



Joshua R. Austin

Petroleum Geologist

report for
RAMA Operating CO., Inc



COMPANY: RAMA Operating Company, Inc.

LEASE: WALLACE #11-29

FIELD: CHASE-SILICA

LOCATION: 1830' FSL & 1160' FWL (NE-SE-NW-SW)

SEC: 29 **TWSP:** 19s **RGE:** 9w

COUNTY: Rice **STATE:** Kansas

KB: 1727' **GL:** 1715'

API # 15-159-22868-00-00

CONTRACTOR: Sterling Drilling (rig #4)

Spud: 7/27/19 **Comp:** 8/3/19

RTD: 3750' **LTD:** 3750'

Mud Up: 2407' **Type Mud:** Chemical was displaced

Samples Saved From: 2400' to RTD

Drilling Time Kept From: 2400' to RTD

Samples Examined From: 2400' to RTD

Geological Supervision From: 2700' to RTD

Geologist on Well: Josh Austin

Surface Casing: 8 5/8" @ 311'

Production Casing: 5 1/2" @ 3343'

Electronic Surveys: Pioneer Energy Services

NOTES

On the basis of the drill stem test and reviewing the electric logs it was recommend by all parties involved to set 5 1/2" casing to test the Arbuckle. Rotary total depth is 3750', casing was set at 3343' with intentions to convert to a salt water disposal well when needed.

Date: 7/27/2019

Moving to location. Will spud today

Date:

7/28/2019

Survey at 315' = 3/4 degree

Survey at 315' = 1/4 degree
 WOC at 315' at 7:00 am. Drilled 315' in 24.00 hours.
 Drilled 12-1/4" hole to 315'. Ran 7 joints new, 23#, 8-5/8" casing. Texas shoe.
 Tallied 299.07 + 12.30' LJ', set at 311' KB. Cemented with 210 sacks 60/40 POZ; 2% Gel, 3% CC & 1/2# FS.
 Cement did circulate. Plug down at 12:00 am on 07/28/19 by Quality Cementing Services. Ticket # 7187.
 Welded straps on bottom 3 joints, tacked collars on remaining. Wooden/rubber plug.

Date: 7/29/2019
 Test BOP to 500 psi. Tag top of cement at 285'. Anhydrite (341' - 354')
 Drilling at 1645' at 7:00 am. Drilled 1330' in 24.00 hours.

Date: 7/30/2019
 Displaced mud system at 2407'.
 Drilling at 2645' at 7:00 am. Drilled 1000' in 24.00 hours.

Date: 7/31/2019
 Survey at 2954' = 1/2 Degree. DST #1 (2937' - 2954'). Pipe strap 0.93' short to board.
 Circulating to clean the hole at 2954' at 7:00 am after DST #1. Drilled 309' in 24 hours.

Date: 8/1/2019
 DST #2 (3190' - 3240').
 Trip in hole with bit at 3240' at 7:00 am after DST #2. Drilled 286' in 24 hours.

Date: 8/2/2019
 Drilling at 3305' at 7:00 am. Drilled 65' in 24.00 hours.
 Bit No. 1: New 7-7/8" JZ HA20 ((#180714)(3-16's)), in at 315', out at 3258', drilled 2,943' in 59.50 hours.
 Bit No. 2: New 7-7/8" PDC Logic PLT616D6, (#S09213)(4-14's, 2-18's), in at 3258', drilled 47' in 1.25 hours.

Date: 8/3/2019
 RTD = 3750', LTD = 3750'. Survey at 3750' = 1-3/4 degrees
 Laying down drill pipe at 3750' at 7:00 am. Drilled 445' in 24.00 hours.
 Slowly losing fluid at 3750' with 5 lb/bbl LCM. Made 10 stand short trip. Shut down to mix 100 bbl of mud. Added for volume after short trip.
 Mixed another 100 bbl mud while logging. After logs rig tripped back in to 3379' and added mud while circulating prior to laying down drill pipe.
 Began laying down drill pipe with bit at 3379'
 Ran 94 joints of used 14.0#, 5-1/2" casing. Tallied 3333.84', set at 3343.84' KB. Float insert at 3311'.
 Lost a total of 250 bbl of mud. Still had seepage loss before packer was set.
 Basket on #2. Centralizers (5) on 3,5,10,12,14. Packer shoe on bottom. Cemented with 125 sacks PRO C,
 Plug down at 4:00 pm on 08/03/19. Plugged rathole with 30 sks, mousehole with 20 sks
 Rig released at 5:30 pm on 08/03/19.

RAMA Operating Company Inc. well comparison sheet

DRILLING WELL Wallace #11-29					COMPARISON WELL Wallace #9				COMPARISON WELL Wallace #6			
1727 KB					1720 KB		Structural Relationship		1718 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Sample	Sub-Sea	Sample	Log	Sample	Sub-Sea	Sample	Log
Anhydrite	341	1386										
Topeka	2500	-773	2498	-771	2486	-766	-7	-5	2498	-780	7	9
Heebner	2772	-1045	2769	-1042	2758	-1038	-7	-4	2768	-1050	5	8
Toronto	2791	-1064	2790	-1063	2780	-1060	-4	-3	2790	-1072	8	9
Douglas	2802	-1075	2801	-1074	2792	-1072	-3	-2	2799	-1081	6	7
Brown Lime	2899	-1172	2897	-1170	2886	-1166	-6	-4	2895	-1177	5	7
Lansing	2921	-1194	2921	-1194	2920	-1200	6	6	2920	-1202	8	8
Base KC	3212	-1485	3210	-1483	3200	-1480	-5	-3	3208	-1490	5	7
Arbuckle	3236	-1509	3234	-1507	3231	-1511	2	4	3225	-1507	-2	0
Total Depth	3750	-2023	3750	-2023	3248	-1528			3251	-1533		



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co Inc

29-19s-9w

101 S. Main
Stafford KS 67578

Wallace #11-29

Job Ticket: 65802 DST#: 1

ATTN: Josh Austin

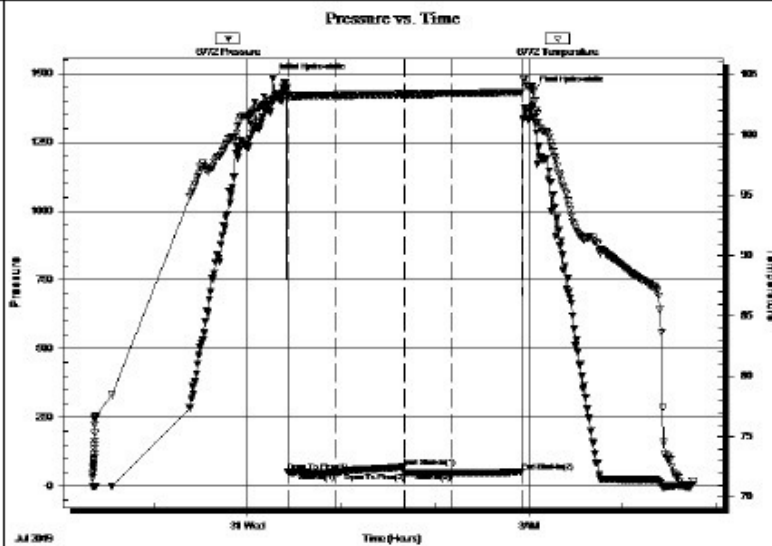
Test Start: 2019.07.30 @ 22:21:00

GENERAL INFORMATION:

Formation: LKC B
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 00:25:40
 Time Test Ended: 04:44:50
 Interval: 2937.00 ft (KB) To 2954.00 ft (KB) (TVD)
 Total Depth: 2954.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1727.00 ft (KB)
 1715.00 ft (CF)
 KB to GR/CF: 12.00 ft

Serial #: 6772 Inside
 Press@RunDepth: 48.24 psig @ 2938.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.30 End Date: 2019.07.31 Last Calib.: 2019.07.31
 Start Time: 22:21:01 End Time: 04:44:50 Time On Btm: 2019.07.31 @ 00:16:20
 Time Off Btm: 2019.07.31 @ 03:02:00

TEST COMMENT: IF-30- Built to 11.8"
 IS-45- No blow back
 FF-30- Built to 3"
 FSI-45- No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1479.76	102.91	Initial Hydro-static
10	52.74	103.24	Open To Flow (1)
40	50.99	103.25	Shut-In(1)
84	70.37	103.35	End Shut-In(1)
85	49.66	103.37	Open To Flow (2)
115	48.24	103.38	Shut-In(2)
160	53.65	103.49	End Shut-In(2)
166	1434.61	104.00	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
50.00	OSM 100%M	0.25

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



TRILOBITE

DRILL STEM TEST REPORT

Rama Operating Co Inc

29-19s-9w



TESTING, INC

Rama Operating Co Inc
101 S. Main
Stafford KS 67578
ATTN: Josh Austin

29-195-9W

Wallace #11-29

Job Ticket: 65803

DST#: 2

Test Start: 2019.08.01 @ 00:47:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: **No Whipstock:** ft (KB)
 Time Tool Opened: 02:33:50
 Time Test Ended: 06:22:09

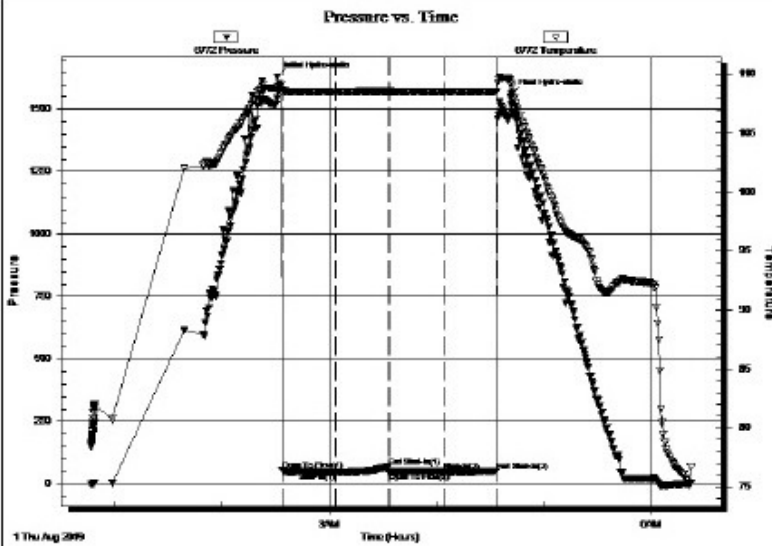
Test Type: **Conventional Bottom Hole (Initial)**
 Tester: **Benny Mulligan**
 Unit No: **66**

Interval: **3190.00 ft (KB) To 3240.00 ft (KB) (TVD)**
 Total Depth: **3240.00 ft (KB) (TVD)**
 Hole Diameter: **7.88 inches** Hole Condition: **Fair**

Reference Elevations: **1727.00 ft (KB)**
1715.00 ft (CF)
 KB to GR/CF: **12.00 ft**

Serial #: 6772 **Inside**
 Press@RunDepth: **51.25 psig @ 3191.00 ft (KB)** Capacity: **8000.00 psig**
 Start Date: **2019.08.01** End Date: **2019.08.01** Last Calib.: **2019.08.01**
 Start Time: **00:47:01** End Time: **06:22:10** Time On Btm: **2019.08.01 @ 02:31:10**
 Time Off Btm: **2019.08.01 @ 04:42:00**

TEST COMMENT: IF-30- Built to 1.8"
 IS-30- No blow back
 FF-30- No blow
 FSI-30- No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1628.92	108.89	Initial Hydro-static
3	56.38	108.67	Open To Flow (1)
33	48.86	108.52	Shut-In(1)
63	69.76	108.57	End Shut-In(1)
63	49.35	108.55	Open To Flow (2)
93	51.25	108.52	Shut-In(2)
123	53.60	108.53	End Shut-In(2)
131	1560.77	109.23	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OCM 20%O 80%M	0.05

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Rama Operating Co Inc
101 S. Main

29-195-9W

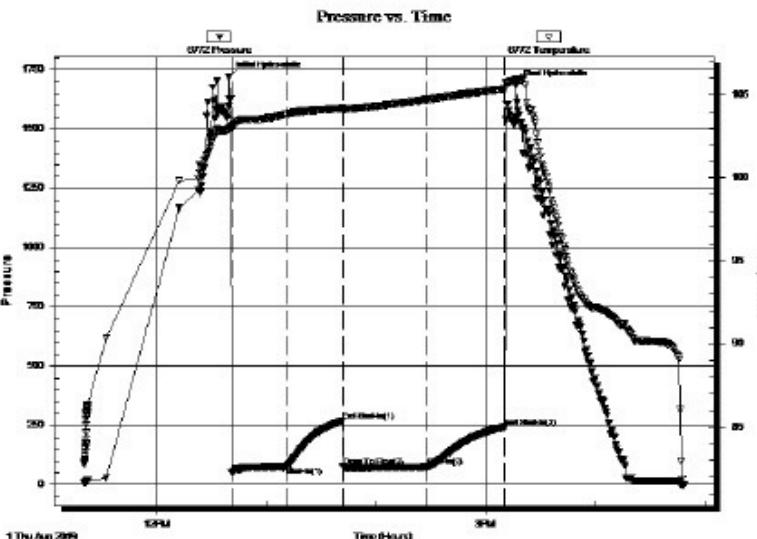
Wallace #11-29

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: **No Whipstock:** ft (KB)
 Time Tool Opened: 12:41:00
 Time Test Ended: 16:48:50
 Interval: **3240.00 ft (KB) To 3248.00 ft (KB) (TVD)**
 Total Depth: **3248.00 ft (KB) (TVD)**
 Hole Diameter: **7.88 inches** Hole Condition: **Fair**
 Test Type: **Conventional Bottom Hole (Initial)**
 Tester: **Benny Mulligan**
 Unit No: **66**
 Reference Elevations: **1727.00 ft (KB)**
1715.00 ft (CF)
 KB to GR/CF: **12.00 ft**

Serial #: 6772 **Inside**
 Press@RunDepth: **77.28 psig @ 3241.00 ft (KB)** Capacity: **8000.00 psig**
 Start Date: **2019.08.01** End Date: **2019.08.01** Last Calib.: **2019.08.01**
 Start Time: **11:20:01** End Time: **16:48:50** Time On Btn: **2019.08.01 @ 12:39:30**
 Time Off Btn: **2019.08.01 @ 15:16:40**

TEST COMMENT: IF-30- Built to 6.8"
 IS-30- No blow back
 FF-45- Built to 9"
 FSI-45- No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1721.53	102.96	Initial Hydro-static
2	50.76	102.93	Open To Flow (1)
32	76.42	103.83	Shut-In(1)
62	267.94	104.20	End Shut-In(1)
63	76.09	104.15	Open To Flow (2)
109	77.28	104.71	Shut-In(2)
151	244.48	105.35	End Shut-In(2)
158	1684.26	105.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
64.00	GSOCM 20%G 10%O 70%M	0.31
64.00	GOCM 20%G 30%O 50%M	0.31
0.00	GIP 190'	0.00

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co Inc

29-19s-9w

101 S. Main
 Stafford KS 67578

Wallace #11-29

ATTN: Josh Austin

Job Ticket: 65805

DST#: 4

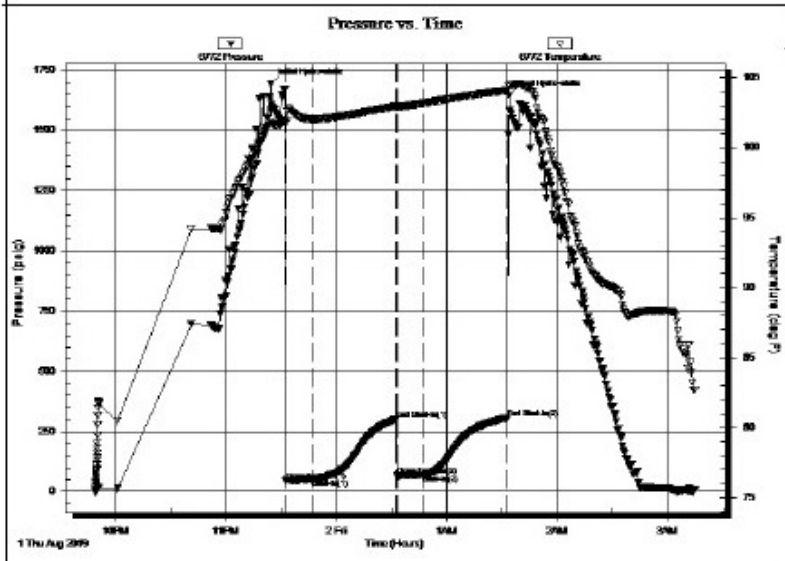
Test Start: 2019.08.01 @ 21:49:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: **No** Whipstock: **ft (KB)**
 Time Tool Opened: **23:32:40**
 Time Test Ended: **03:15:09**
 Interval: **3248.00 ft (KB) To 3258.00 ft (KB) (TVD)**
 Total Depth: **3258.00 ft (KB) (TVD)**
 Hole Diameter: **7.88 inches** Hole Condition: **Fair**
 Test Type: **Conventional Bottom Hole (Initial)**
 Tester: **Benny Mulligan**
 Unit No: **66**
 Reference Elevations: **1727.00 ft (KB)**
1715.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 6772 **Inside**
 Press@RunDepth: **71.60 psig @ 3249.00 ft (KB)**
 Start Date: **2019.08.01** End Date: **2019.08.02**
 Start Time: **21:49:01** End Time: **03:15:10**
 Capacity: **8000.00 psig**
 Last Calib.: **2019.08.02**
 Time On Btm: **2019.08.01 @ 23:24:30**
 Time Off Btm: **2019.08.02 @ 01:34:00**

TEST COMMENT: IF-15-BOB 12 mins 10 secs total build of 14.7"
 ISI-45- No blow back
 FF-15- Built to 6"
 FSI-45- No blow back



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1695.19	101.87	Initial Hydro-static
9	46.53	101.72	Open To Flow (1)
23	52.56	102.05	Shut-In(1)
68	300.10	102.97	End Shut-In(1)
69	66.09	102.92	Open To Flow (2)
83	71.60	103.18	Shut-In(2)
129	306.10	104.10	End Shut-In(2)
130	1645.85	104.46	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
64.00	MCO 40%M 60%O	0.31
64.00	CO 100%O	0.31
0.00	GIP 190'	0.00

Gas Rates			
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

ROCK TYPES

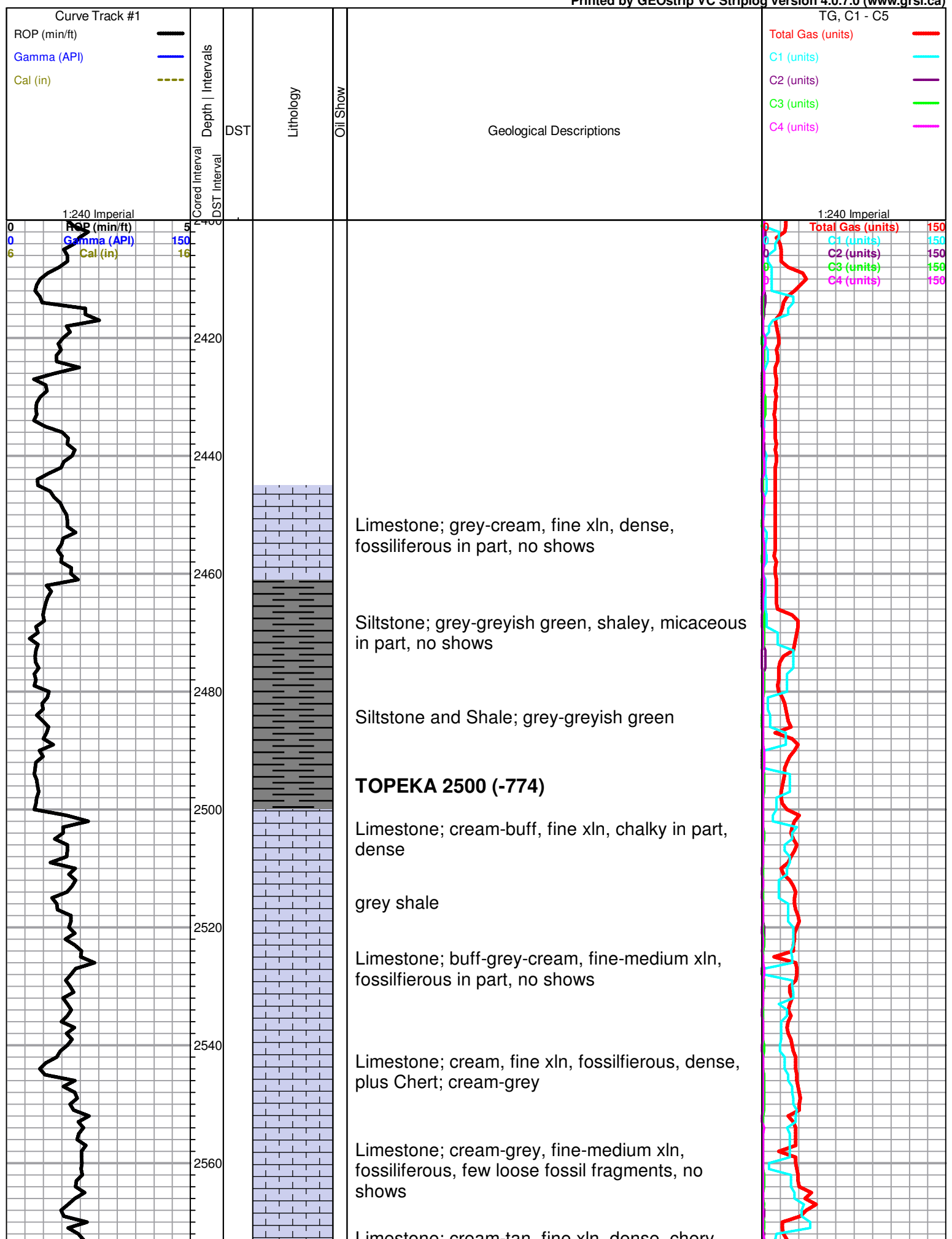
Chtcong	Dolsec	Lmst fw7>	shale, gry	Slst
Dolprim	sdy lmst	shale, grn	Carbon Sh	

ACCESSORIES

MINERAL
 ▲ Chert White

OTHER SYMBOLS

DST
 DST Int
 DST alt



Limestone; grey-cream, fine xln, dense, fossiliferous in part, no shows

Siltstone; grey-greyish green, shaley, micaceous in part, no shows

Siltstone and Shale; grey-greyish green

TOPEKA 2500 (-774)

Limestone; cream-buff, fine xln, chalky in part, dense

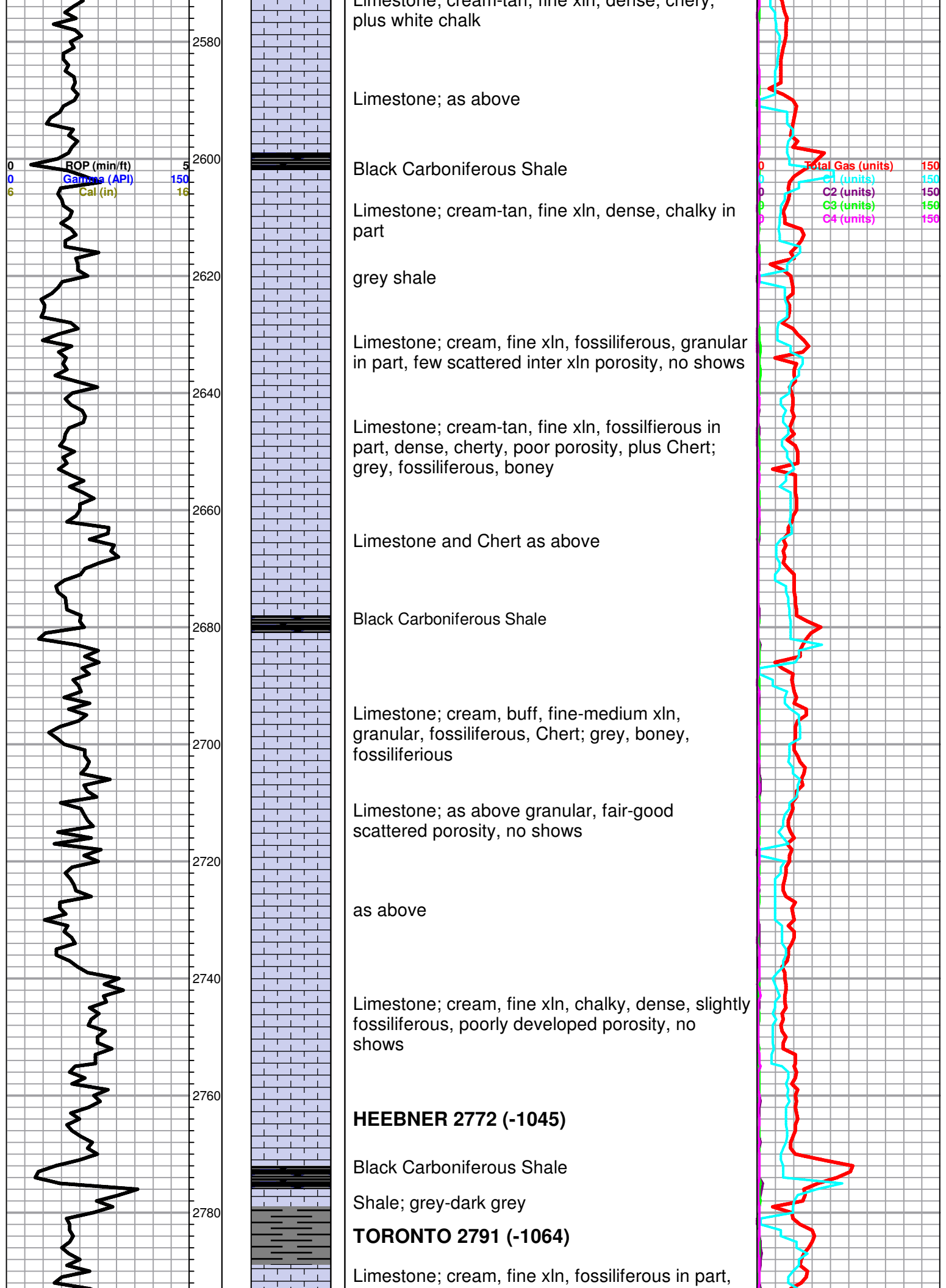
grey shale

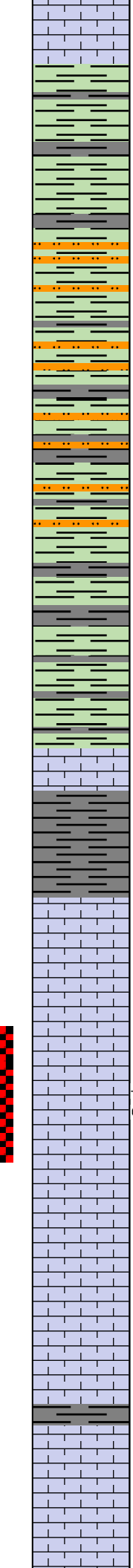
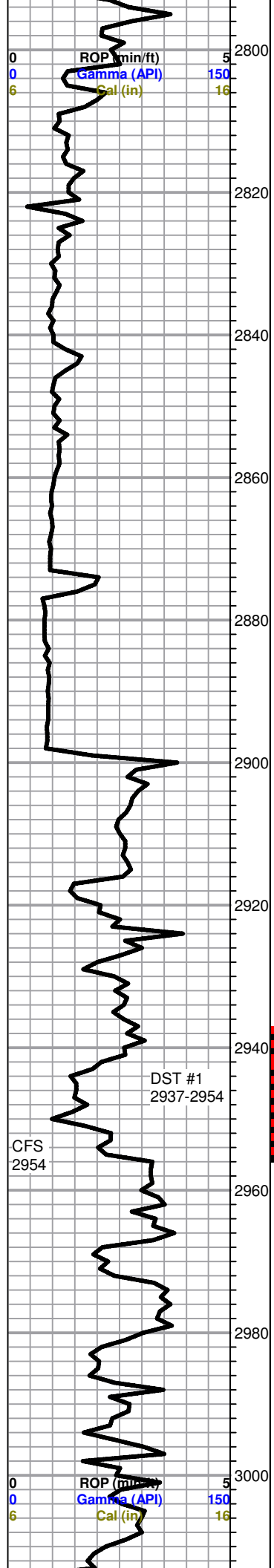
Limestone; buff-grey-cream, fine-medium xln, fossiliferous in part, no shows

Limestone; cream, fine xln, fossiliferous, dense, plus Chert; cream-grey

Limestone; cream-grey, fine-medium xln, fossiliferous, few loose fossil fragments, no shows

Limestone; cream-tan, fine xln, dense, cherty





pin point-inter xln porosity, chalky in part, no shows

DOUGLAS 2802 (-1075)

Shale; grey-green-brick red

Shale; as above

Shale; grey-greyish green, silty, micaceous in part

Siltstone; grey-greyish green, shaley, micaceous in part, no shows

Siltstone and Shale as above

Shale; grey-greyish green, silty, micaceous in part, soft/gummy

BROWN LIME 2899 (-1172)

Limestone; tan, fine xln, dense, cherty, fossiliferous poor visible porosity

Shale; grey-dark grey

LANSING 2921 (-1194)

Limestone; cream, fine xln, chalky, dense, poorly developed inter xln porosity, no shows

Limestone; cream-tan, sub oomoldic, oolitic, fair-good porosity, spotty SFO, gas bubbles, faint-fair odor (132 unit gas kick)

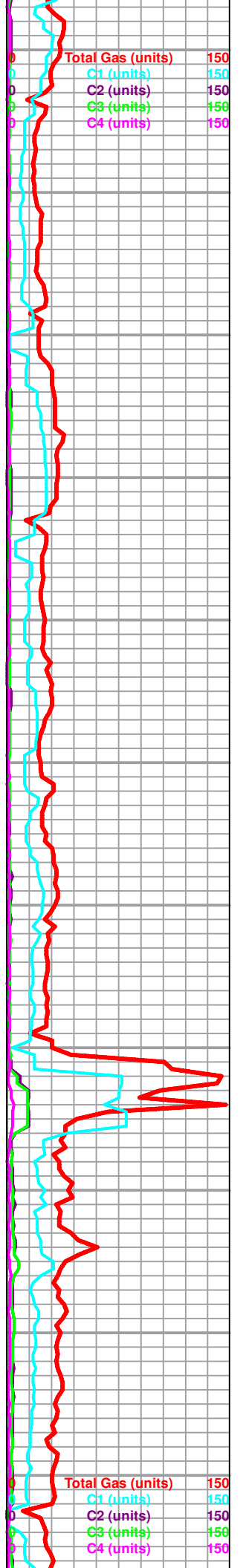
Limestone; cream-grey, fine xln, dense, mottled in part, poor porosity, plus Chert; grey, fossiliferous

Limestone; grey-tan, fossiliferous, dense, cherty, poorly developed porosity, no shows

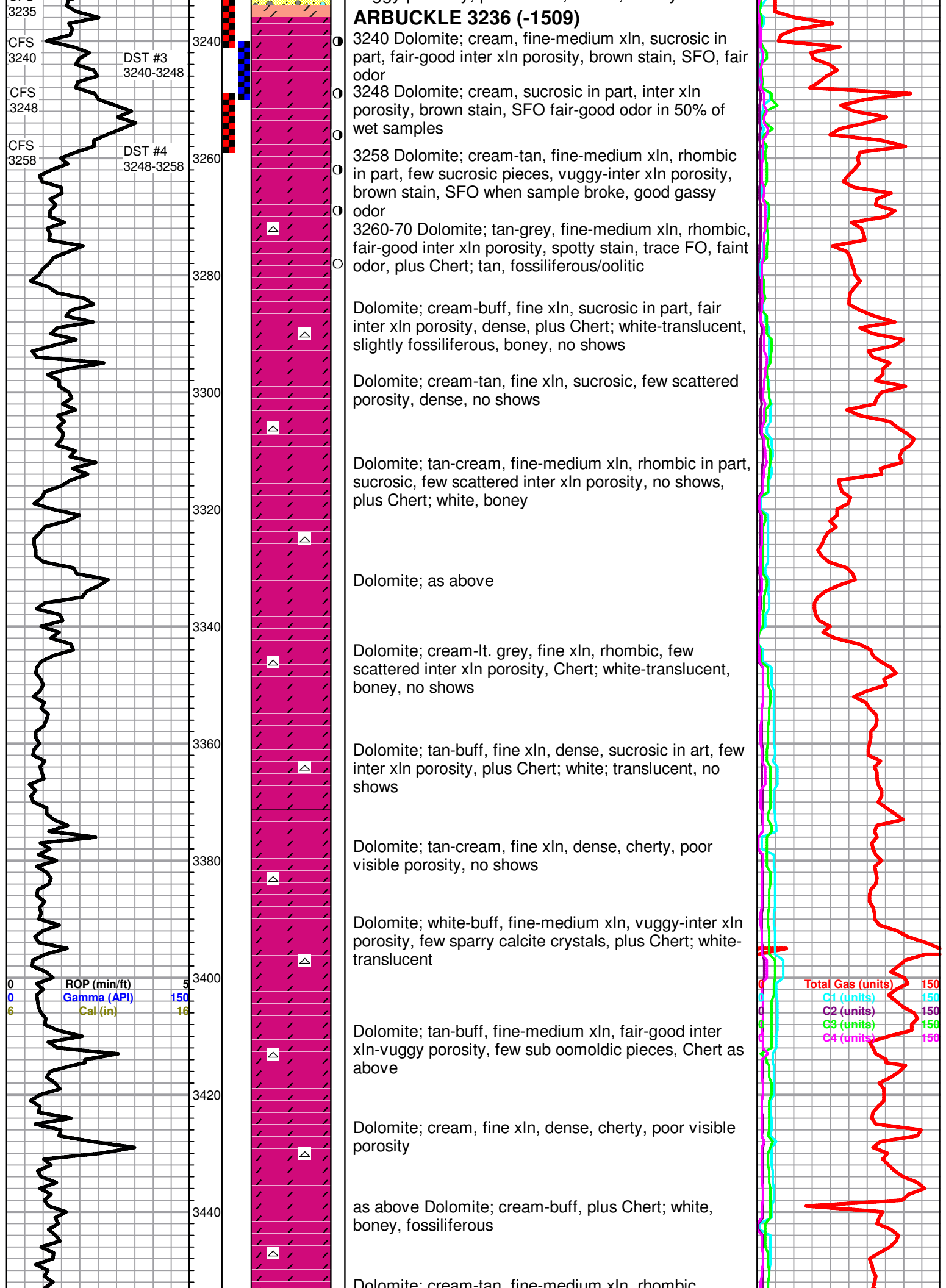
grey shale

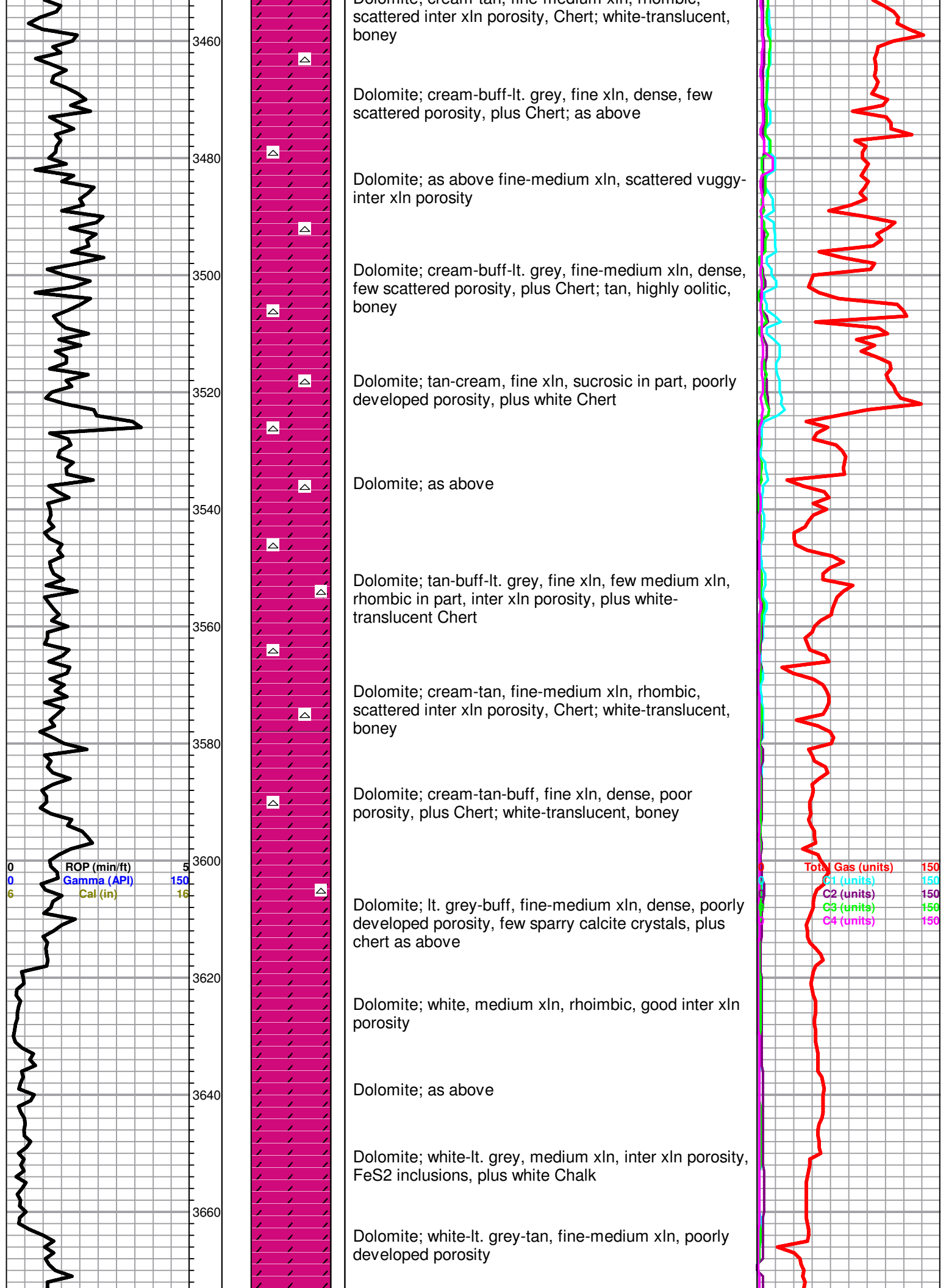
Limestone; grey-cream-lt. grey, fine xln, chalky, slightly fossiliferous, no shows

Limestone; tan, oomoldic, fair-good oomoldic



ARBUCKLE 3236 (-1509)





3680
3700
3720
3740
3760
3780



Dolomite; grey-white, fine-medium xln, fair inter xln porosity, plus white chalk

Dolomite; white-cream-buff, fine-medium xln, rhombic, good inter xln porosity

Dolomite as above

Dolomite; tan-grey-cream, fine-medium xln, dense, few scattered inter xln porosity, slightly cherty

Started losing returns, pulled 10 stands, did not recover samples

ROTARY TOTAL DEPTH 3750 (-2023)

