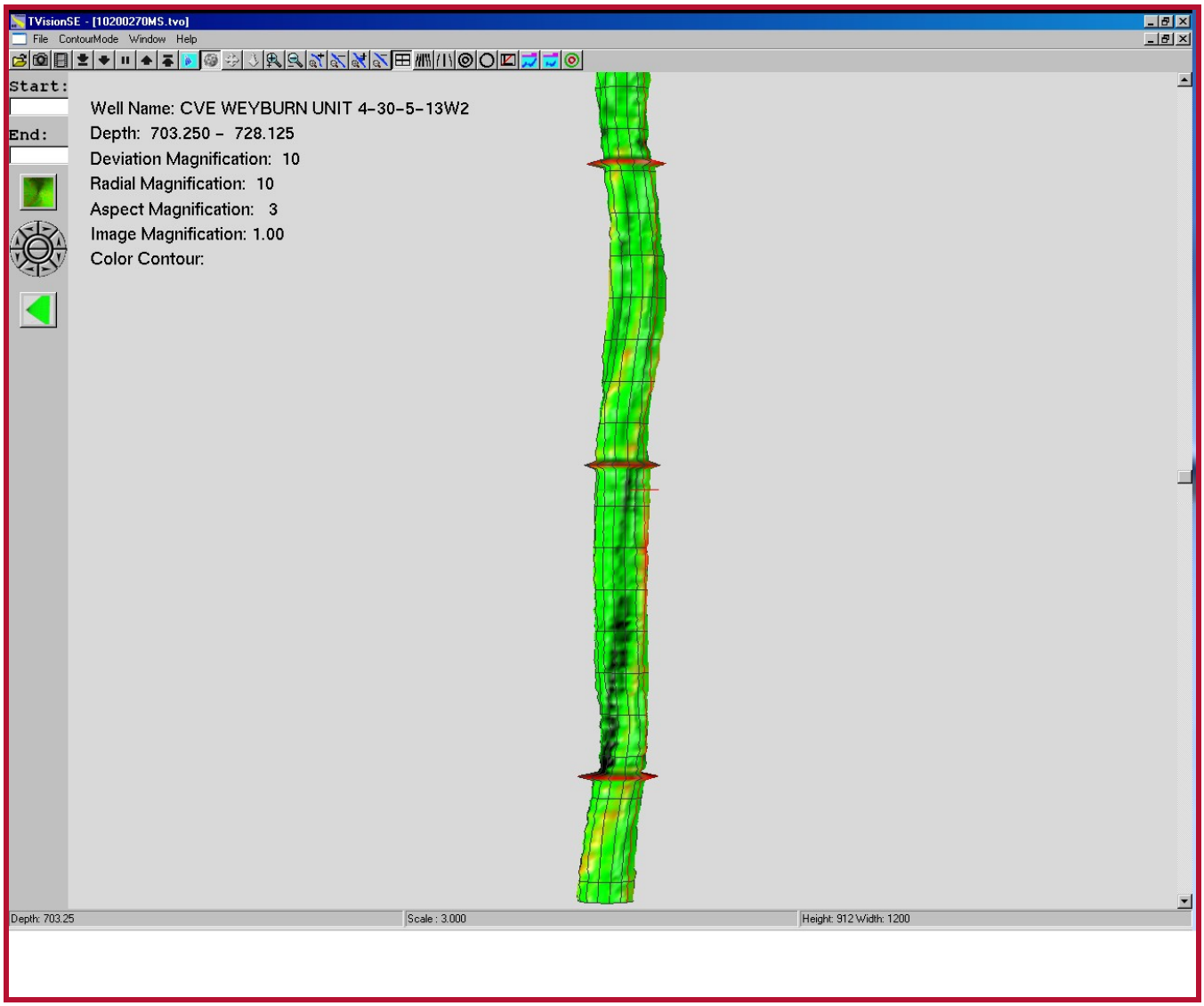

Figure 3 3D of possible helical stress on the pipe with no cement support (view 3)

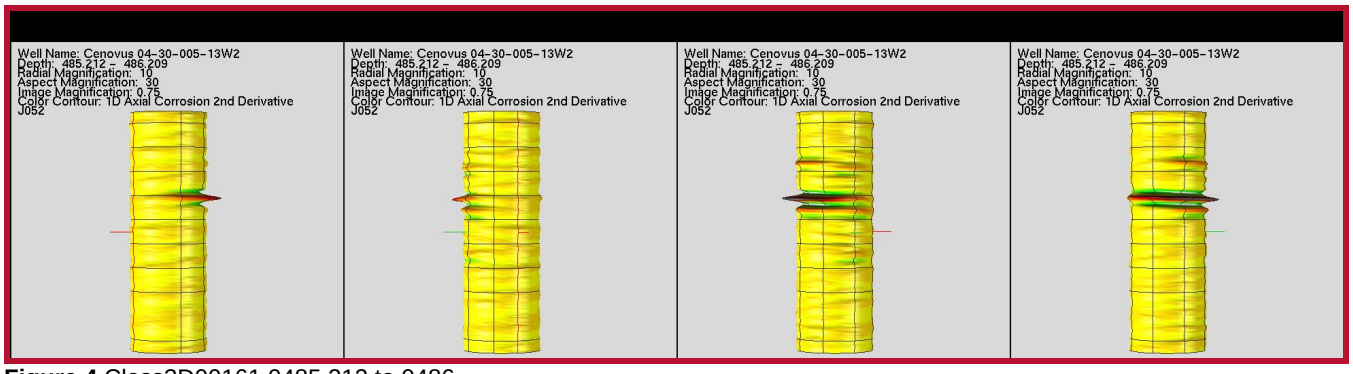

Figure 4 Class3D00161 0485.212 to 0486

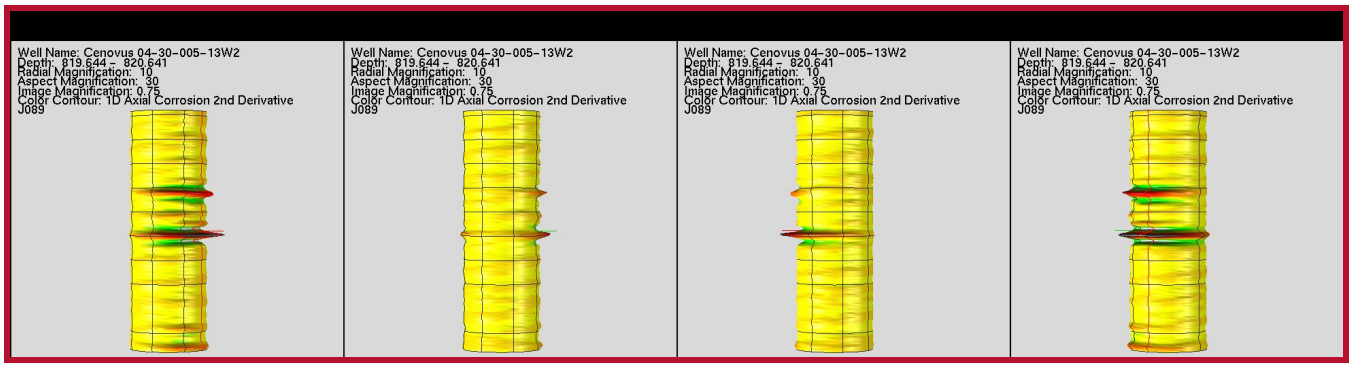

Figure 5 Class3D00172 0819.644 to 0820

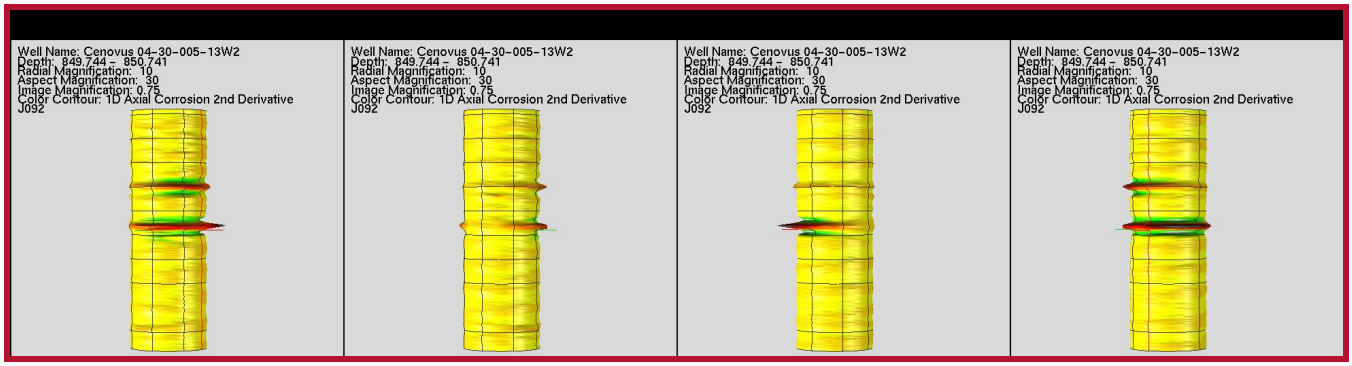

Figure 6 Class3D00173 0849.744 to 0850

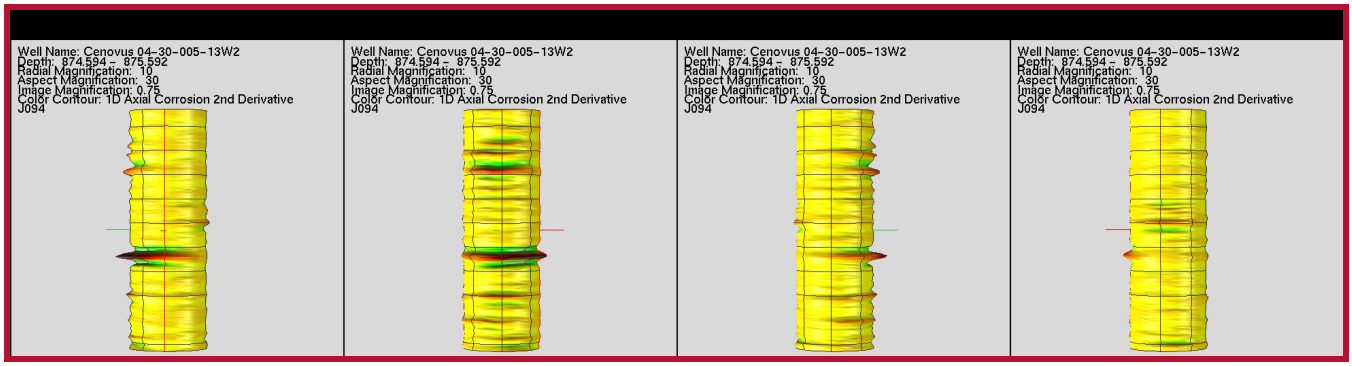

Figure 7 Class3D00176 0874.594 to 0875

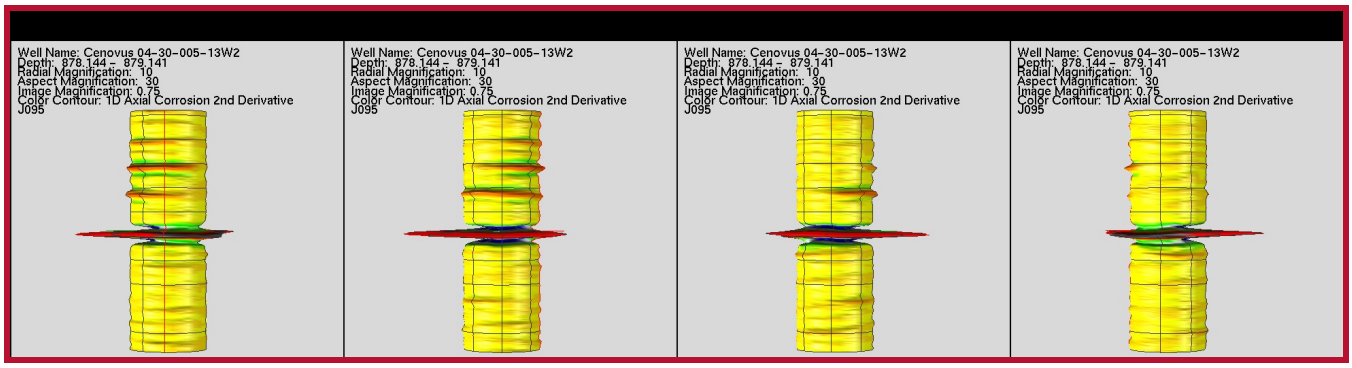

Figure 8 Class3D00177 0878.144 to 0879

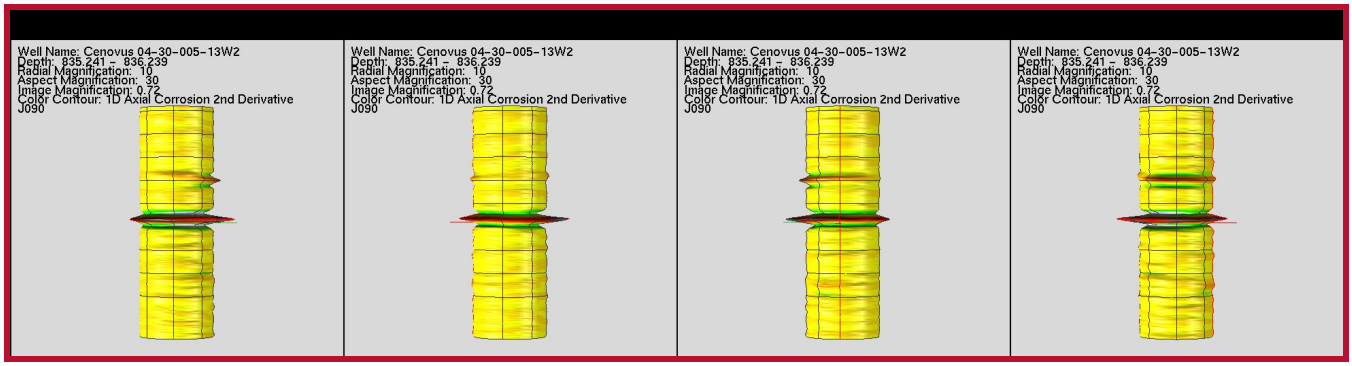

Figure 9 Class3D00000 0835.241 to 0836

Cement Evaluation Results

Free Pipe Amplitude	~80 mV
Free Pipe Travel Time	~231 µsec.
Fluid	Water
Fluid level	Full with 7 MPa of applied pressure while logging

Note: The interpretation is performed on the un-pressured pass. A comparison between the pressure and un-pressured passes indicate the presence of a very small micro annulus.

Table 4. Summary of cement evaluation interpretation for Sector Bond Tool.

Interval (m)	Amplitude, Travel Time & VDL	Variable Energy (Cement map)	Condition
6 to 127.9 (Surface Casing)	Amplitude reading 55 to 75 MV. VDL is exhibiting strong first arrivals meaning no cement bond to pipe.	High energy levels on all the sectors	No to very poor cement bond to pipe. No circumferential coverage around the casing pipe. No zonal isolation capable interval. No coverage around the casing shoe.
127.9 to 275 m	Amplitude reading 20 to 75 MV. VDL is showing strong first arrival and chevron meaning very poor cement in this interval.	High to medium energy levels on all the sectors.	Poor scattered cement in this interval. No good circumferential coverage around the casing pipe.

Interval (m)	Amplitude, Travel Time & VDL	Variable Energy (Cement map)	Condition
			No zonal isolation interval.
275 to 700 m	Amplitude reading 10 to 63 MV. VDL is showing strong first arrival and chevron meaning poor cement in this interval.	High to Medium energy level on all the sectors	Poor to weak cement in this interval. No good circumferential coverage except few exceptions. No zonal isolated intervals.
700 to 1160 m	Amplitude reading 5 to 66 MV. VDL is exhibiting strong first arrivals meaning no good cement bond to pipe.	High to medium energy levels on all the sectors	Very poor to weak cement in this interval with extended channels. No circumferential coverage around the casing pipe with few exceptions. No zonal isolation capable zones seen in this interval. Possible micro annulus.
1160 to 1450 m	Amplitude reading 0.6 to 5 MV. VDL is reading excellent cement in this interval with formation arrivals.	Low energy levels on all the sectors	Excellent cement in this interval with extended zonal isolation intervals. Excellent circumferential coverage around the casing pipe.