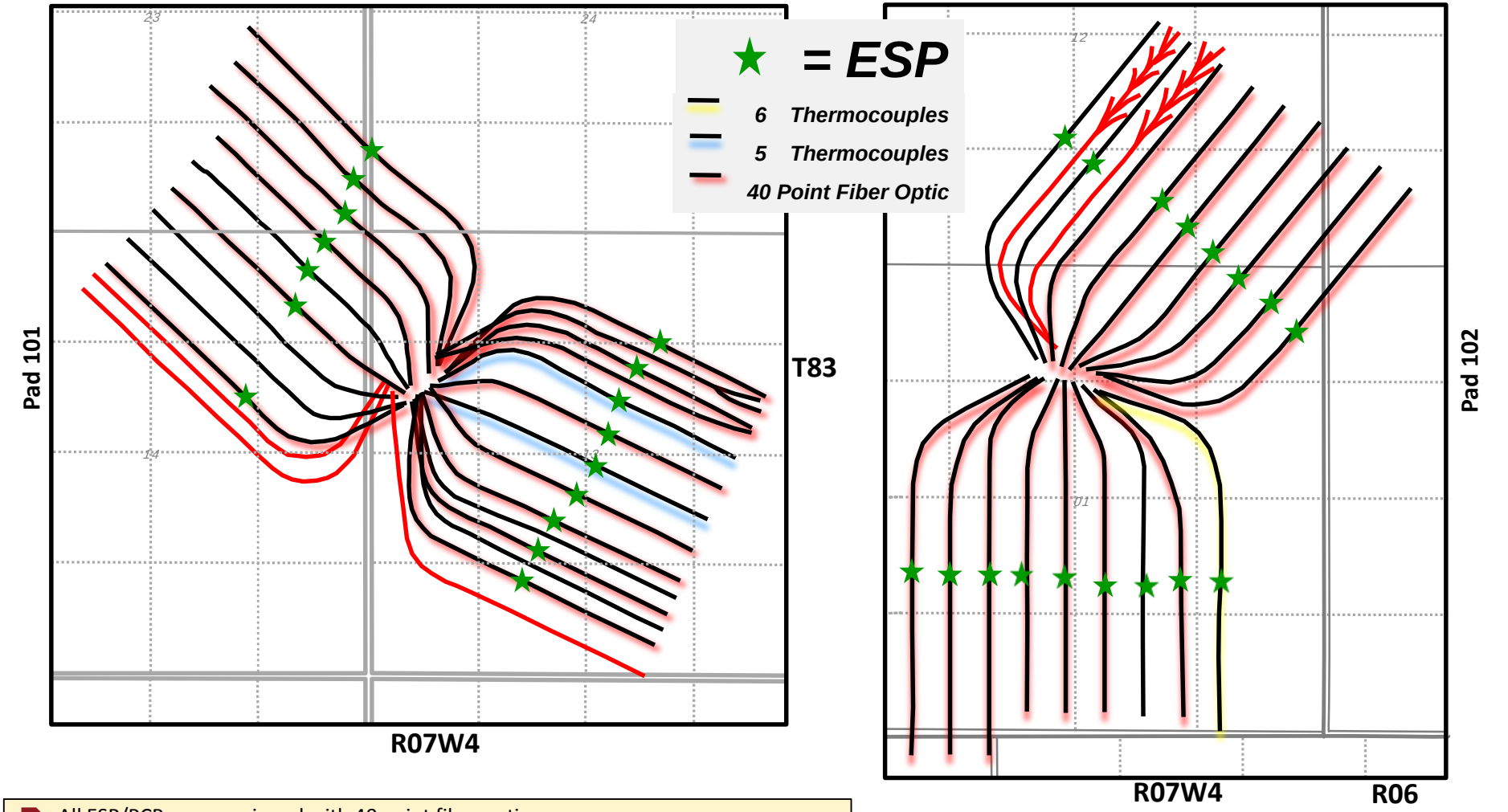
ConocoPhillips Canada Oil Sands | TOTAL

Annual Surmont SAGD Performance Review Approvals 9426 and 9460 Subsurface Appendix 3.1.1. (5)

May 13, 2015

Calgary, Alberta, Canada



- All ESP/PCPs are equipped with 40 point fiber optic
  - 101-03 and 101-05 are the only ESP conversions equipped with thermocouples (first ESP completions) with 5 points
- The ESP's on 102-14 and 102-16 were worked over to accommodate 40 point fiber optic sensors
- Heel instrumentation includes a fiber optic PT with a bubble tube backup

Newly converted wells in 2013

- *Pad 101 – 101-12 (05 DH) + 101-19 (16inf DH)*
- *Pad 102 – 102-11 RD*

Pad 101 Injectors BHP [kPa]

Month	101-I01	101-I02	101-I03	101-I04	101-I05	101-I06	101-I07	101-I08	101-I09	101-I10	101-I11	101-I12	101-I13	101-I14	101-I15	101-I16	101-I17	101-I18	101-I19	101-I20	101-I21	101-I22
Apr-14	2,942	2,649	2,898	2,968	2,943	2,148	2,225	2,139	2,030	1,670	1,634	1,735	1,591	1,756	2,047	2,562	2,701	#N/A	2,708	3,629	#N/A	#N/A
Aug-14	2,814	2,564	2,888	2,992	2,959	2,154	2,179	2,082	1,982	1,613	1,562	1,701	1,700	1,803	1,940	2,313	2,367	#N/A	2,420	3,607	#N/A	#N/A
Dec-14	2,711	2,617	2,876	2,942	2,891	2,148	2,136	2,046	1,955	1,441	1,481	1,600	1,524	1,693	1,769	2,050	2,167	#N/A	2,191	2,511	#N/A	#N/A
Feb-14	2,997	2,638	2,901	3,000	3,035	2,269	2,283	2,213	2,131	1,720	1,672	1,765	1,741	1,787	2,027	2,579	2,736	#N/A	2,780	3,395	#N/A	#N/A
Jul-14	2,839	2,469	2,871	2,986	2,948	2,164	2,197	2,088	1,980	1,651	1,564	1,685	1,711	1,786	1,969	2,355	2,382	#N/A	2,422	3,788	#N/A	#N/A
Jun-14	2,879	#N/A	2,887	2,977	2,935	2,154	2,199	2,120	2,013	1,629	1,605	1,708	1,603	1,788	2,002	2,426	2,468	#N/A	2,498	2,751	#N/A	#N/A
Mar-14	2,962	2,639	2,885	2,974	2,958	2,214	2,287	2,167	1,132	1,704	1,652	1,769	1,655	1,765	2,038	2,574	2,724	#N/A	2,754	3,831	#N/A	#N/A
May-14	2,936	2,922	2,872	2,965	2,942	2,152	2,212	2,138	2,028	1,650	1,613	1,718	1,585	1,774	2,040	2,503	2,581	#N/A	2,586	3,937	#N/A	#N/A
Nov-14	2,692	2,518	2,763	2,801	2,714	2,158	2,121	2,068	1,921	1,460	1,472	1,630	1,557	1,698	1,711	2,083	2,082	#N/A	2,004	3,088	#N/A	#N/A
Oct-14	2,447	2,277	2,555	2,576	2,549	2,036	2,078	1,746	1,884	1,457	1,442	1,606	1,564	1,704	1,740	2,054	2,033	#N/A	2,351	2,880	#N/A	#N/A
Sep-14	2,445	2,460	2,485	2,519	2,533	1,466	1,347	1,888	1,863	1,566	1,514	1,399	1,734	1,583	1,755	2,001	1,957	#N/A	1,987	2,189	#N/A	#N/A
Jan-15	2,732	2,644	2,849	2,945	2,919	2,166	2,069	2,002	1,916	1,448	1,481	1,567	1,548	1,697	1,630	2,032	2,096	#N/A	2,100	2,206	#N/A	#N/A

Pad 101 Producers BHP [kPa]

Month	101-P01	101-P02	101-P03	101-P04	101-P05	101-P06	101-P07	101-P08	101-P09	101-P10	101-P11	101-P12	101-P13	101-P14	101-P15	101-P16	101-P17	101-P18	101-P19	101-P20	101-P21	101-P22
Feb-14	2,770.21	2,863.00	1,448.00	2,652.07	2,755.21	2,176.89	1,818.85	1,711.94	1,964.09	1,649.26	1,384.05	1,591.00	1,584.27	1,648.52	2,084.66	2,234.95	#N/A	#N/A	3,286.77	#N/A	1,813.56	#N/A
Mar-14	2,669.42	2,861.00	1,412.00	2,588.86	2,750.24	2,076.51	1,782.32	1,669.82	2,016.24	1,636.51	1,402.12	1,578.00	1,554.91	1,557.60	2,012.85	2,209.39	#N/A	#N/A	3,012.67	#N/A	1,782.90	#N/A
Apr-14	2,693.79	2,851.00	1,352.00	2,493.52	2,819.56	1,911.10	1,744.51	1,631.50	1,887.03	1,600.38	1,383.23	1,563.00	1,550.62	1,488.08	2,021.08	2,185.77	#N/A	#N/A	2,922.53	#N/A	1,767.55	#N/A
May-14	2,725.32	2,774.00	1,351.00	2,472.95	2,803.78	1,997.90	1,697.04	1,612.06	1,865.30	1,560.67	1,370.26	1,543.00	1,547.52	1,422.72	2,000.89	2,176.48	#N/A	#N/A	2,764.99	#N/A	1,768.17	#N/A
Jun-14	2,619.89	2,800.00	1,398.00	2,525.47	2,780.19	2,037.93	1,720.74	1,607.63	1,843.64	1,545.83	1,394.94	1,536.00	1,551.78	1,389.08	1,947.32	2,144.69	#N/A	#N/A	2,757.13	#N/A	#N/A	#N/A
Jul-14	2,642.15	2,801.00	1,400.00	2,617.33	2,789.09	2,072.47	1,614.98	1,624.71	1,831.28	1,522.48	1,371.02	1,501.00	1,520.79	1,391.72	1,918.91	2,083.57	#N/A	#N/A	2,587.80	#N/A	#N/A	#N/A
Aug-14	2,429.38	2,764.00	1,397.00	2,529.22	2,759.08	2,124.35	1,635.23	1,658.69	1,837.84	1,499.60	1,381.00	1,501.00	1,508.87	1,442.61	1,942.50	2,071.80	#N/A	#N/A	2,688.35	#N/A	#N/A	#N/A
Sep-14	2,649.88	2,795.00	#N/A	2,836.86	2,784.68	2,154.86	2,047.70	2,113.02	1,981.36	1,581.76	1,575.02	1,525.00	1,720.93	1,600.46	2,091.33	2,315.56	#N/A	#N/A	3,792.92	#N/A	#N/A	#N/A
Oct-14	1,994.57	2,737.00	1,696.00	2,143.61	2,339.90	1,893.80	1,463.43	2,090.90	1,720.81	1,571.83	1,332.30	1,423.00	1,722.17	1,289.04	1,738.33	2,118.94	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Nov-14	2,161.77	2,601.00	1,719.00	2,361.17	2,442.51	2,042.81	1,607.18	#N/A	1,790.45	#N/A	1,311.55	1,412.00	#N/A	1,374.63	1,719.79	1,984.69	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Dec-14	2,246.38	2,692.00	1,731.00	2,423.46	2,586.01	2,012.76	1,634.71	#N/A	1,864.74	#N/A	1,310.84	1,432.00	#N/A	1,449.26	1,729.95	1,815.17	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Jan-15	2,361.19	2,815.00	1,800.00	2,699.02	2,771.50	1,940.53	1,785.86	#N/A	1,827.90	#N/A	1,341.47	1,428.00	#N/A	1,471.80	1,802.91	1,714.89	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

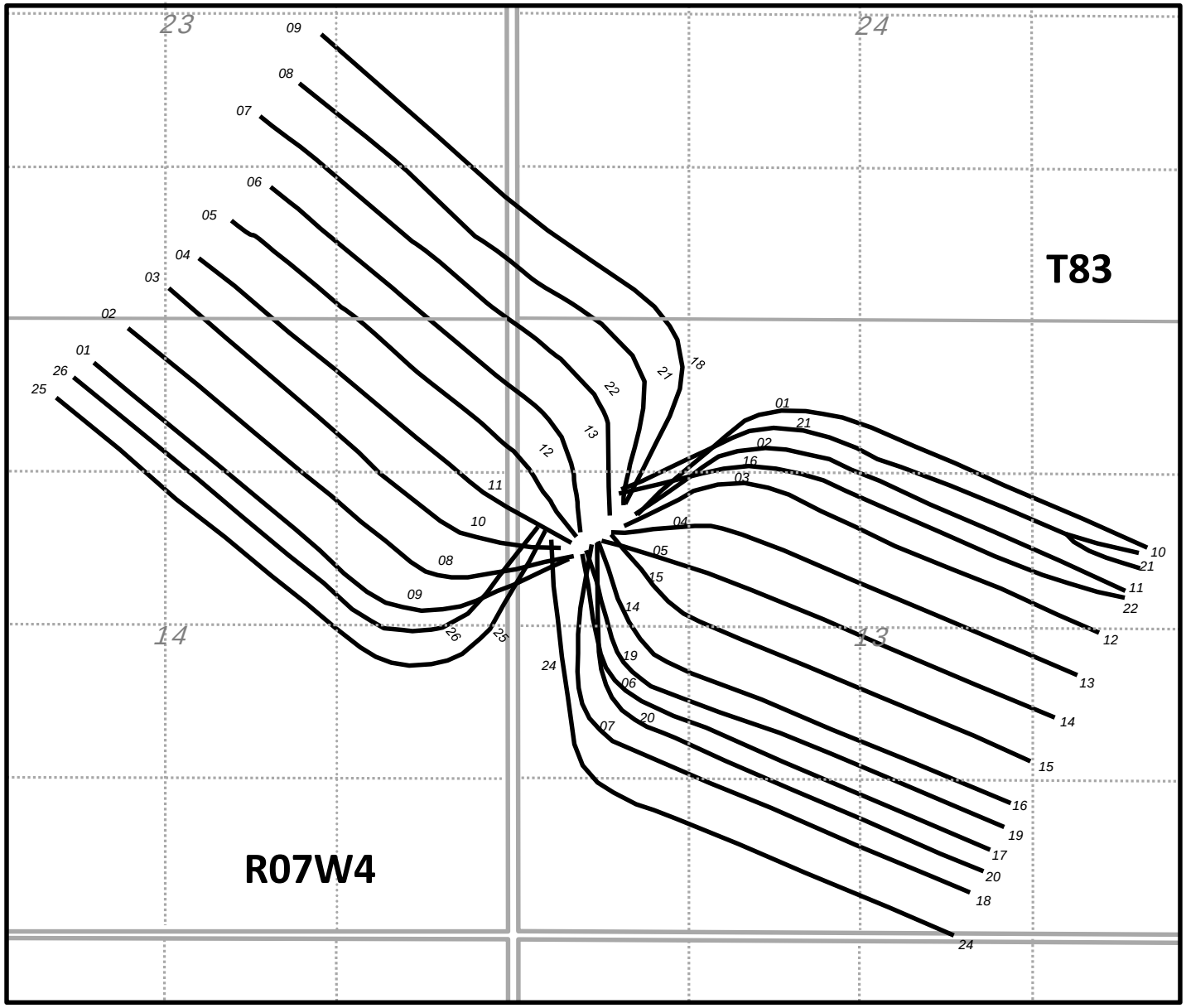
Pad 102 Injectors BHP [kPa]

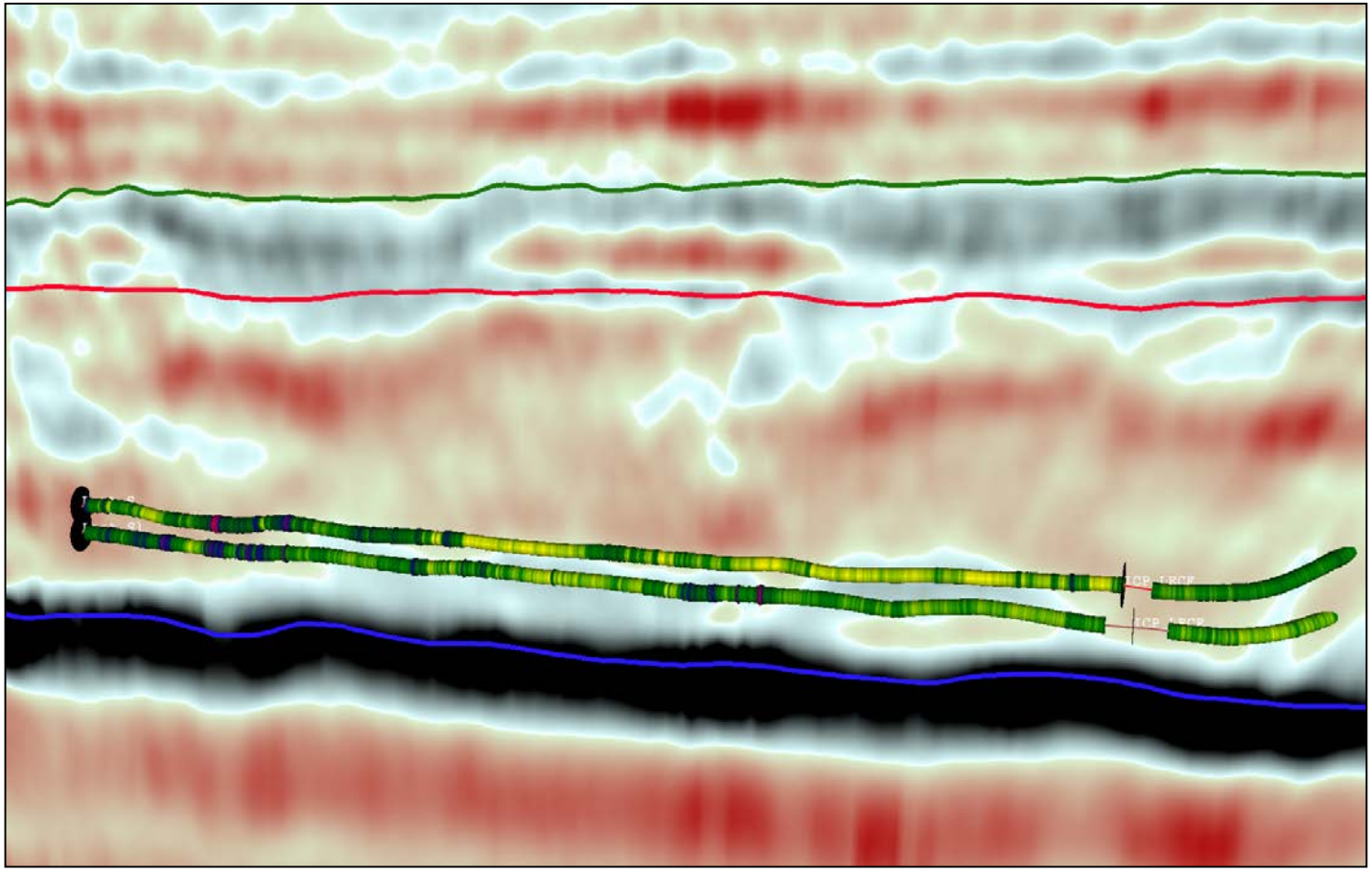
Month	102-I01	102-I02	102-I03	102-I04	102-I05	102-I06	102-I07	102-I08	102-I09	102-I10	102-I11	102-I12	102-I13	102-I14	102-I15	102-I16	102-I17	102-I18
Feb-14	2,406	2,567	2,493	2,271	2,249	2,021	2,297	2,239	2,247	3,644	2,285	2,162	1,863	1,938	1,947	2,000	2,019	1,986
Mar-14	2,357	2,516	2,416	2,240	#N/A	2,016	2,301	2,242	2,222	3,562	2,243	2,113	1,302	1,922	1,949	1,997	2,024	2,004
Apr-14	2,219	2,461	2,377	2,267	2,270	2,013	2,309	2,237	2,227	3,398	2,205	2,109	2,036	1,977	1,940	2,003	2,024	1,995
May-14	2,190	2,459	2,351	2,283	2,260	2,013	2,296	2,228	2,204	3,468	2,222	2,112	2,018	2,002	1,946	1,959	2,018	1,992
Jun-14	2,215	2,500	2,333	2,272	2,245	1,977	2,260	2,212	2,173	3,520	2,199	2,110	2,014	1,944	1,948	1,998	2,026	2,000
Jul-14	2,271	2,514	2,336	2,251	2,221	1,982	2,225	2,196	2,138	3,547	2,206	2,096	1,998	1,924	1,965	1,984	2,003	1,982
Aug-14	2,270	2,469	2,265	2,234	2,206	2,105	2,209	2,194	2,147	3,530	2,192	2,106	2,022	1,887	1,943	2,012	2,004	1,992
Sep-14	1,564	1,569	1,555	1,338	1,954	1,359	1,267	1,441	1,124	2,015	1,354	1,380	1,292	#N/A	1,760	1,740	1,754	1,985
Oct-14	2,031	2,332	2,202	2,070	2,102	1,948	2,059	2,013	1,891	#N/A	1,957	1,941	1,903	1,724	1,815	1,848	1,885	1,901
Nov-14	2,224	2,263	2,299	2,113	2,091	1,874	2,102	2,047	1,997	2,524	1,874	1,935	1,885	1,766	1,831	1,865	1,892	1,911
Dec-14	2,233	2,327	2,333	2,103	2,081	1,916	2,093	2,030	1,987	2,672	1,882	1,922	1,879	1,776	1,826	1,868	1,879	1,875
Jan-15	2,212	2,342	2,424	2,077	2,071	1,835	2,058	1,986	1,955	2,976	1,907	1,931	1,844	1,791	1,816	1,828	1,851	1,841

Pad 102 Producers BHP [kPa]

Month	102-P01	102-P02	102-P03	102-P04	102-P05	102-P06	102-P07	102-P08	102-P09	102-P10	102-P11	102-P12	102-P13	102-P14	102-P15	102-P16	102-P17	102-P18	102-P21	102-P22
Feb-14	1,958	2,146	1,637	1,873	2,093	1,844	1,743	1,868	2,068	#N/A	#N/A	1,739	2,138	1,796	1,982	1,893	1,735	1,742	#N/A	#N/A
Mar-14	1,855	2,109	1,528	1,880	2,145	1,828	1,675	1,865	2,057	#N/A	#N/A	1,742	1,910	1,770	1,974	1,900	1,729	1,771	#N/A	#N/A
Apr-14	1,680	2,059	1,498	1,882	1,522	1,832	1,695	1,813	2,039	#N/A	#N/A	1,737	1,878	1,791	1,989	1,940	1,701	1,781	#N/A	#N/A
May-14	1,740	2,022	#N/A	1,897	1,488	1,801	1,677	1,764	1,944	#N/A	#N/A	1,710	1,927	1,897	1,999	2,013	1,703	1,789	#N/A	#N/A
Jun-14	1,855	2,051	#N/A	1,877	1,491	1,855	1,637	1,790	1,944	#N/A	#N/A	1,663	1,944	1,878	2,008	1,962	1,702	1,799	2,892	2,660
Jul-14	1,854	2,025	#N/A	1,850	1,510	1,741	1,481	1,746	1,915	#N/A	#N/A	1,601	1,937	1,857	1,988	1,953	1,684	1,796	2,695	2,655
Aug-14	1,855	2,054	1,974	1,888	1,549	1,787	1,576	1,788	1,931	#N/A	#N/A	1,651	1,949	1,859	2,005	1,968	1,683	1,806	2,333	2,578
Sep-14	2,298	2,579	#N/A	2,199	2,258	2,161	2,220	2,099	2,166	#N/A	#N/A	2,258	2,148	2,088	2,077	2,064	#N/A	1,891	2,484	2,524
Oct-14	1,777	1,794	1,801	1,547	1,910	1,689	1,464	1,646	1,751	#N/A	#N/A	1,519	1,772	1,814	1,843	1,821	1,476	1,633	2,443	2,475
Nov-14	2,202	1,890	1,837	1,709	1,548	1,734	1,502	1,591	1,793	2,515	#N/A	1,532	1,809	#N/A	1,820	1,815	1,505	1,680	2,480	2,558
Dec-14	2,168	1,887	1,846	1,738	1,565	1,829	1,431	1,592	1,765	#N/A	#N/A	1,514	1,825	#N/A	1,836	1,821	1,478	1,663	1,901	1,851
Jan-15	2,162	1,890	1,916	1,740	#N/A	1,744	1,431	1,674	1,817	#N/A	#N/A	1,564	1,799	#N/A	1,819	1,809	1,557	1,643	1,740	1,998

Surface vs Subsurface
Naming Convention Well Pad 101





Horizons

= WAB

= TopResSeis

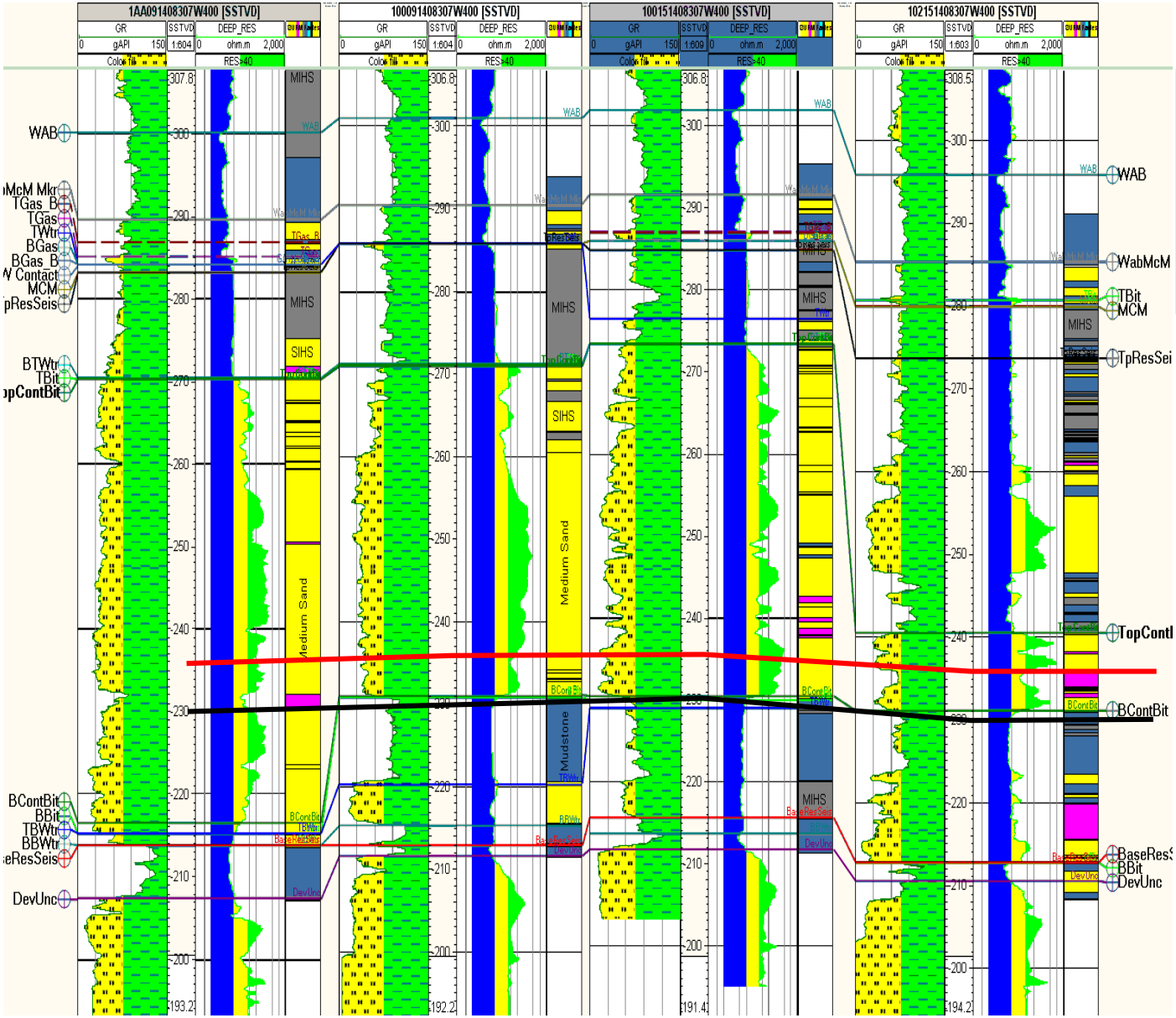
= BHL

Picks

= Casing Point

Gamma Ray Color Scale (API)

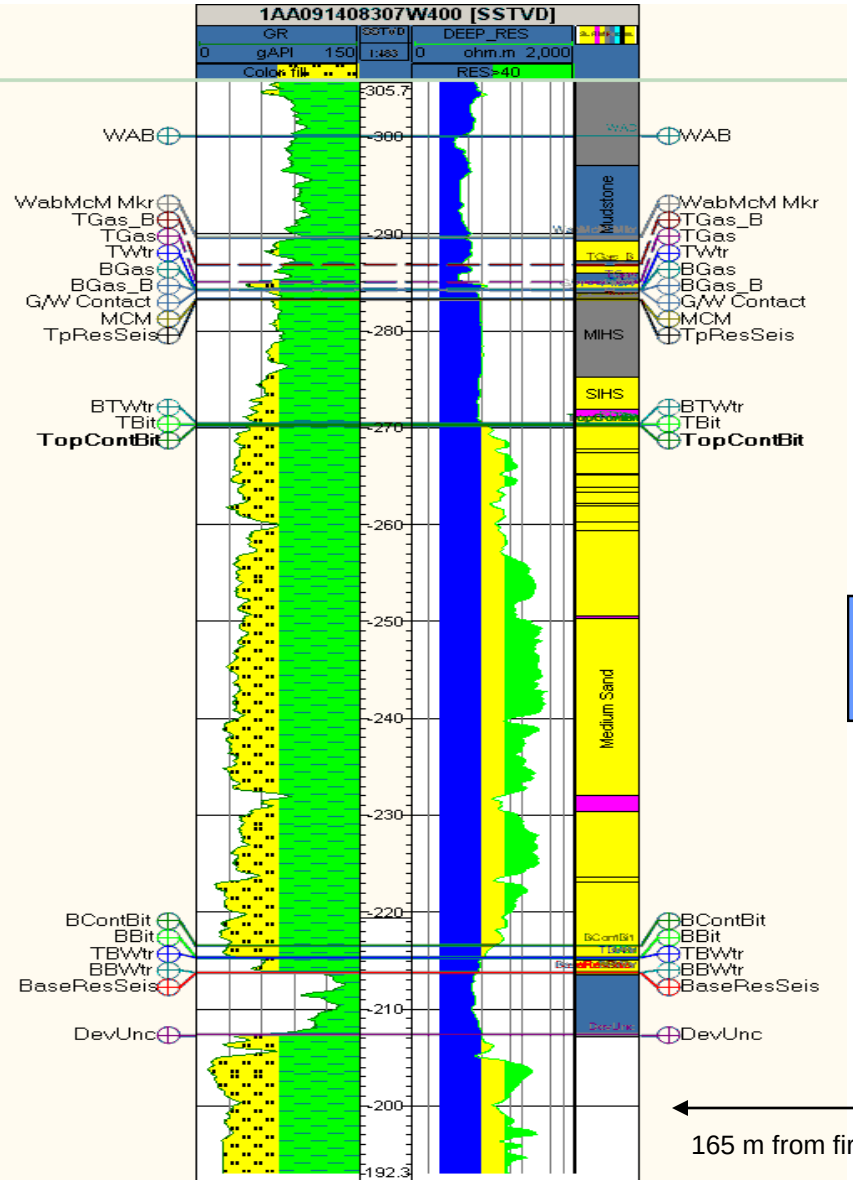
Integrated Seismic Trace

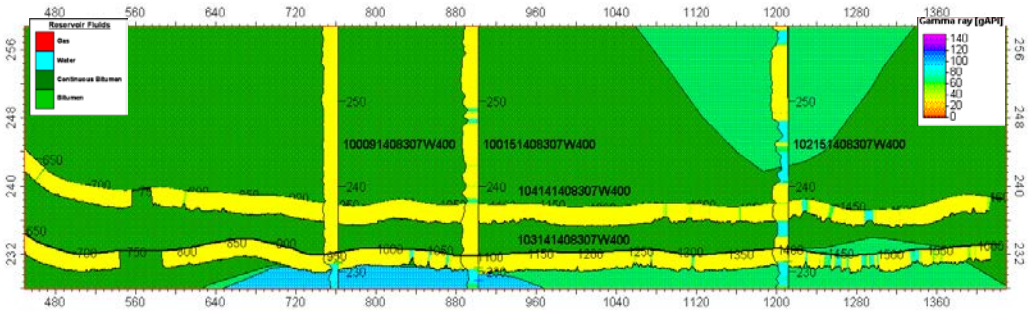


1. Started up in March 2011
2. Converted to SAGD mode in Aug. 2011
3. 4 observation wells. Only 2 equipped with thermocouples and piezometers

Inj depth 238 mASL

Prod depth232 mASL

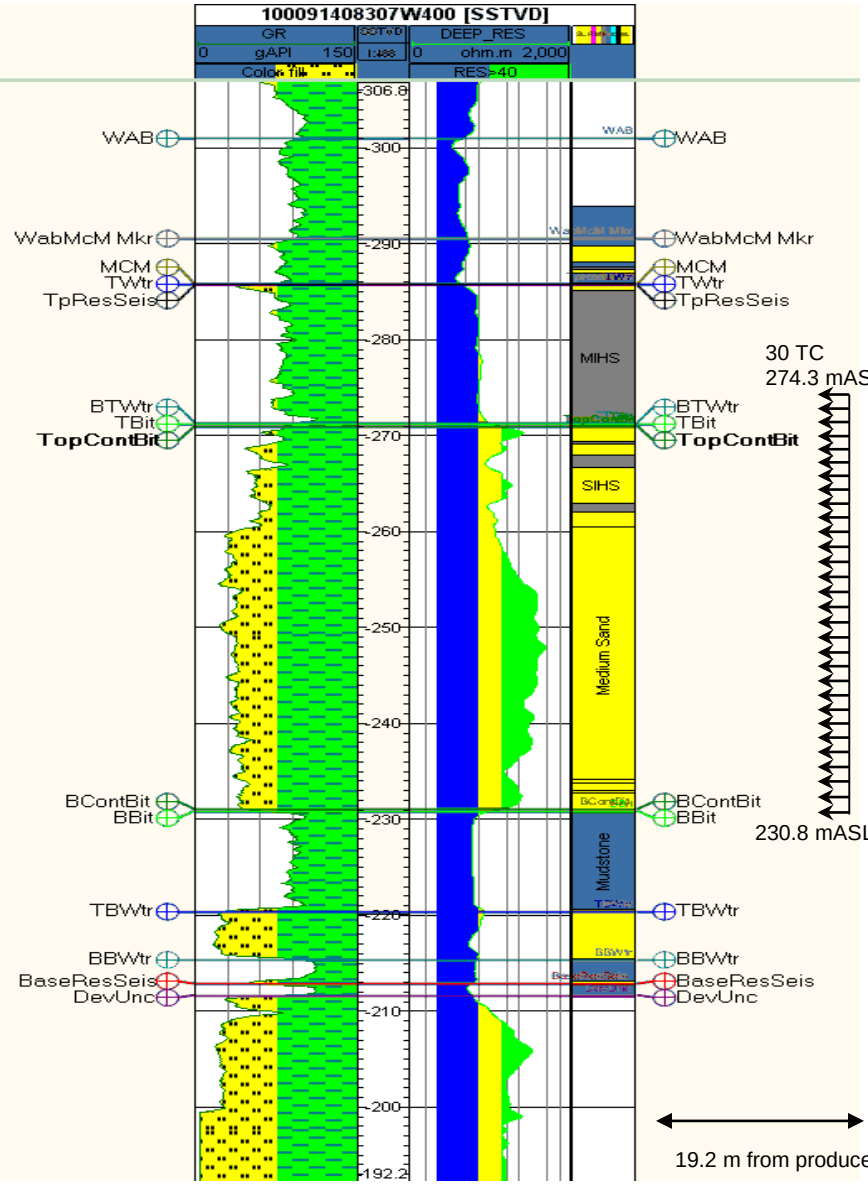


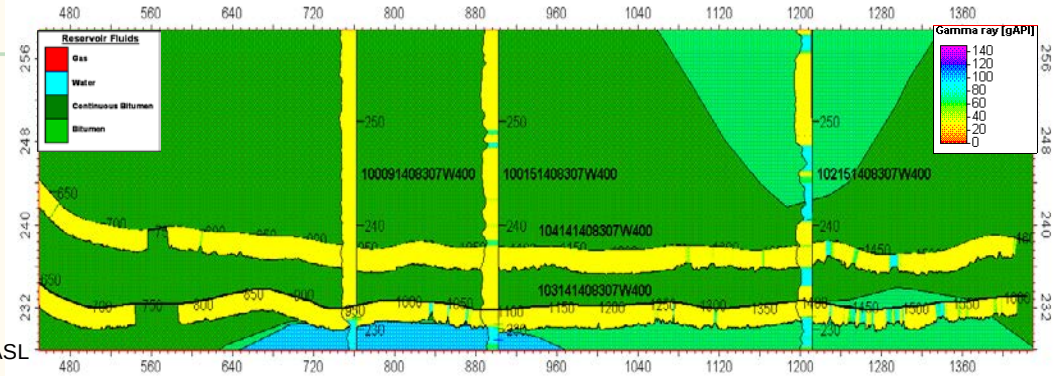


⇦ Piezo 1: 271.6 mASL

- **Piezometer not reporting data**
- **No TC's**

↔ 165 m from first producer slotted liner joint





Injector: 238 mASL

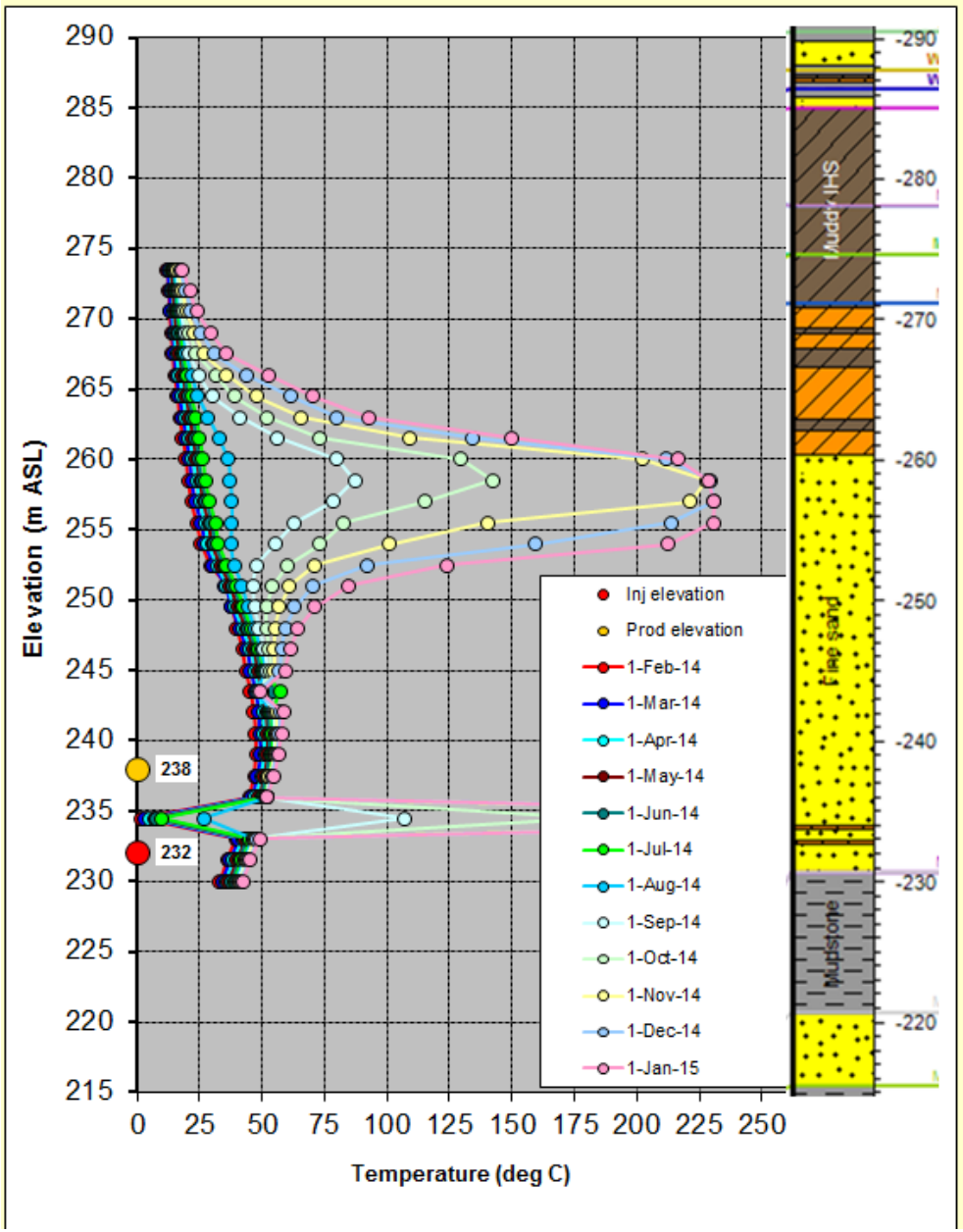
Producer: 232 mASL

No Piezometer.

TC string installed in June 2011.

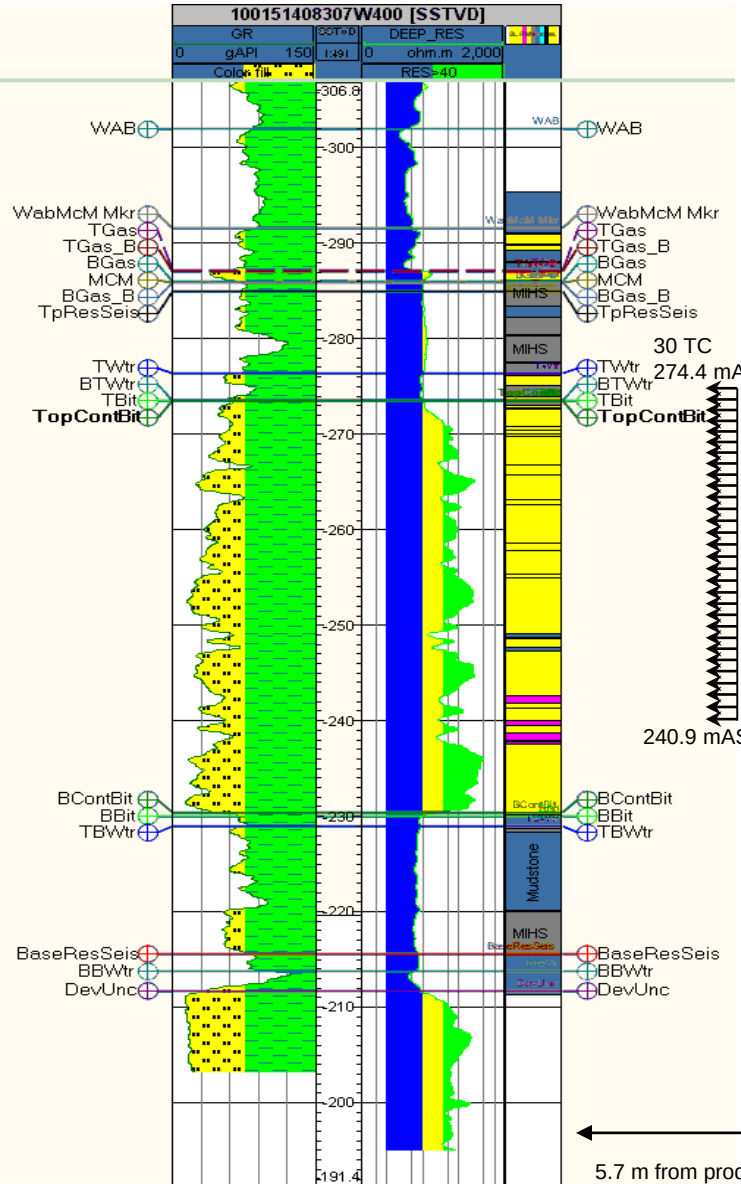
Because of ground condition and according to reservoir ranking list, 101-02 OBB surface connection was completed February 21, 2012.

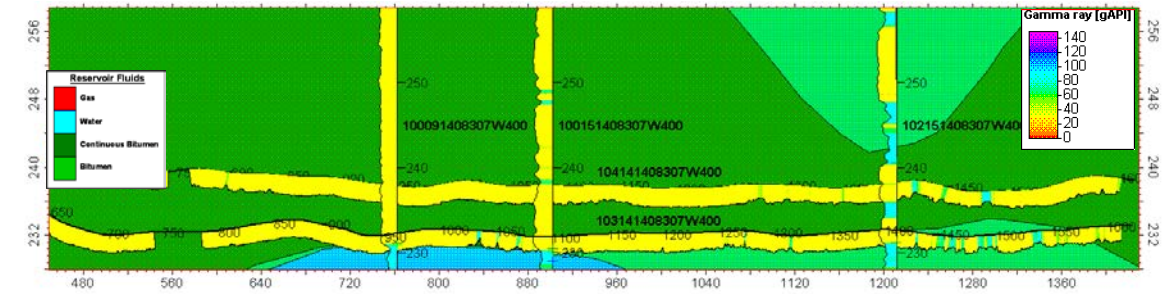
101-02 OBB
Temperature vs. Depth



TC string connected Feb. 21, 2012

No Piezometers





Piezo 10: 285.95 mASL

30 TC
274.4 mASL

Piezo 9: 278.7 mASL

Piezo 8: 274.7 mASL

Piezo 7: 272.2 mASL

Piezo 6: 264.2 mASL

Piezo 5: 260.7 mASL

Piezo 4: 253.7 mASL

Piezo 3: 248.2 mASL

Piezo 2: 242.7 mASL

240.9 mASL

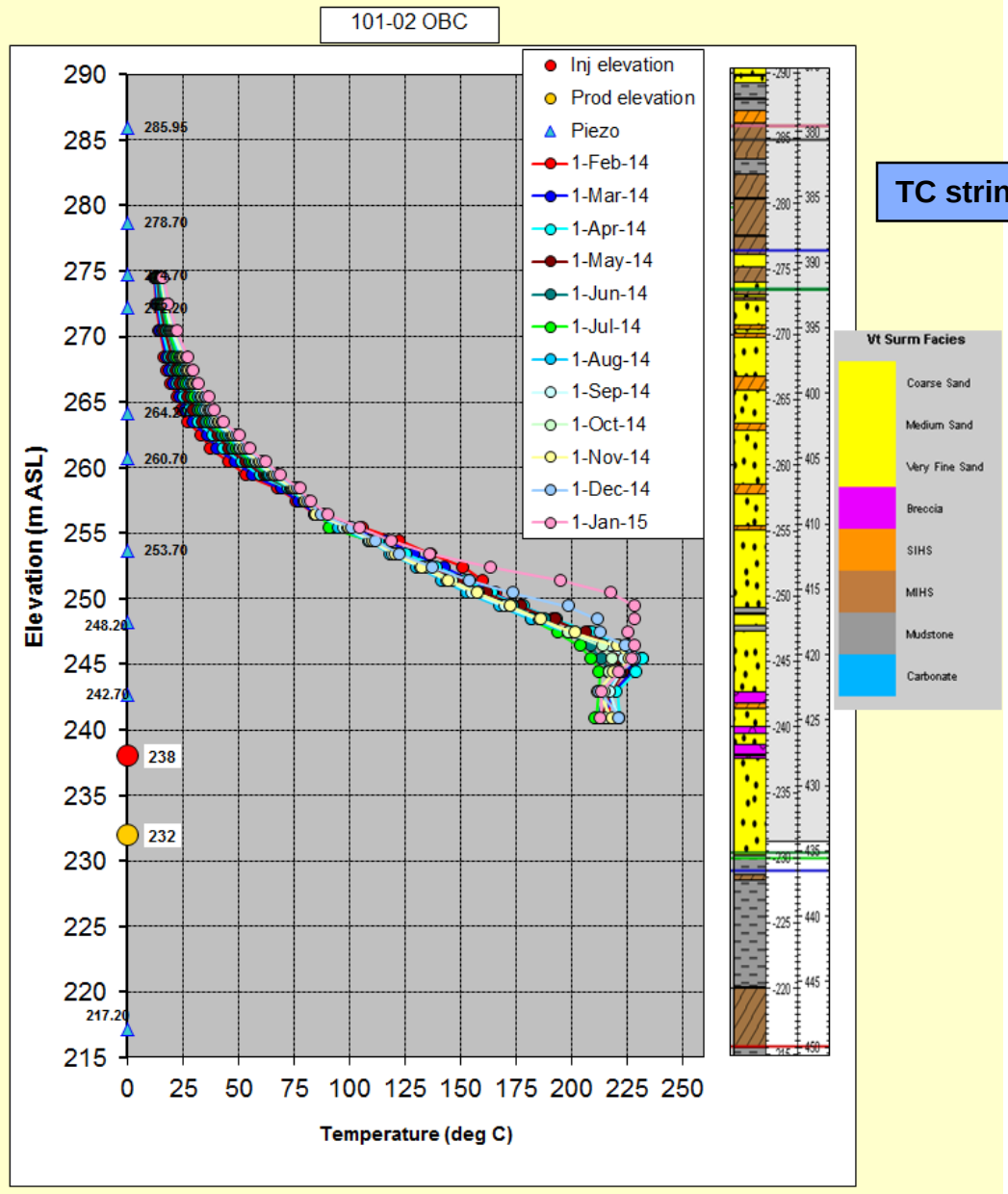
Injector: 238 mASL

Producer: 232 mASL

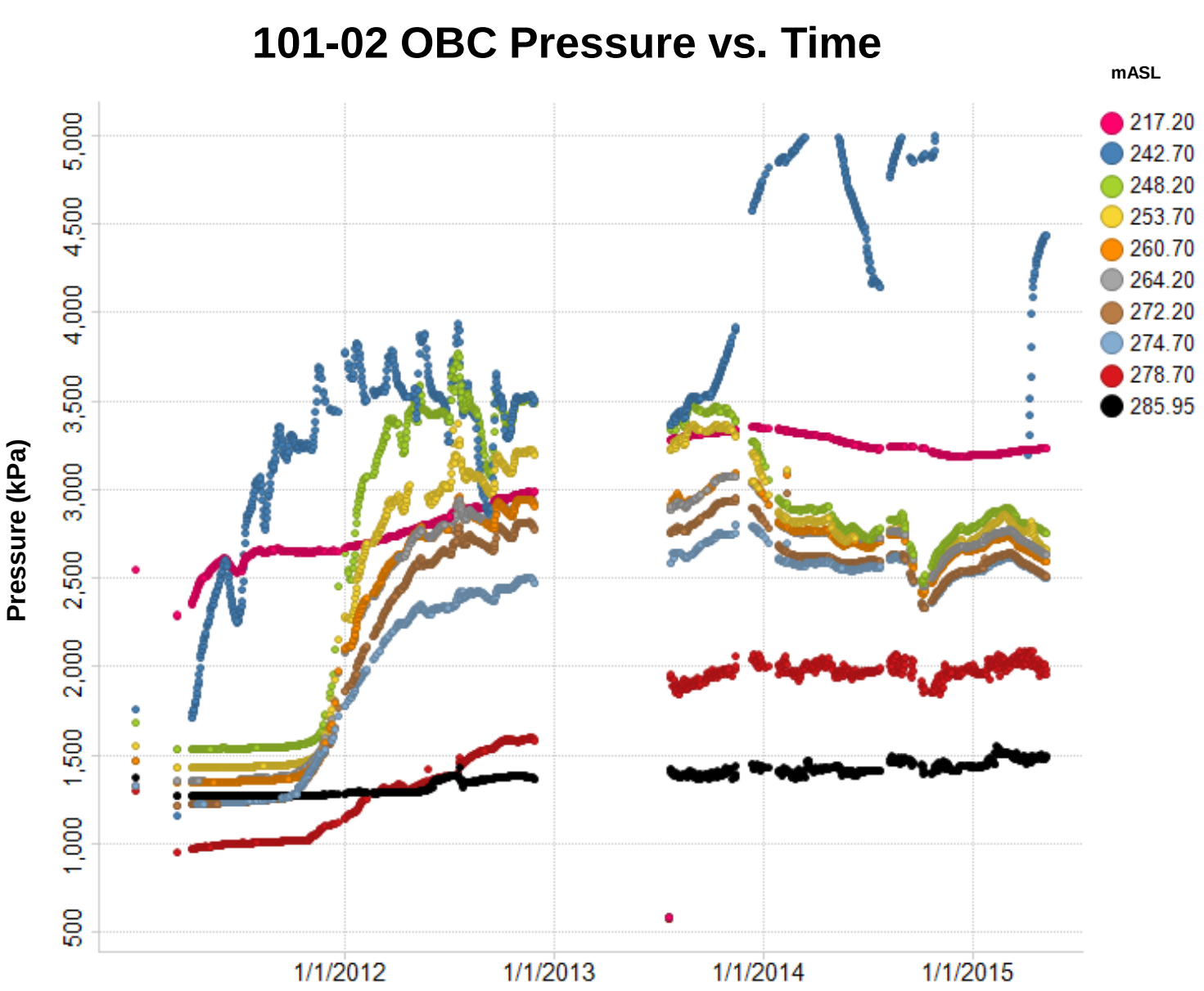
Piezo 1: 217.2 mASL

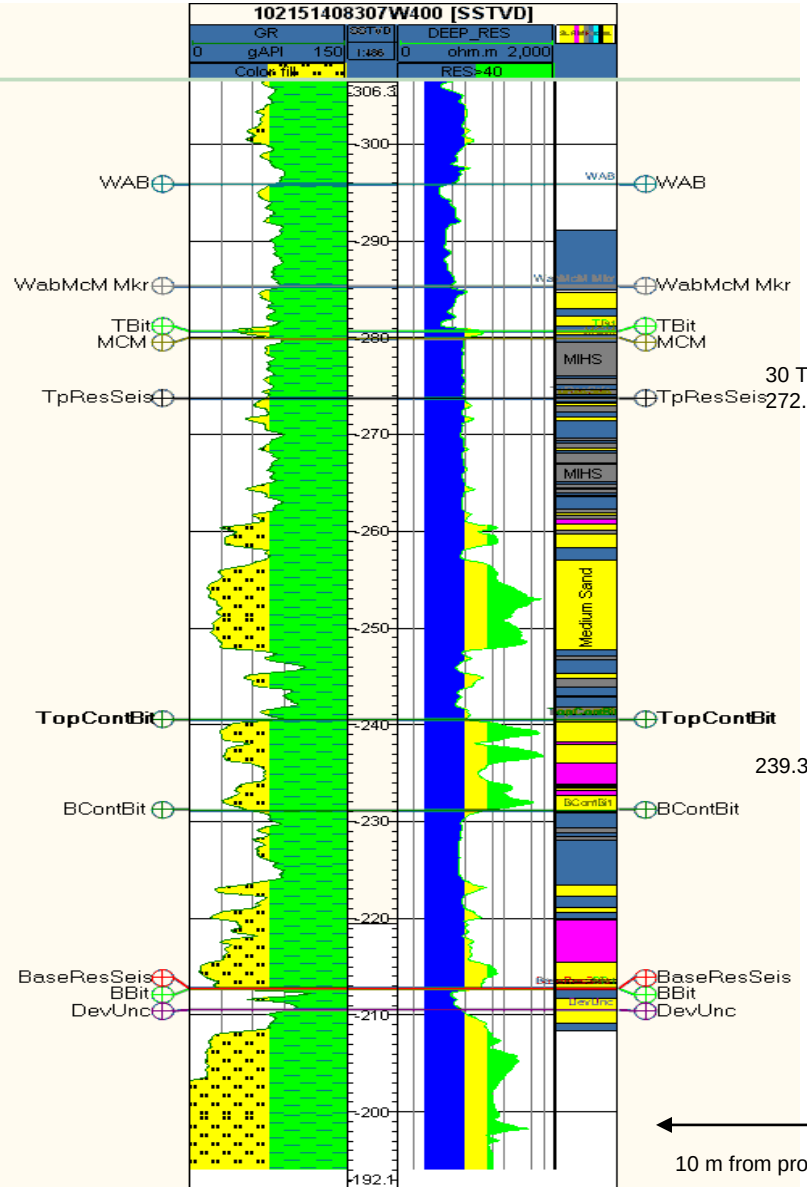
5.7 m from producer

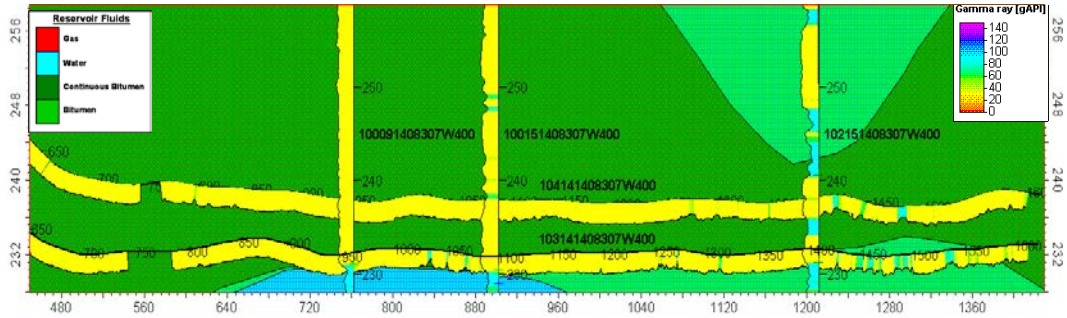
101-02 OBC
Temperature vs. Depth



TC string installed on March 14, 2011


101-02 OBC Pressure vs. Time
mASL
217.20
242.70
248.20
253.70
260.70
264.20
272.20
274.70
278.70
285.95
Pressure (kPa)
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
5,000
1/1/2012
1/1/2013
1/1/2014
1/1/2015





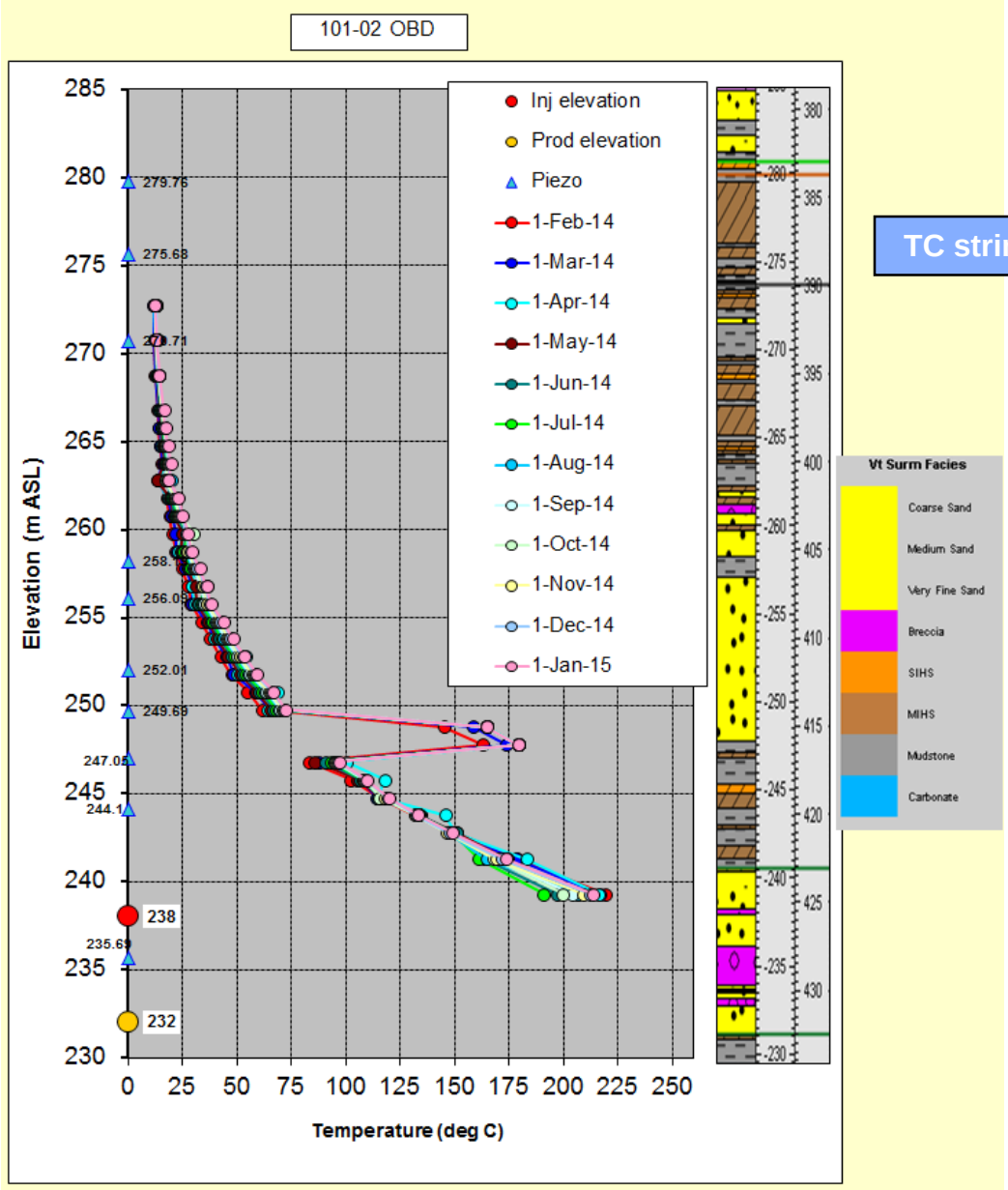
30 TC
272.8 mASL

239.3 mASL

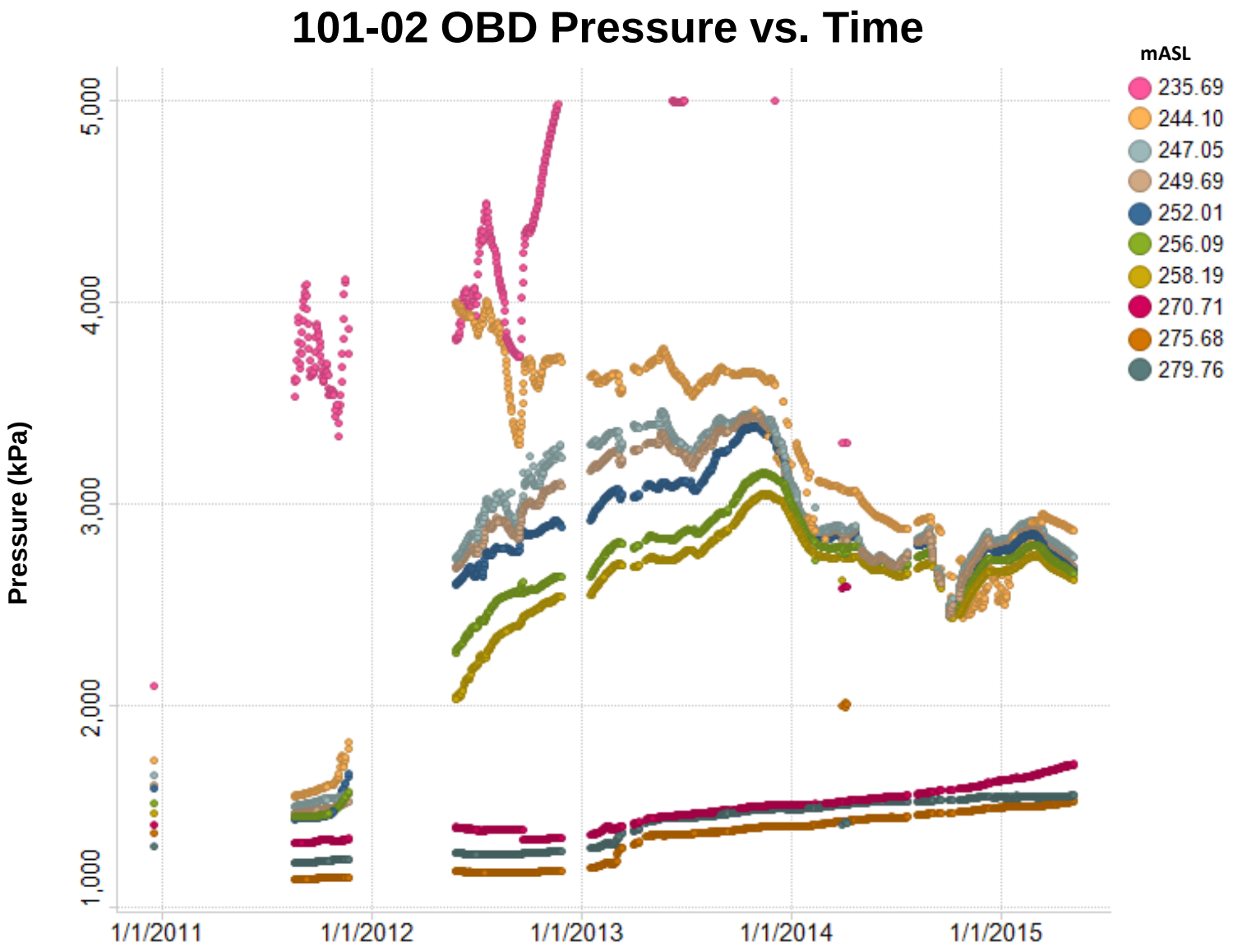
Piezo 10: 279.8 mASL
Piezo 9: 275.7 mASL
Piezo 8: 270.7 mASL
Piezo 7: 258.2 mASL
Piezo 6: 256.1 mASL
Piezo 5: 252.0 mASL
Piezo 4: 249.7 mASL
Piezo 3: 247.1 mASL
Piezo 2: 244.1 mASL
Injector: 238 mASL
Piezo 1: 235.7 mASL
Producer: 232 mASL

10 m from producer

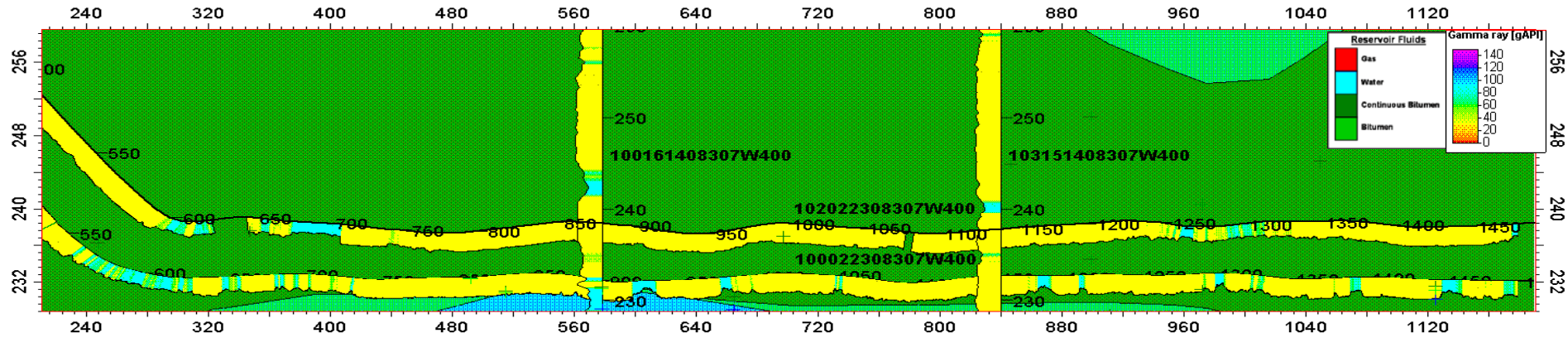
101-02 OBD
Temperature vs. Depth



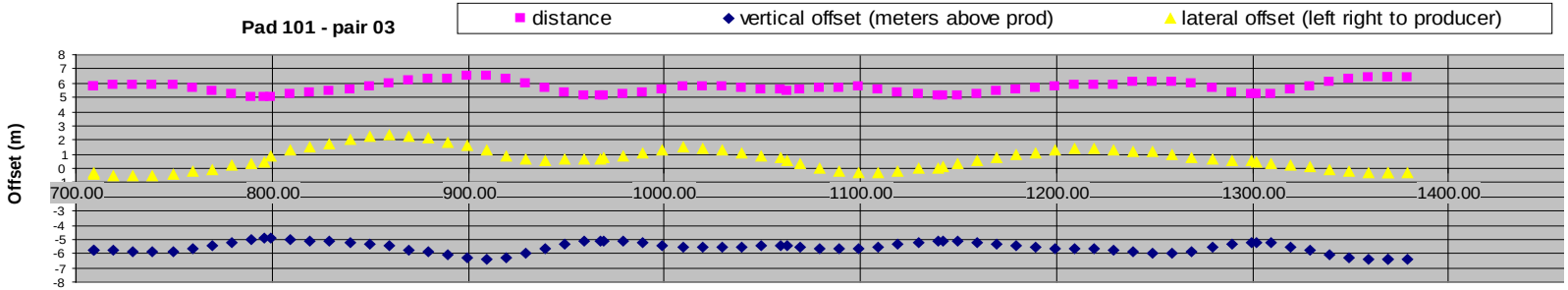
TC string installed on March 21, 2011


101-02 OBD Pressure vs. Time
Pressure (kPa)
5,000
4,000
3,000
2,000
1,000
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
mASL
235.69
244.10
247.05
249.69
252.01
256.09
258.19
270.71
275.68
279.76

Well Pair 101-03 (101-10)



Offset



injector

Liner OD 8.625" – 1491mKB MD

Heel string OD 7" – 597.2mKB MD (412mKB TVD)

Toe string OD 4.5" – 1466.3mKB MD (412.9mKB TVD)

TD: 1495mKB MD

Casing Shoe – 640mKB MD

Liner OD 7" – 1510.3mKB MD

Heel string OD 7" – 602.9mKB MD (418.23mKB TVD)

Toe string OD 4" – 1478.9mKB MD (419mKB TVD)

Bubble tube OD 0.25" – 592 MD (417.9mKB TVD)

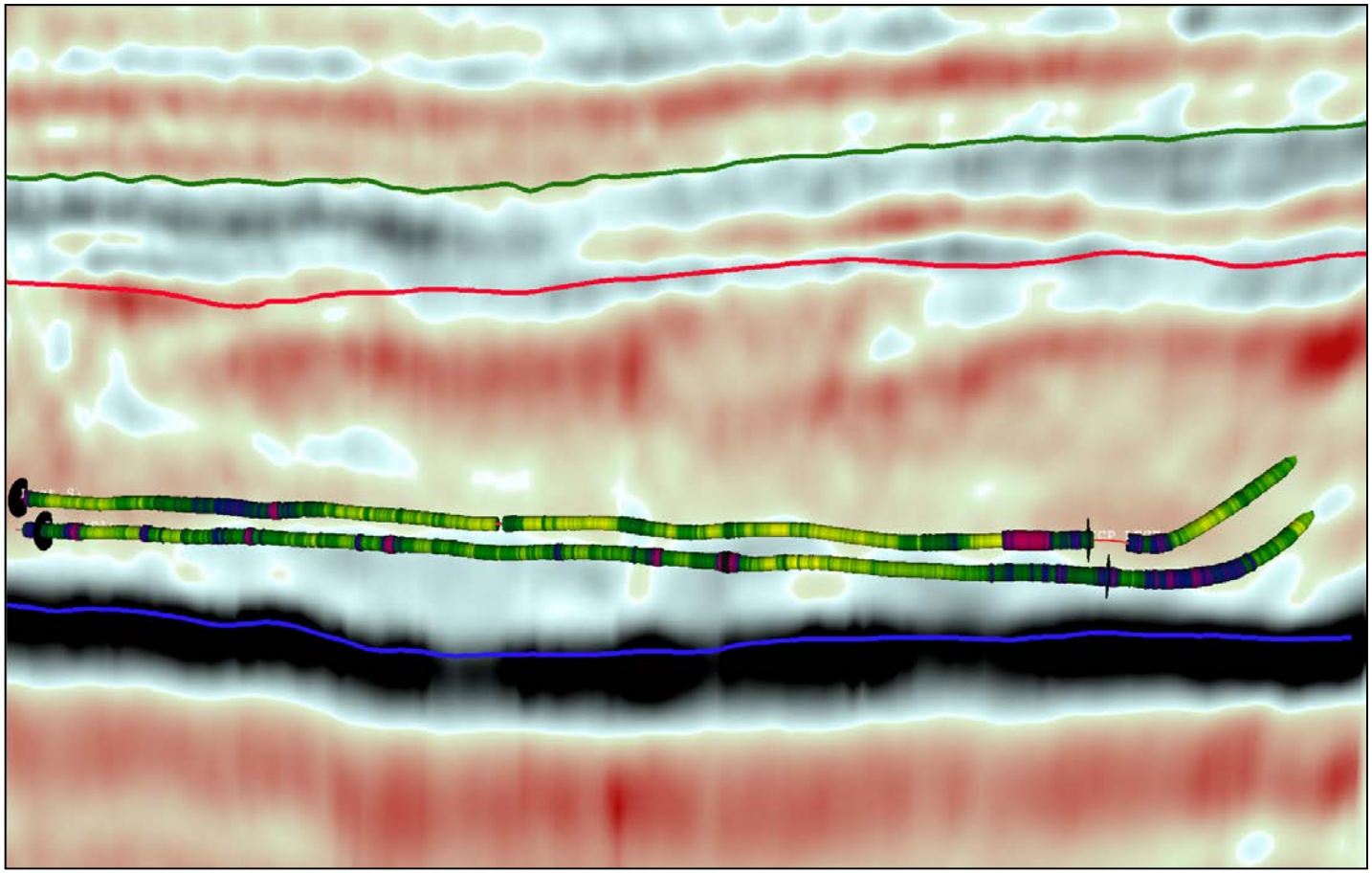
Inside Toe Ins. string OD 1.25" – 1476mKB MD (419.1mKB TVD)

TD: 1514mKB MD

Screen : 630mKB MD

producer

40 Point Fiber Optics – Distributed from 599mKB MD to 1472mKB MD



Horizons

= WAB

= TopResSeis

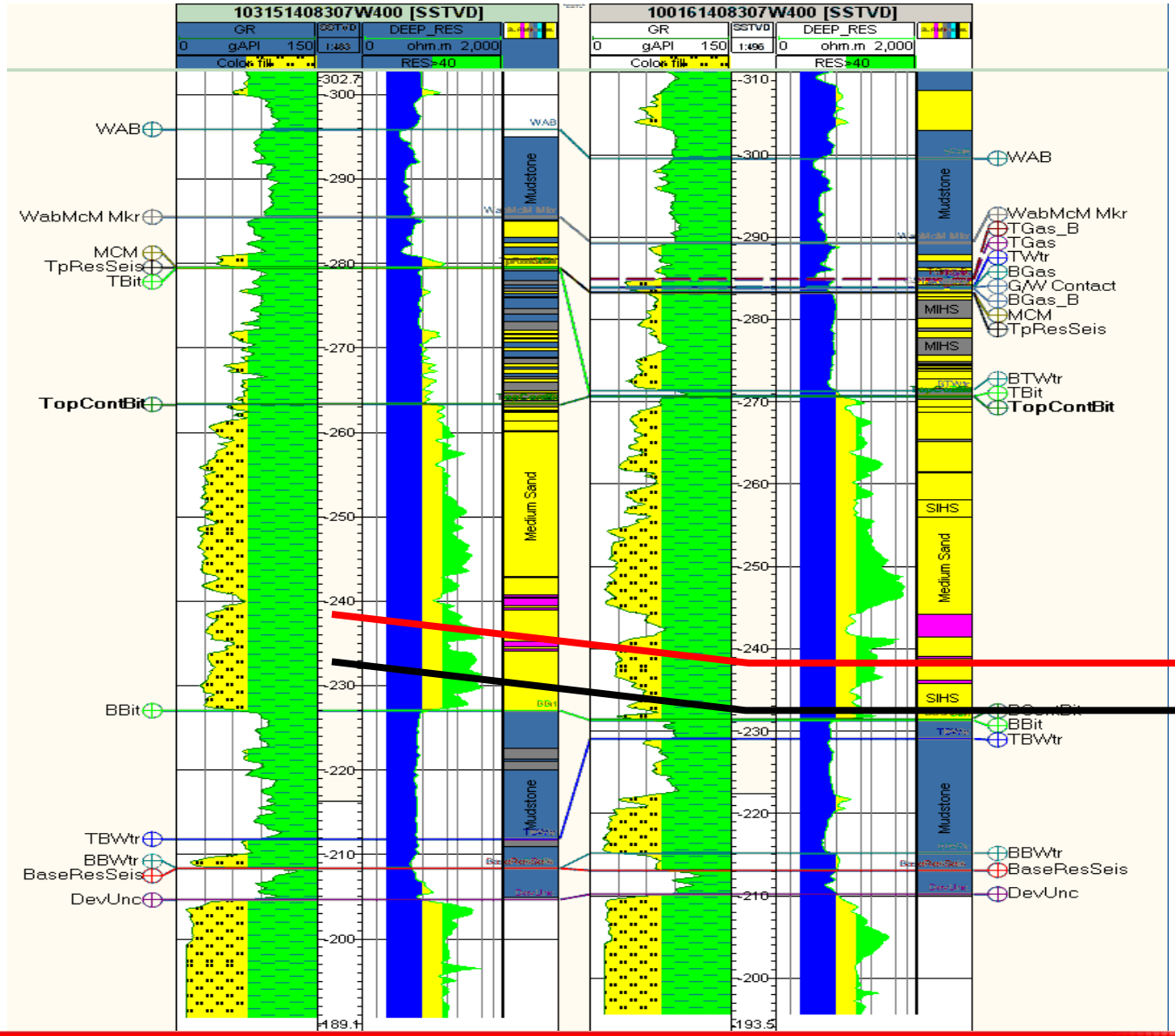
= BHL

Picks

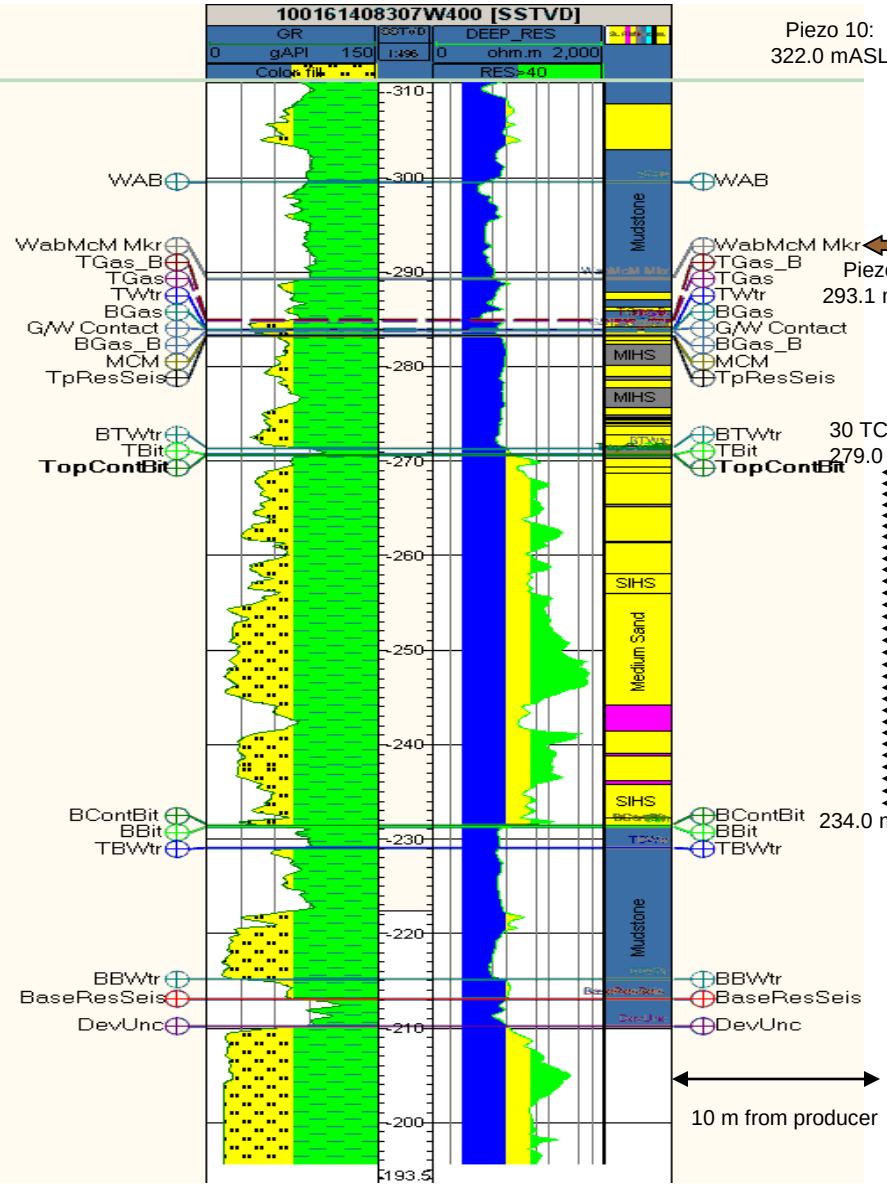
= Casing Point

Gamma Ray Color Scale (API)

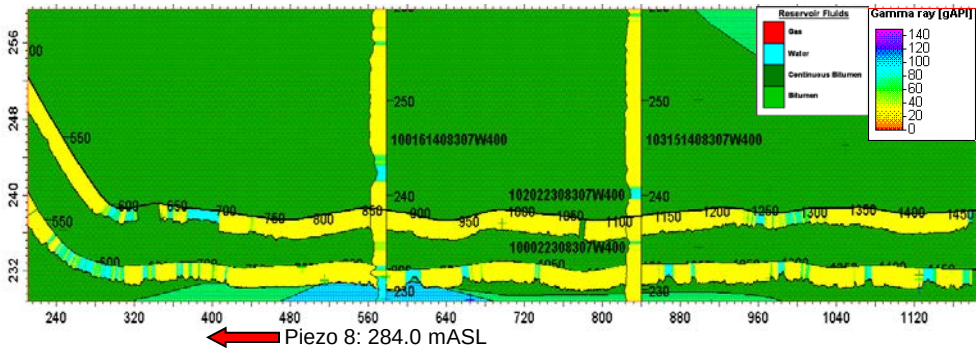
Integrated Seismic Trace



1. Started up in Feb. 2011
2. Converted to SAGD mode in Aug. 2011
3. 2 observation wells equipped with thermocouples and piezometers



Piezo 10: 322.0 mASL



Piezo 9: 293.1 mASL

Piezo 8: 284.0 mASL

30 TC 279.0 mASL

Piezo 7: 272.4 mASL

Piezo 6: 266.9 mASL

Piezo 5: 256.7 mASL

Piezo 4: 252.2 mASL

Piezo 3: 246.1 mASL

Piezo 2: 242.0 mASL

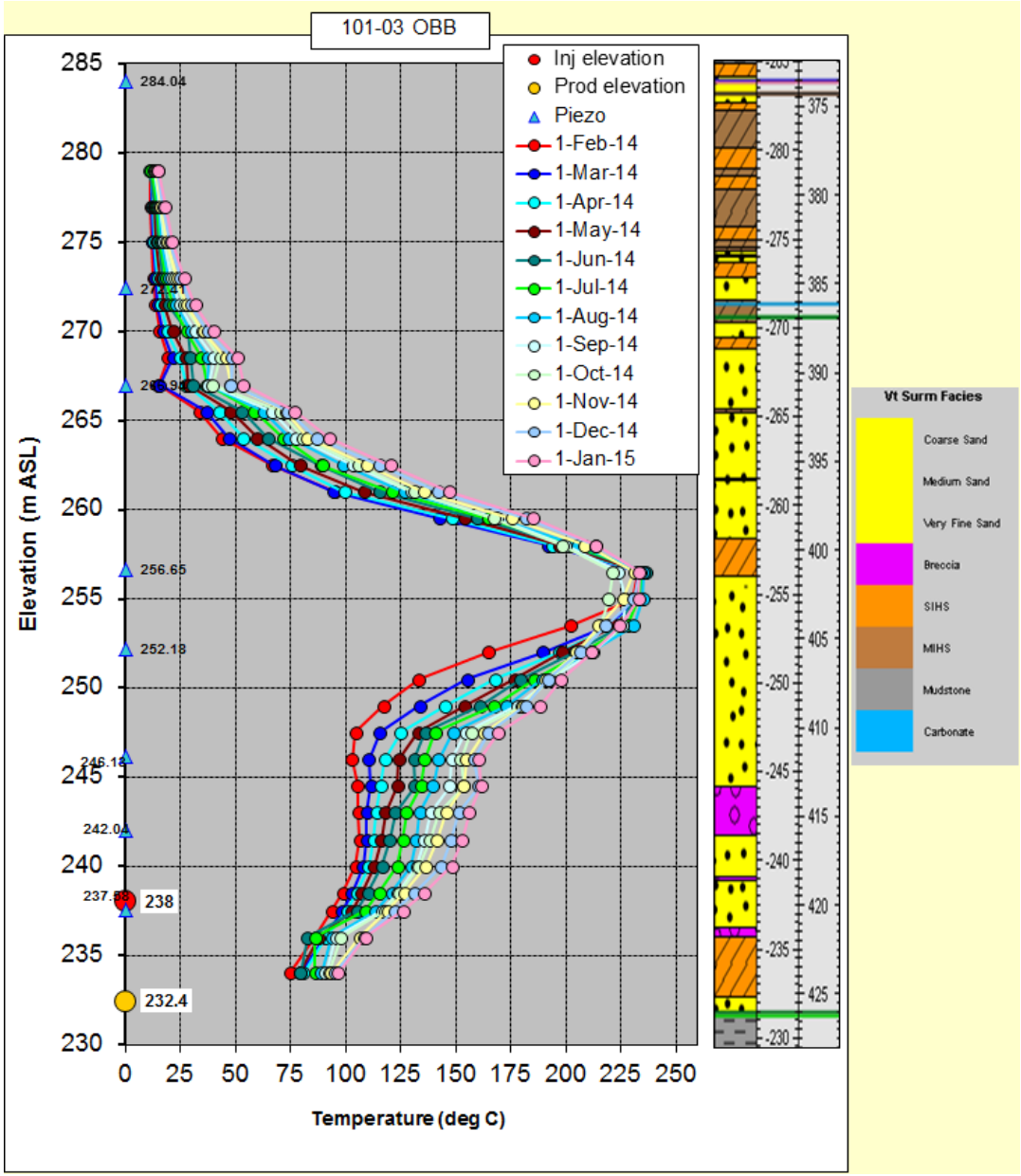
Piezo 1: 237.6 mASL

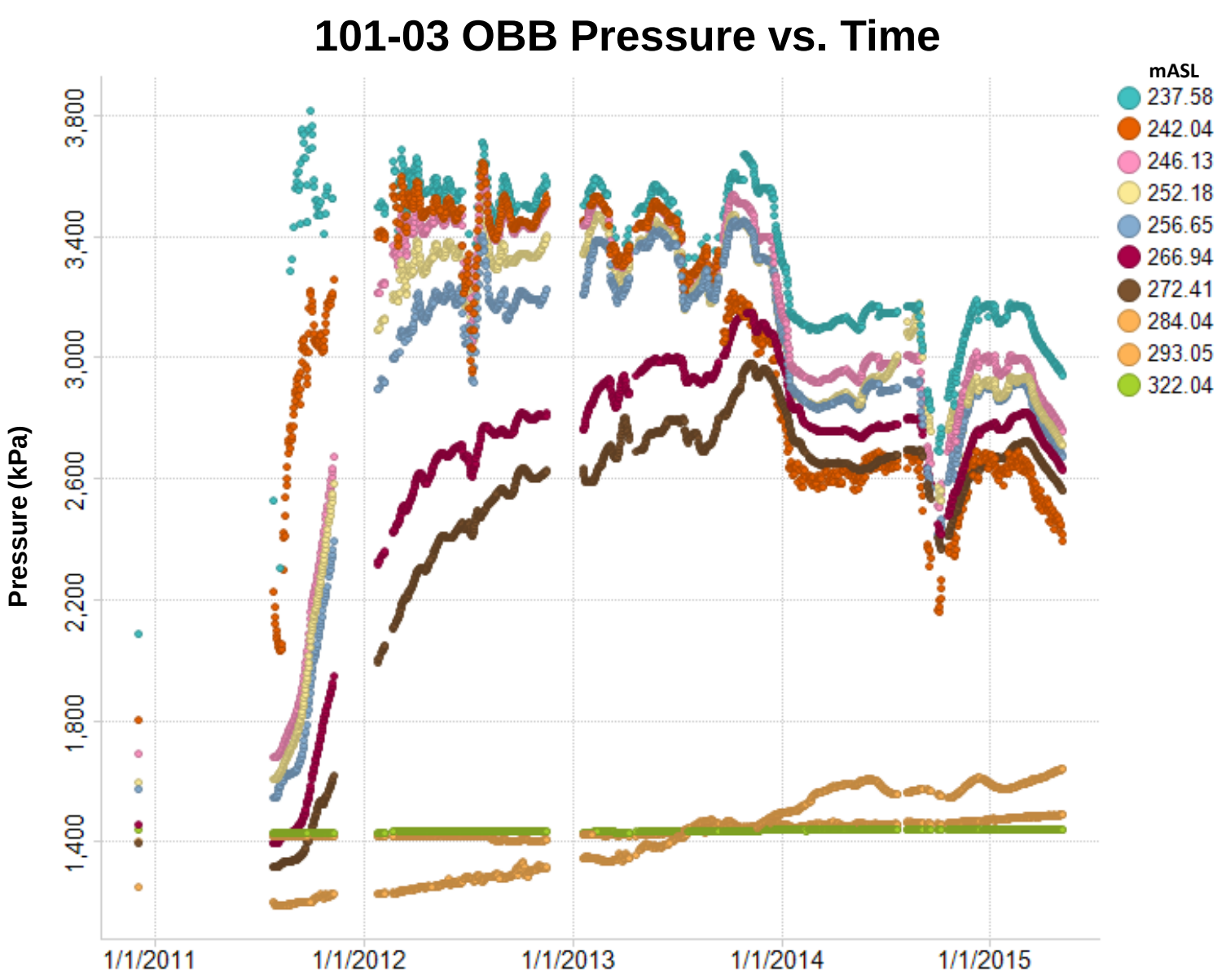
Injector: 238 mASL

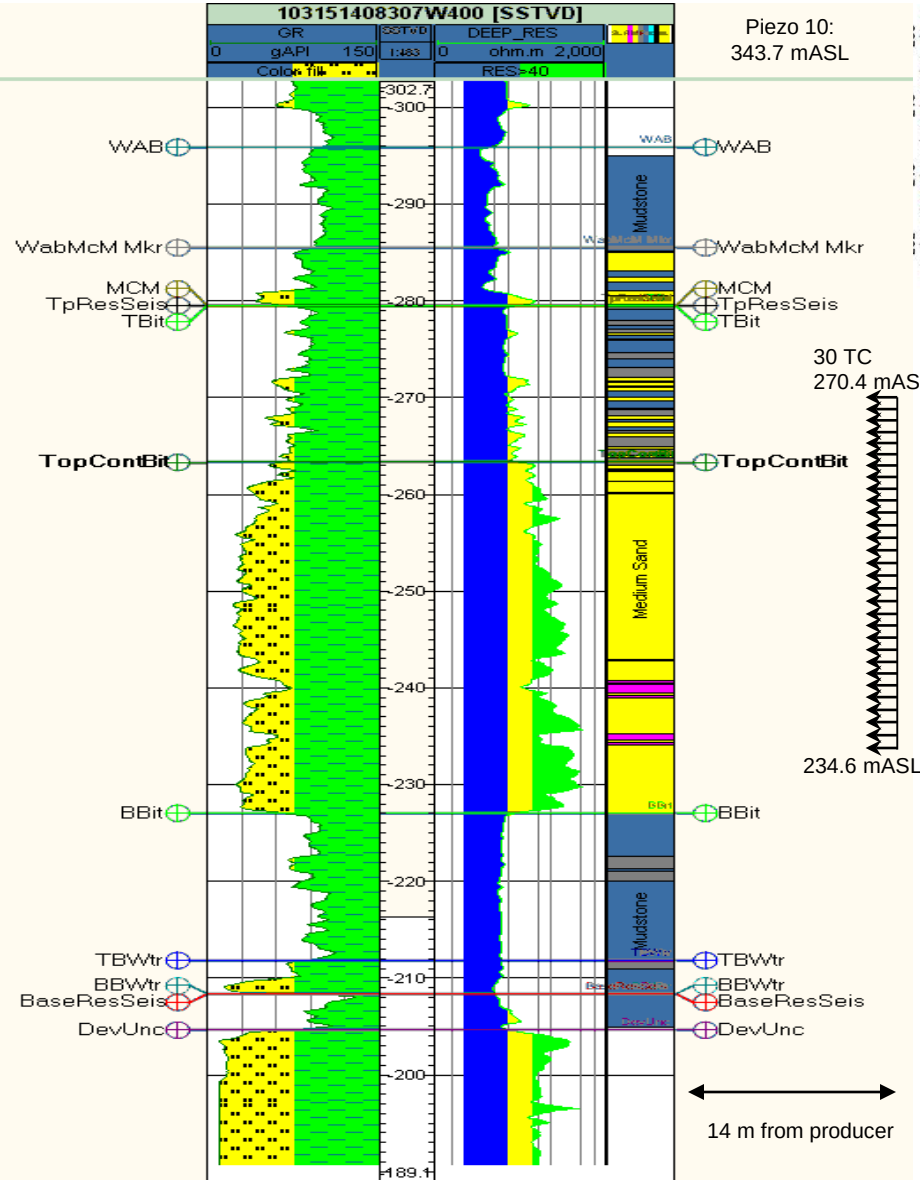
234.0 mASL

Producer: 232 mASL

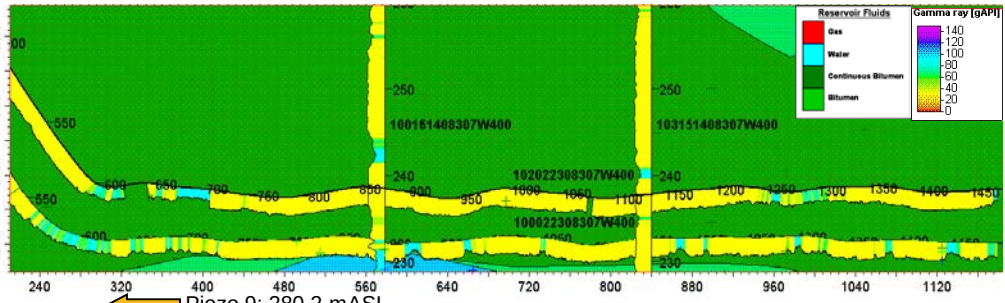
10 m from producer


101-03 OBB
Inj elevation
Prod elevation
Piezo
1-Feb-14
1-Mar-14
1-Apr-14
1-May-14
1-Jun-14
1-Jul-14
1-Aug-14
1-Sep-14
1-Oct-14
1-Nov-14
1-Dec-14
1-Jan-15
284.04
256.65
252.18
242.0
238
232.4
Elevation (m ASL)
Temperature (deg C)
Vt Surm Facies
Coarse Sand
Medium Sand
Very Fine Sand
Breccia
SIHS
MIHS
Mudstone
Carbonate


101-03 OBB Pressure vs. Time
Pressure (kPa)
1,400
1,800
2,200
2,600
3,000
3,400
3,800
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
mASL
237.58
242.04
246.13
252.18
256.65
266.94
272.41
284.04
293.05
322.04



Piezo 10:
343.7 mASL



Piezo 9: 280.2 mASL

Piezo 8: 275.7 mASL

Piezo 7: 271.7 mASL

30 TC
270.4 mASL

Piezo 6: 263.7 mASL

Piezo 5: 253.7 mASL

Piezo 4: 246.7 mASL

Piezo 3: 241.7 mASL

Injector: 238 mASL

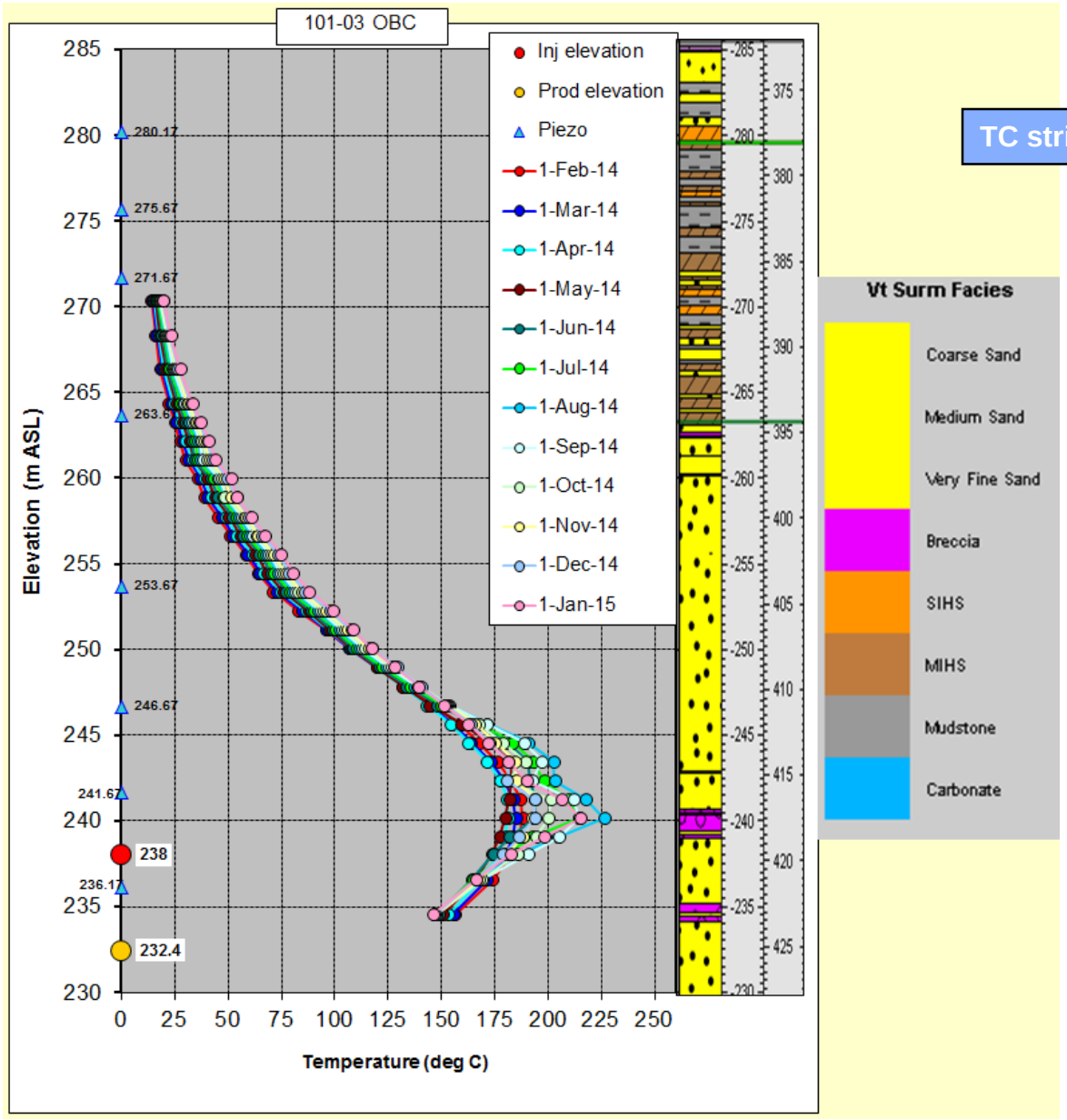
Piezo 2: 236.2 mASL

234.6 mASL

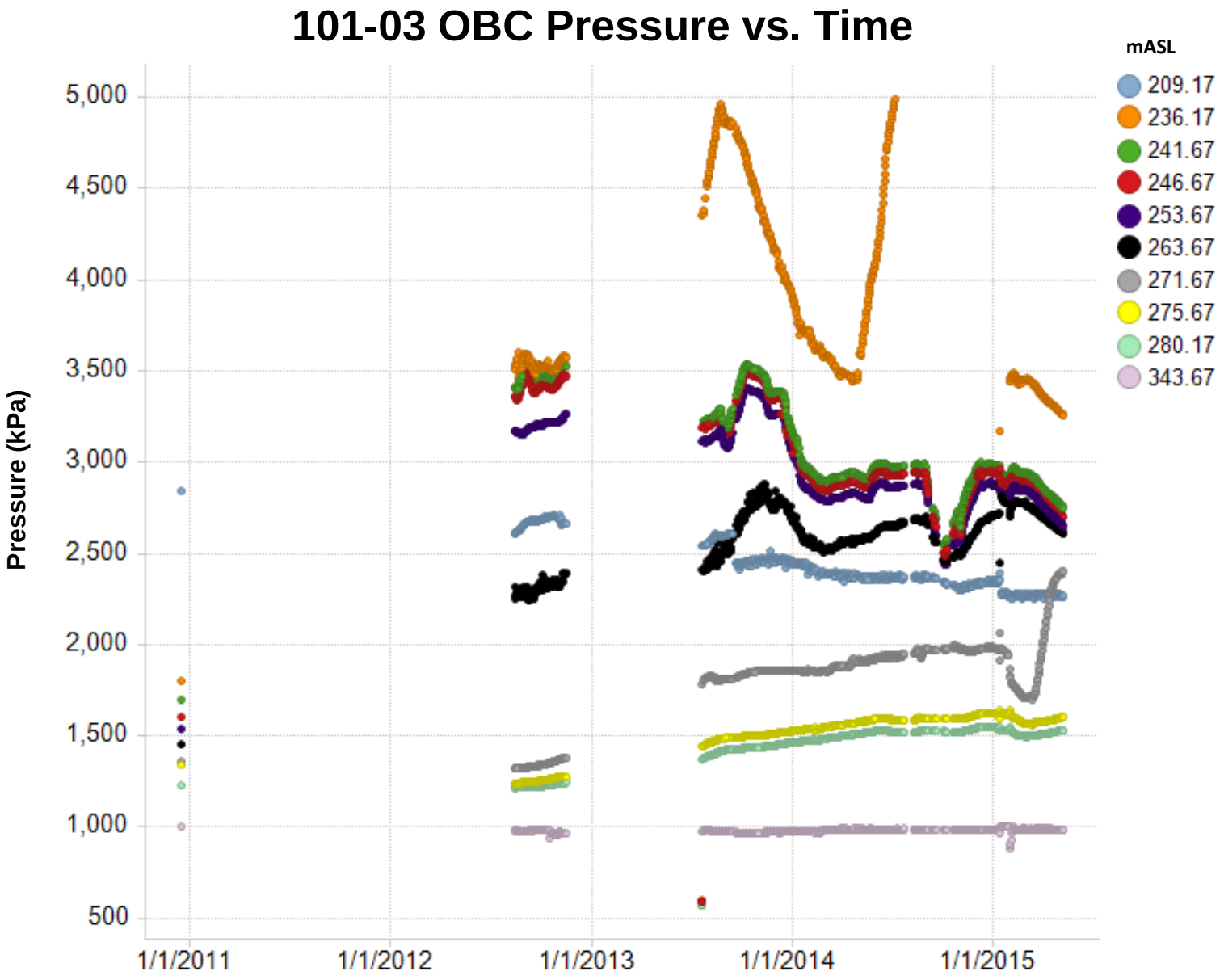
Producer: 232 mASL

Piezo 1: 209.2 mASL

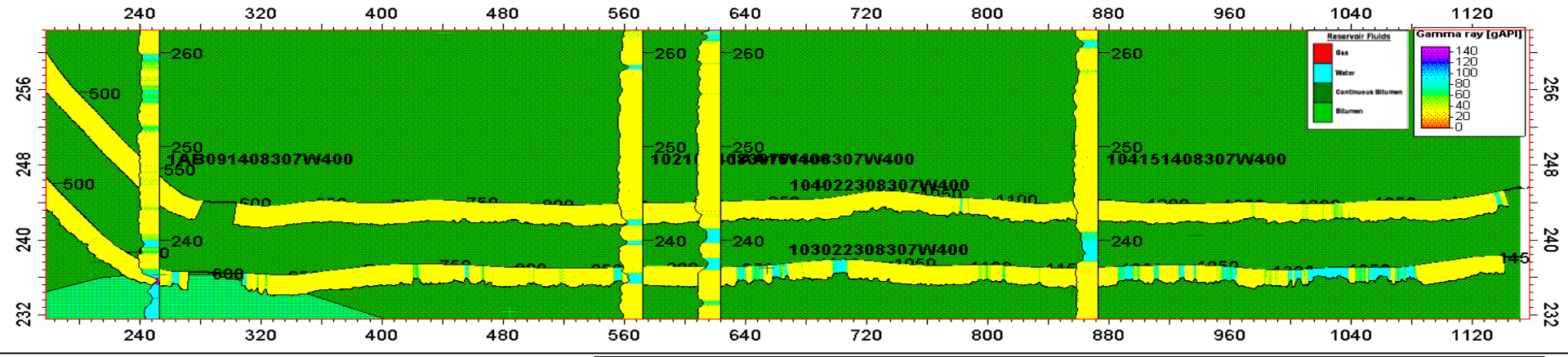
101-03 OBC
Temperature vs. Depth



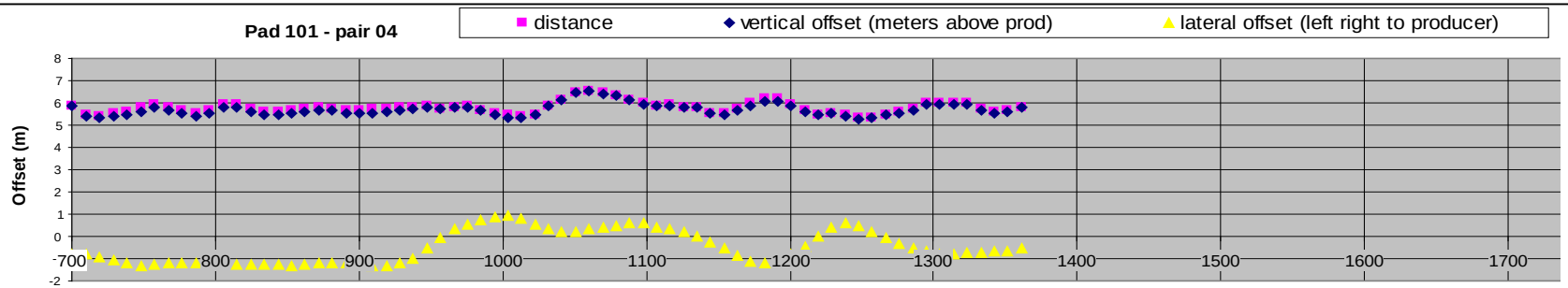
TC string installed on March 21, 2011

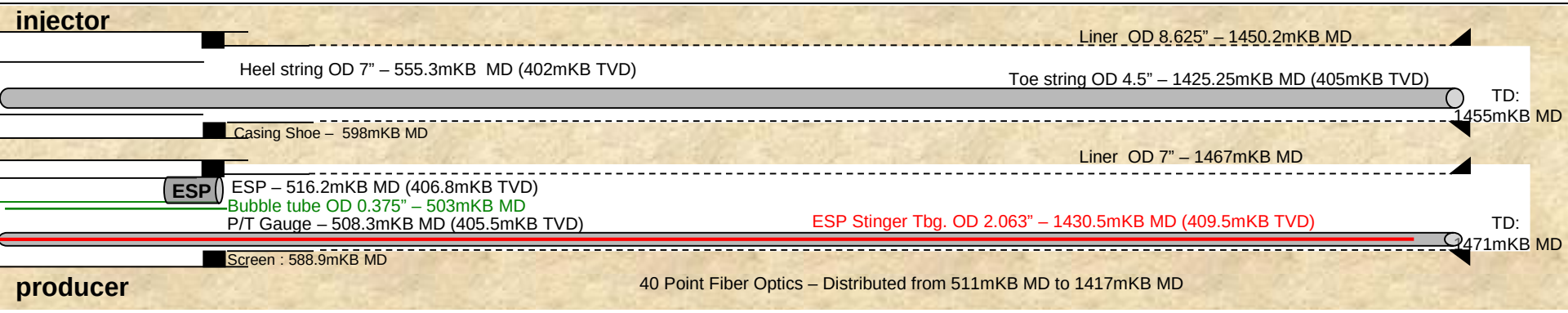

101-03 OBC Pressure vs. Time
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
mASL
209.17
236.17
241.67
246.67
253.67
263.67
271.67
275.67
280.17
343.67

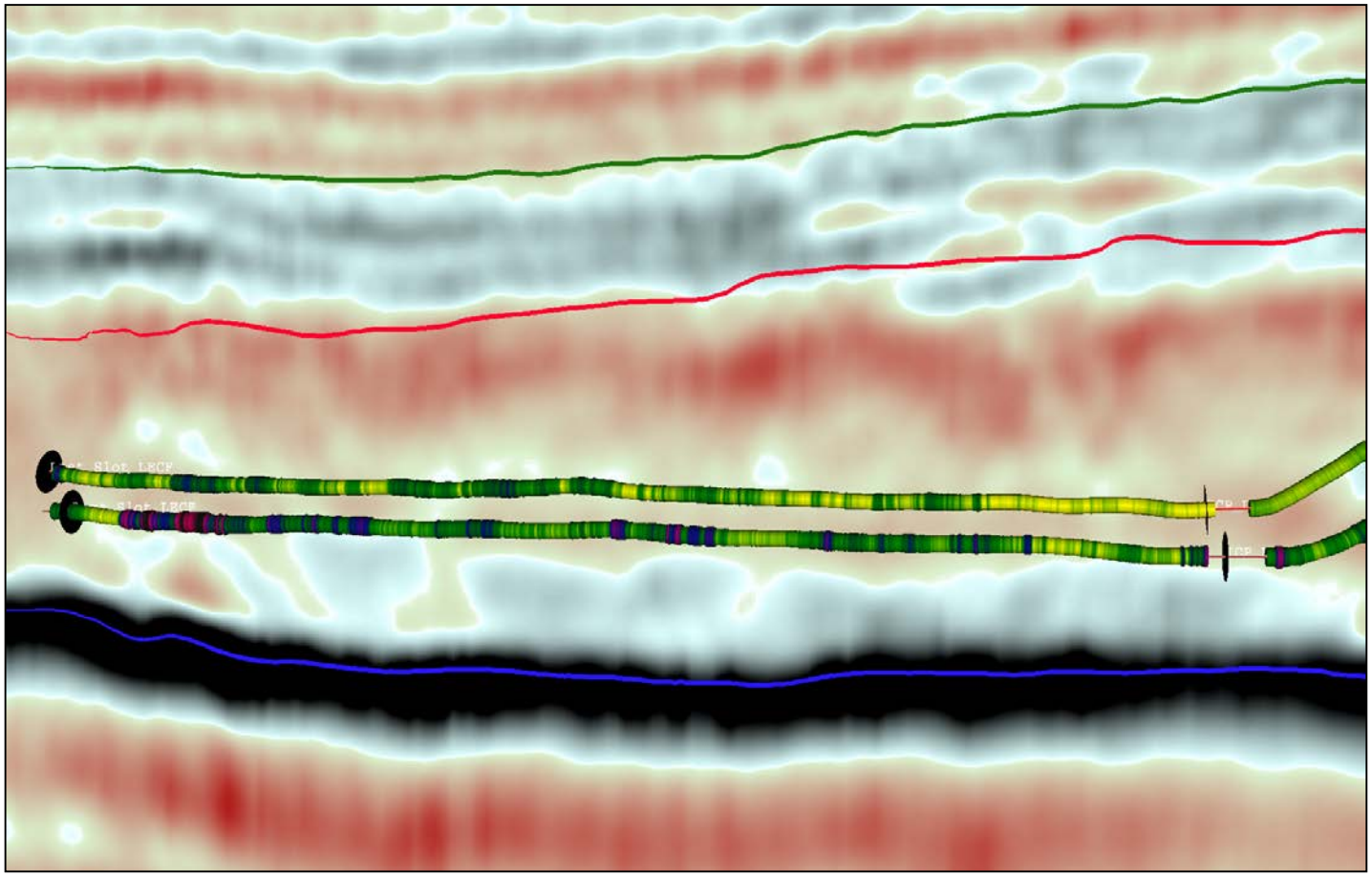
Well Pair 101-04 (101-11)



Offset







Horizons

= WAB

= TopResSeis

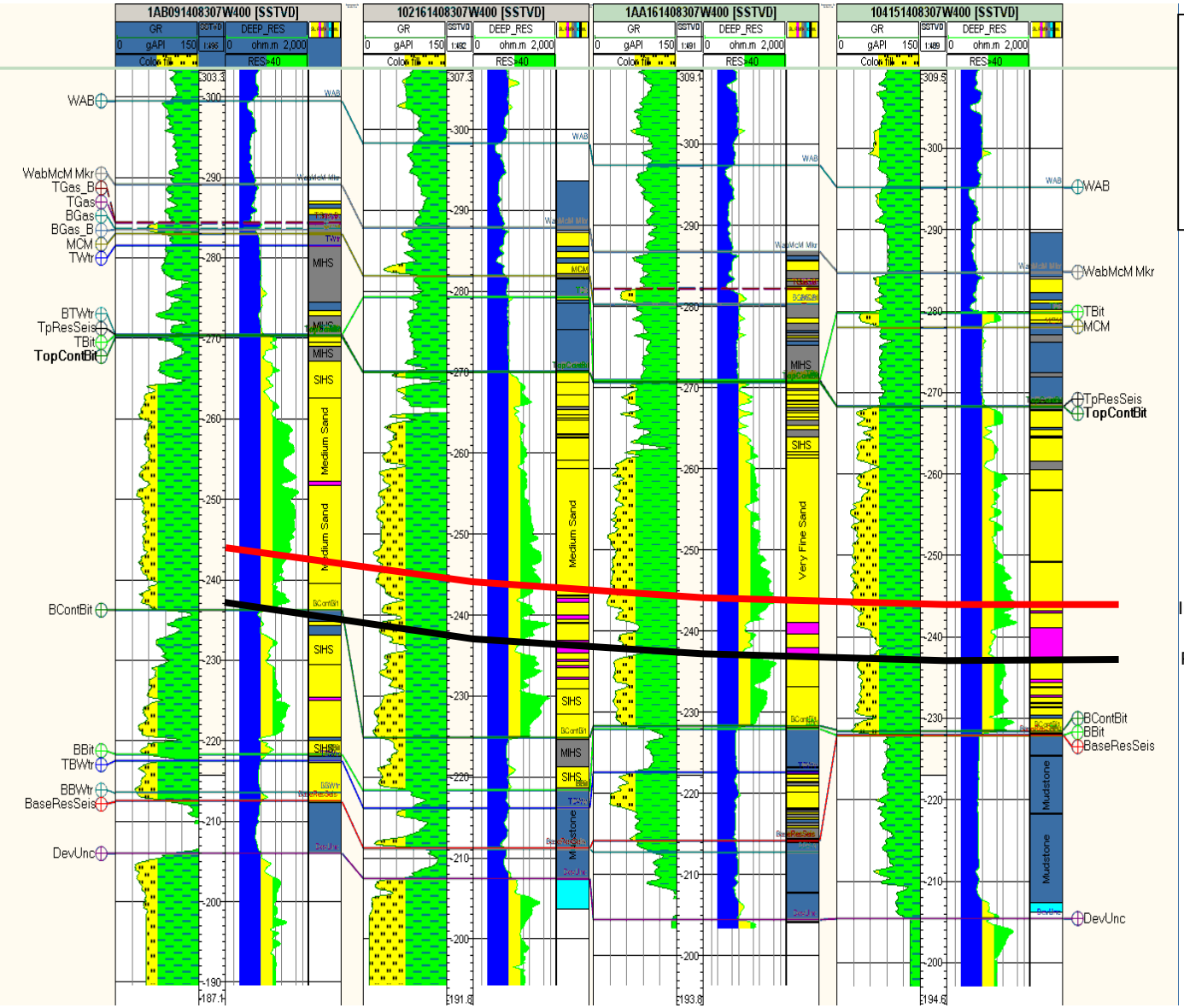
= BHL

Picks

= Casing Point

Gamma Ray Color Scale (API)

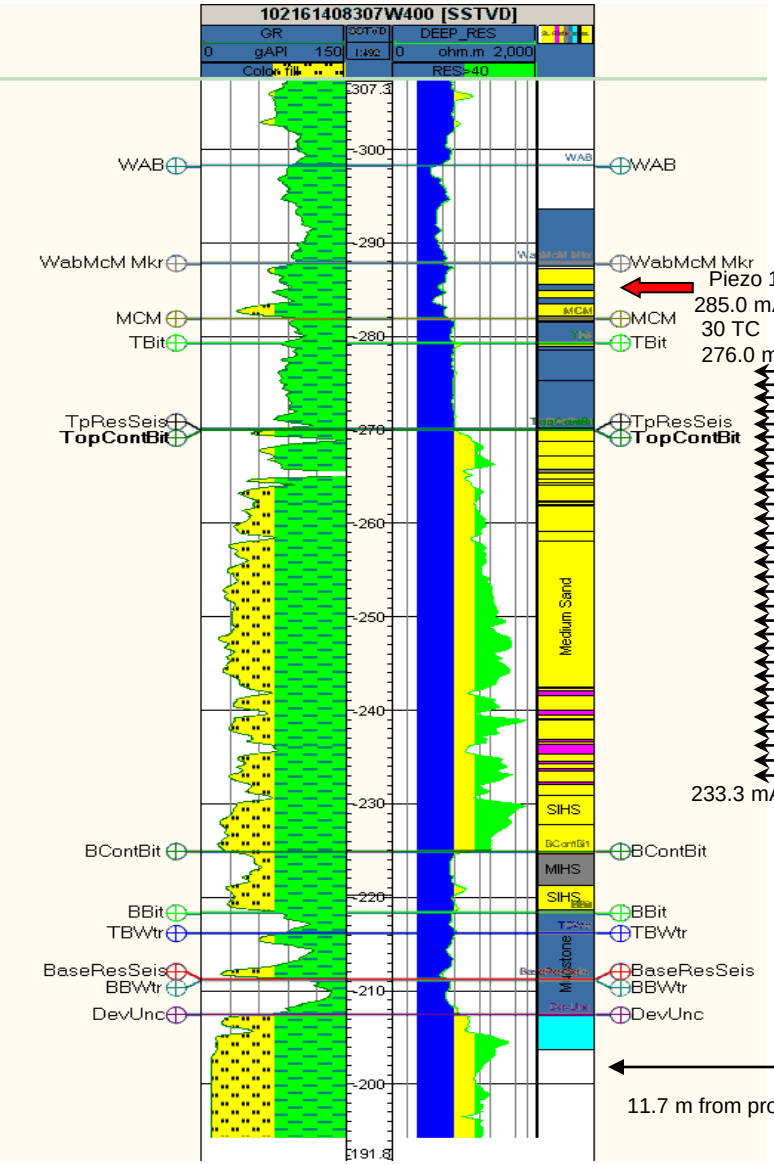
Integrated Seismic Trace

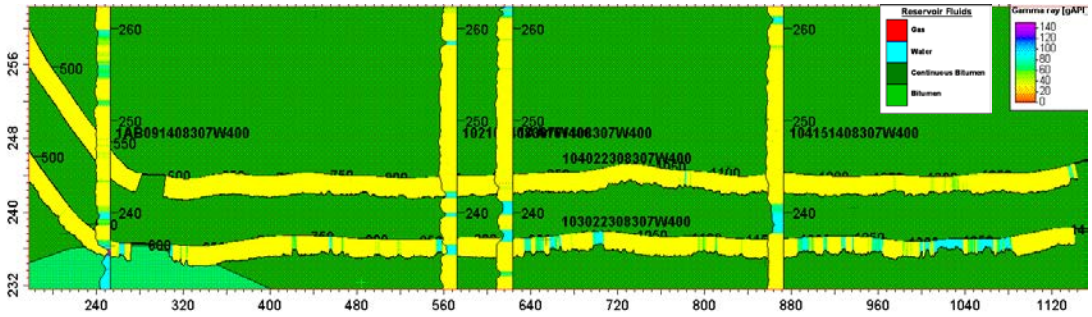


1. Started up in Feb. 2011
2. Converted to SAGD mode in Jul. 2011
3. 2 observation wells equipped with thermocouples and piezometers

Inj depth 244 mASL

Prod depth237 mASL





Piezo 10:
285.0 mASL
30 TC
276.0 mASL

233.3 mASL

Injector: 244 mASL

Producer: 237 mASL

11.7 m from producer

Piezo 9: 269.7 mASL

Piezo 8: 265.3 mASL

Piezo 7: 260.3 mASL

Piezo 6: 257.6 mASL

Piezo 5: 254.6 mASL

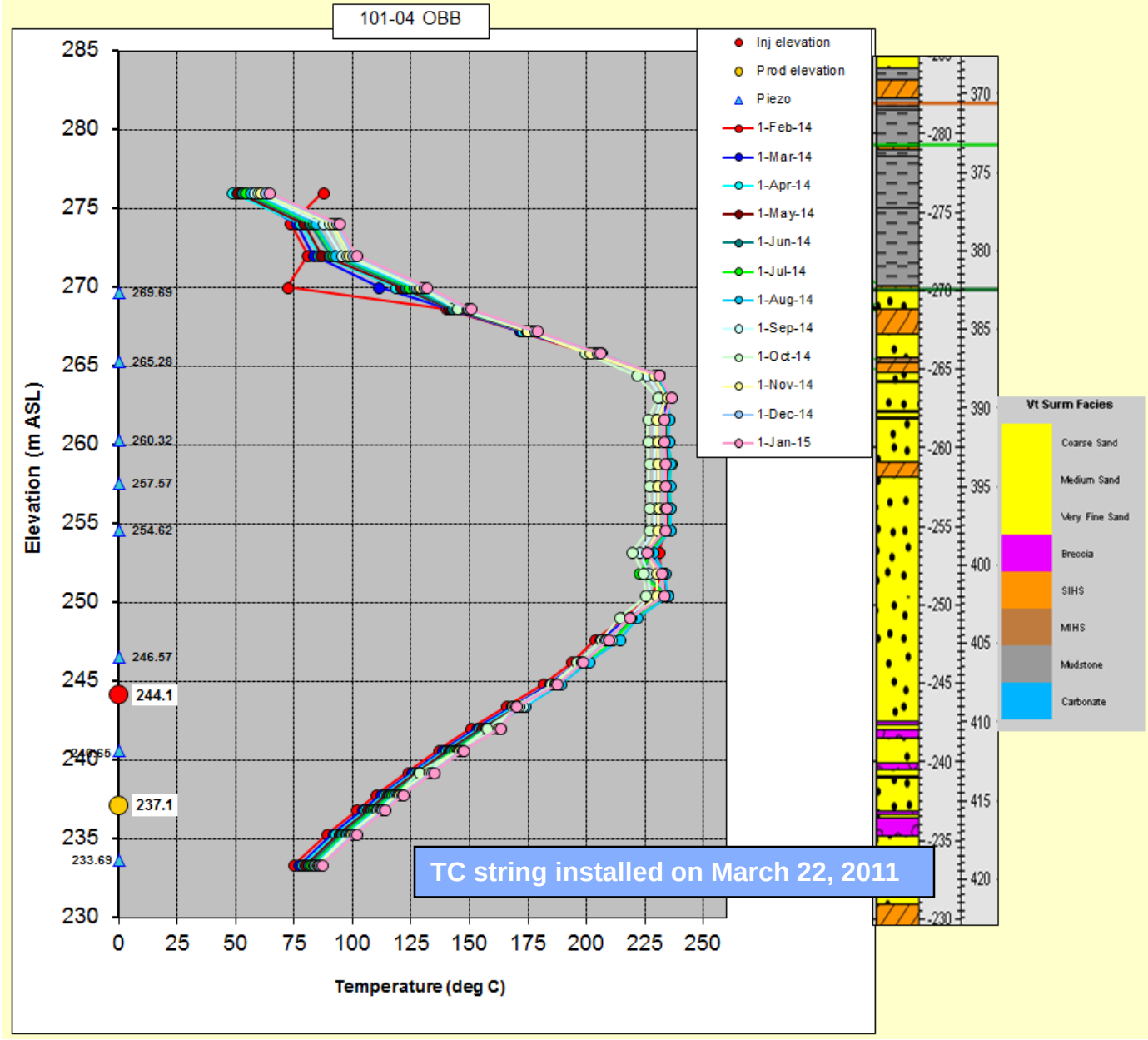
Piezo 4: 246.6 mASL

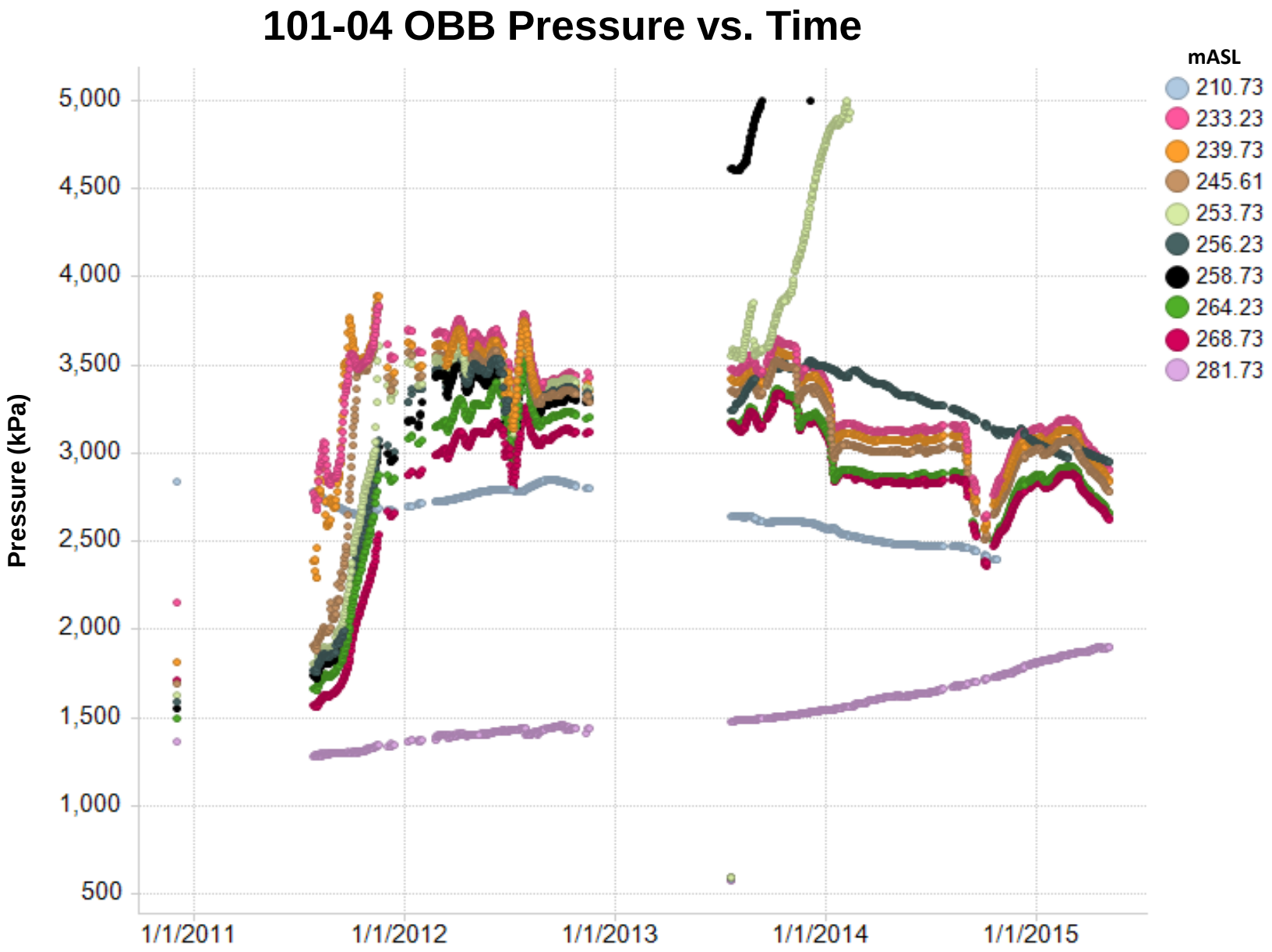
Piezo 3: 240.7 mASL

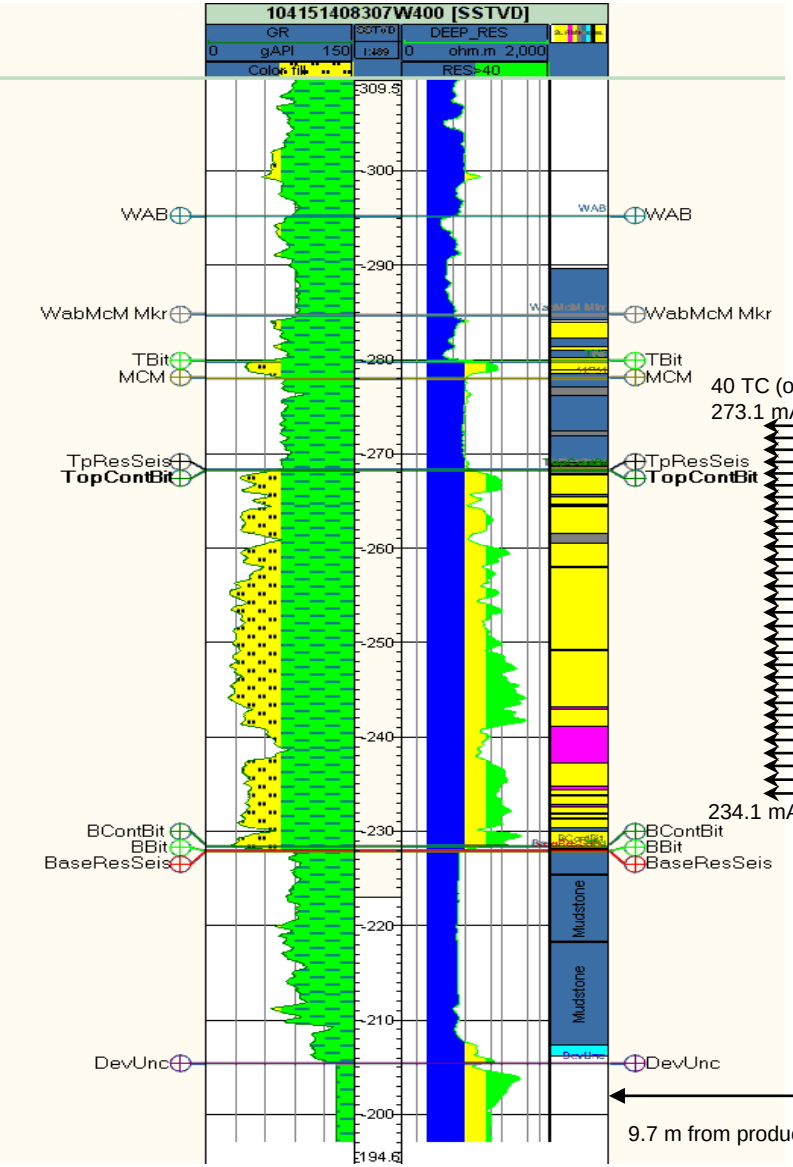
Piezo 2: 233.7 mASL

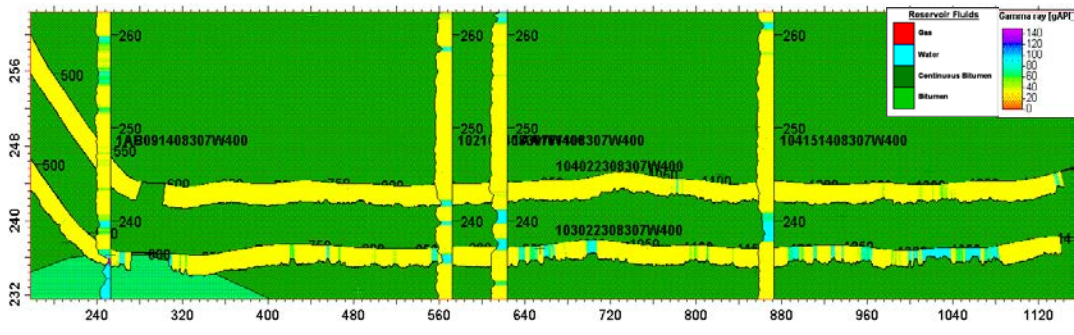
Piezo 1: 211.7 mASL

101-04 OBB
Temperature vs. Depth




101-04 OBB Pressure vs. Time
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
mASL
210.73
233.23
239.73
245.61
253.73
256.23
258.73
264.23
268.73
281.73





Piezo 10: 279.3 mASL

40 TC (only 30 bottom ones connected)
273.1 mASL

Piezo 9: 270.2 mASL
Piezo 8: 267.3 mASL
Piezo 7: 264.3 mASL
Piezo 6: 261.4 mASL

Piezo 5: 255.9 mASL

Piezo 4: 250.9 mASL
Piezo 3: 248.0 mASL

Injector: 244 mASL

Piezo 2: 243.5 mASL

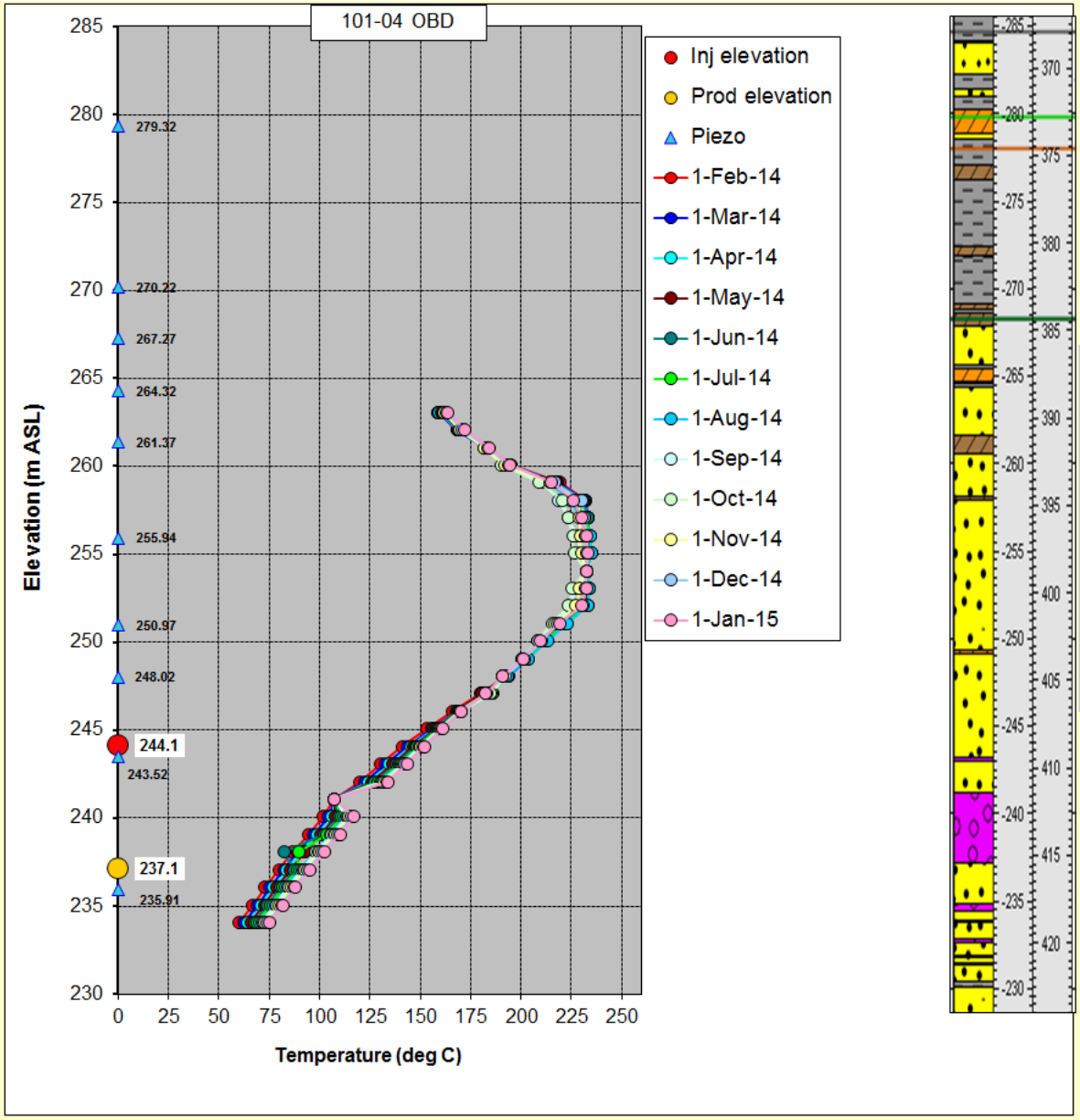
Producer: 237 mASL

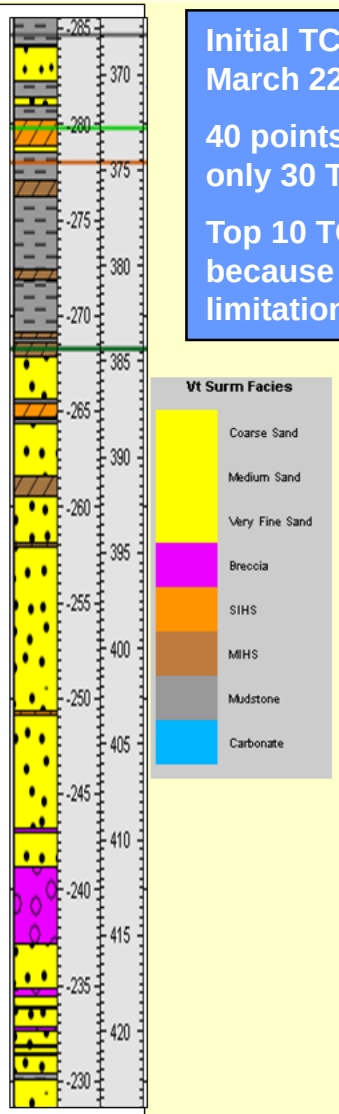
Piezo 1: 235.9 mASL

234.1 mASL

9.7 m from producer

101-04 OBD
Temperature vs. Depth



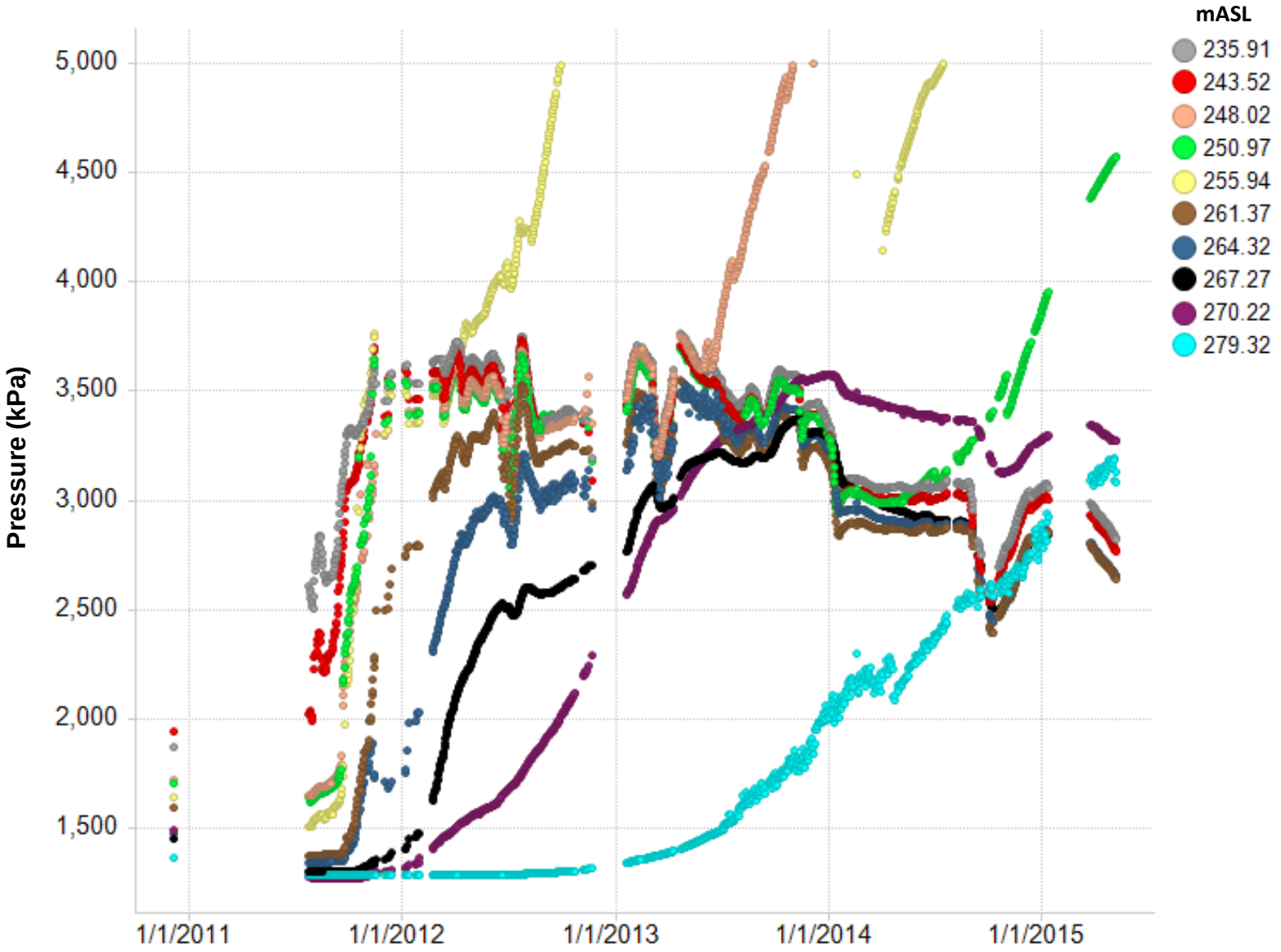


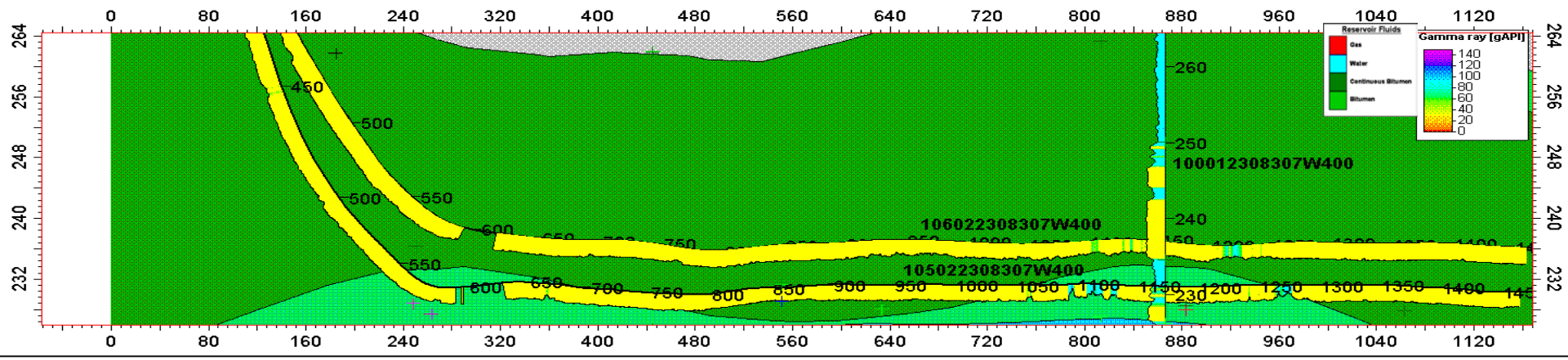
Initial TC string installed on March 22, 2011

40 points TC string installed – only 30 TC's reading

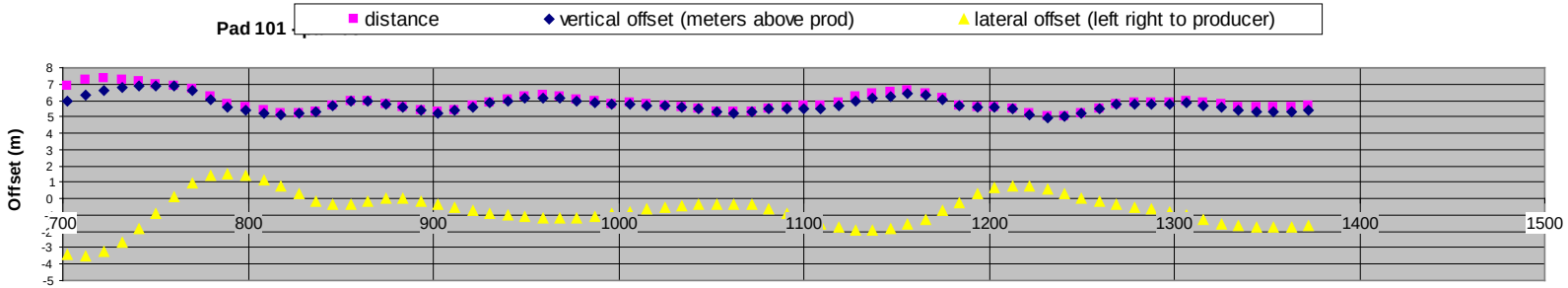
Top 10 TCs not connected because of surface equipment limitations

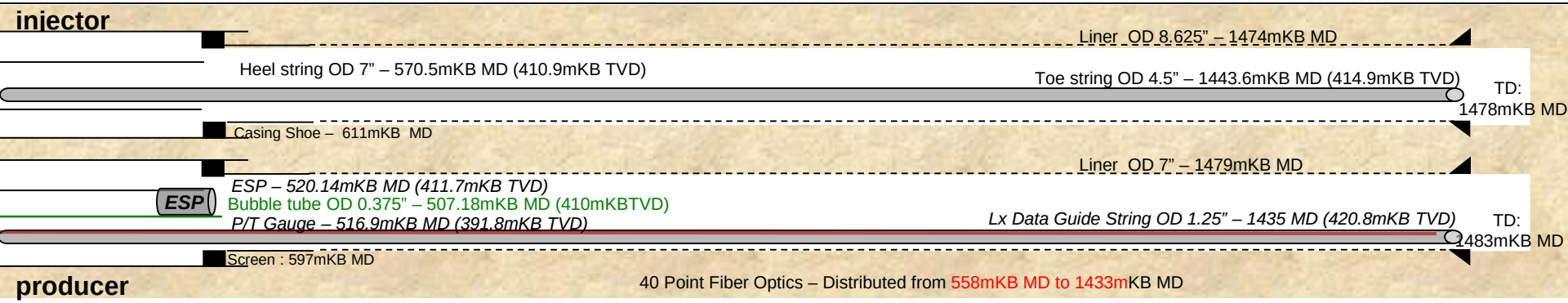
101-04 OBD Pressure vs. Time

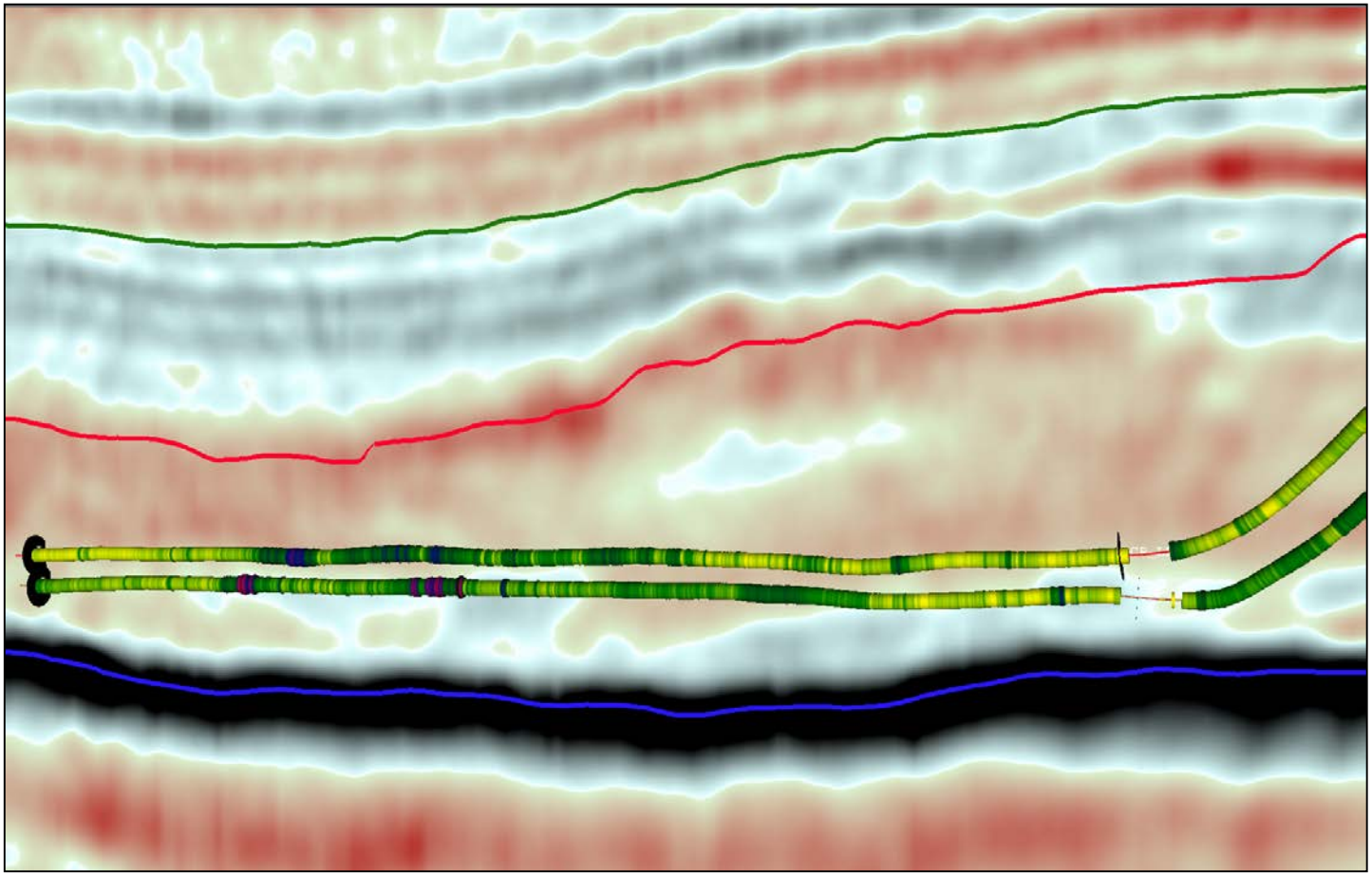



Reservoir Fluids
Gas
Water
Continuous Bitumen
Bitumen
Gamma ray [gAPI]
100012308307W400
106022308307W400
105022308307W400

Offset


Pad 101
distance
vertical offset (meters above prod)
lateral offset (left right to producer)
Offset (m)


injector
Liner OD 8.625" – 1474mKB MD
Heel string OD 7" – 570.5mKB MD (410.9mKB TVD)
Toe string OD 4.5" – 1443.6mKB MD (414.9mKB TVD)
TD: 1478mKB MD
Casing Shoe – 611mKB MD
Liner OD 7" – 1479mKB MD
ESP
ESP – 520.14mKB MD (411.7mKB TVD)
Bubble tube OD 0.375" – 507.18mKB MD (410mKBTVD)
P/T Gauge – 516.9mKB MD (391.8mKB TVD)
Lx Data Guide String OD 1.25" – 1435 MD (420.8mKB TVD)
TD: 1483mKB MD
Screen : 597mKB MD
producer
40 Point Fiber Optics – Distributed from 558mKB MD to 1433mKB MD



Horizons

= WAB

= TopResSeis

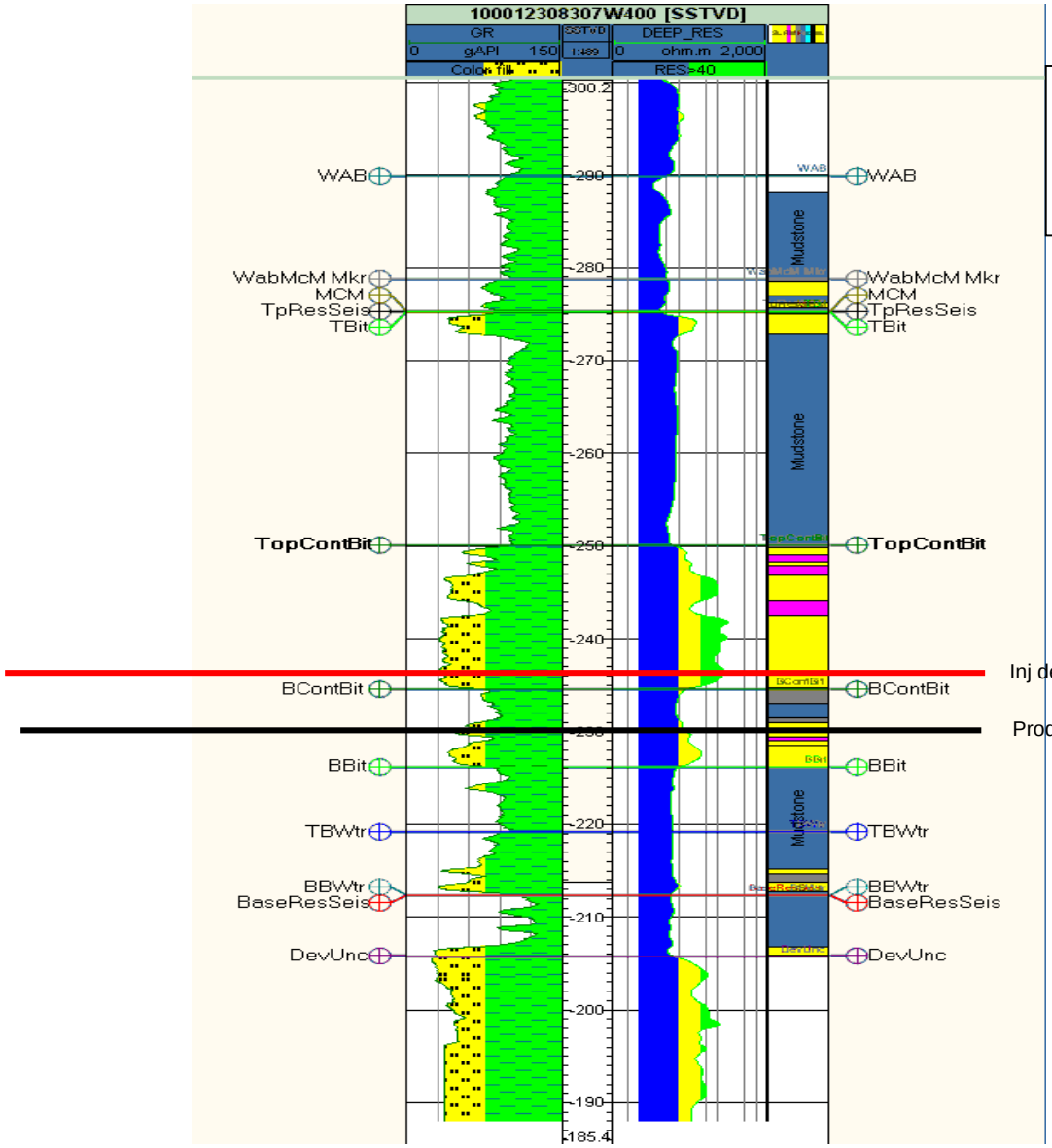
= BHL

Picks

= Casing Point

Gamma Ray Color Scale (API)

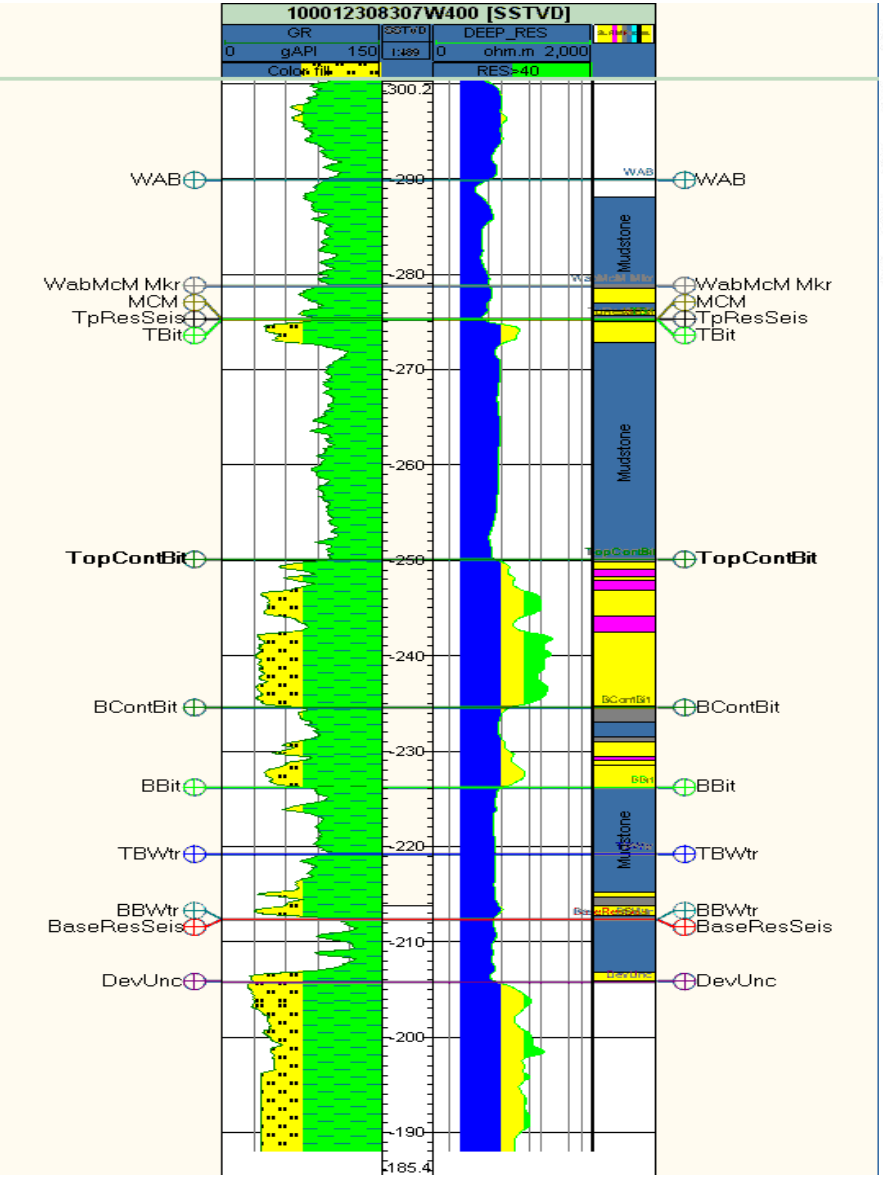
Integrated Seismic Trace

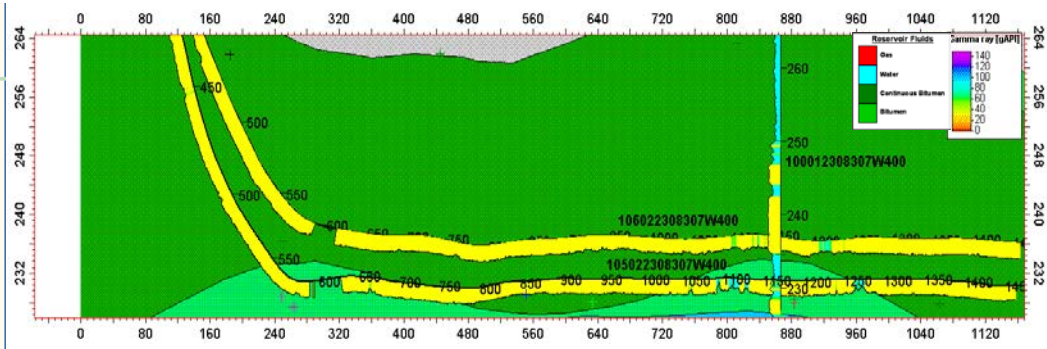


Inj depth 236 mASL

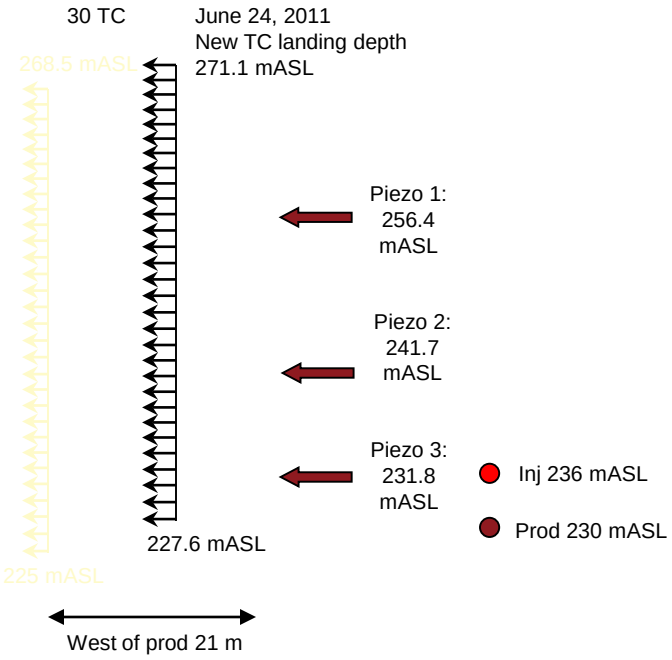
Prod depth230 mASL

1. Started up in Jan. 2011
2. Converted to SAGD mode in May. 2011
3. 1 observation well equipped with thermocouples

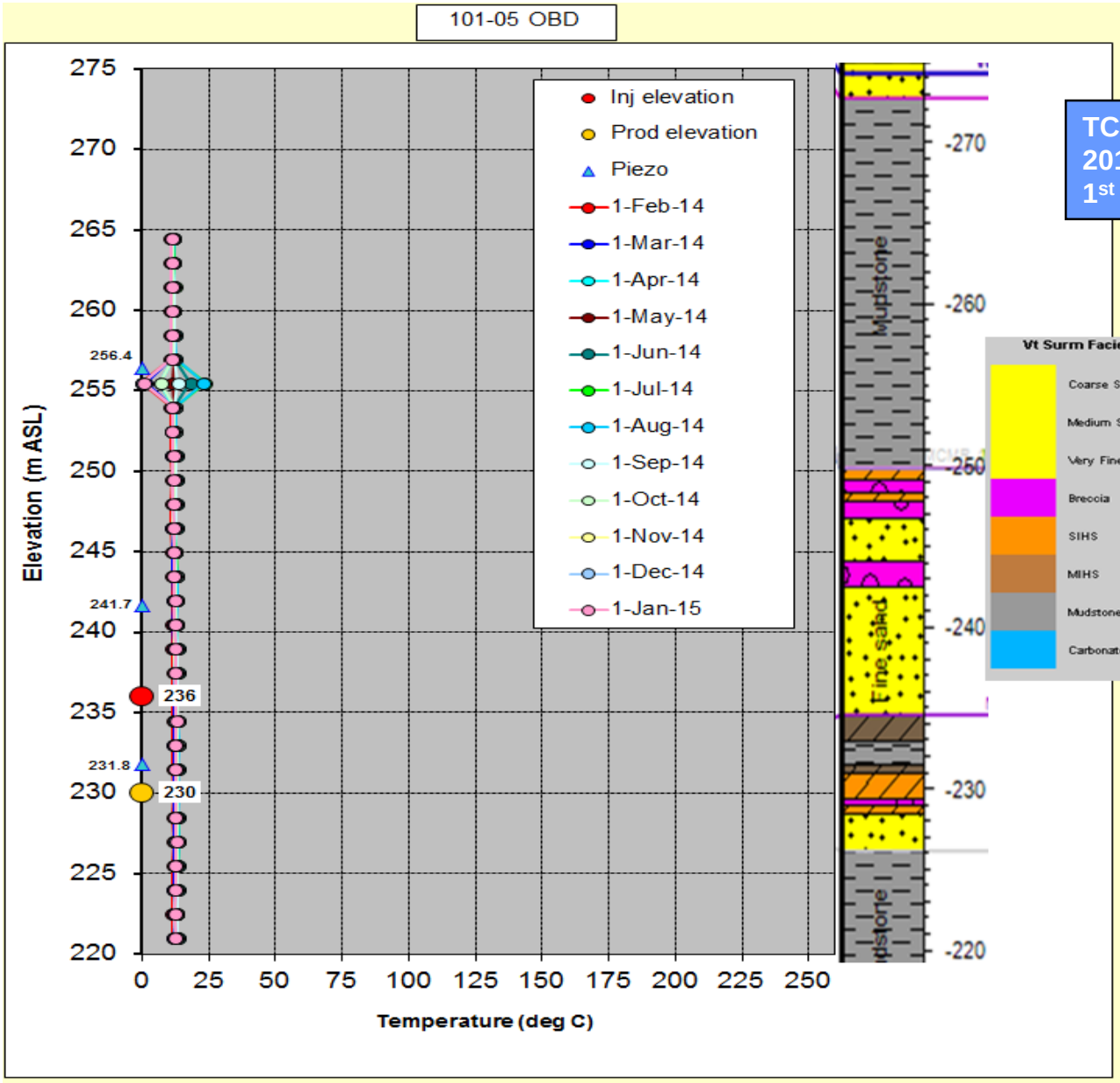




TC string installed in June 24, 2011.

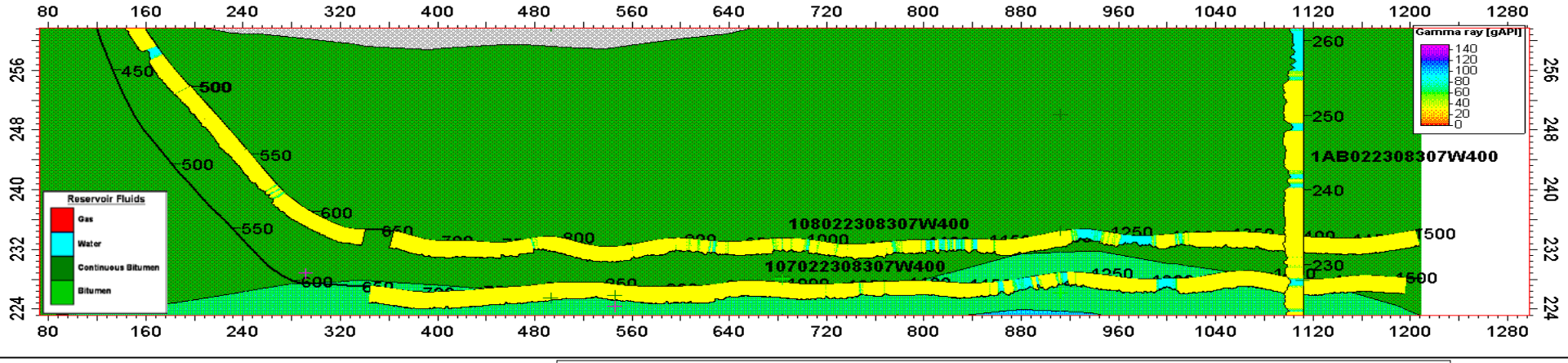


101-05 OBD
Temperature vs. Depth

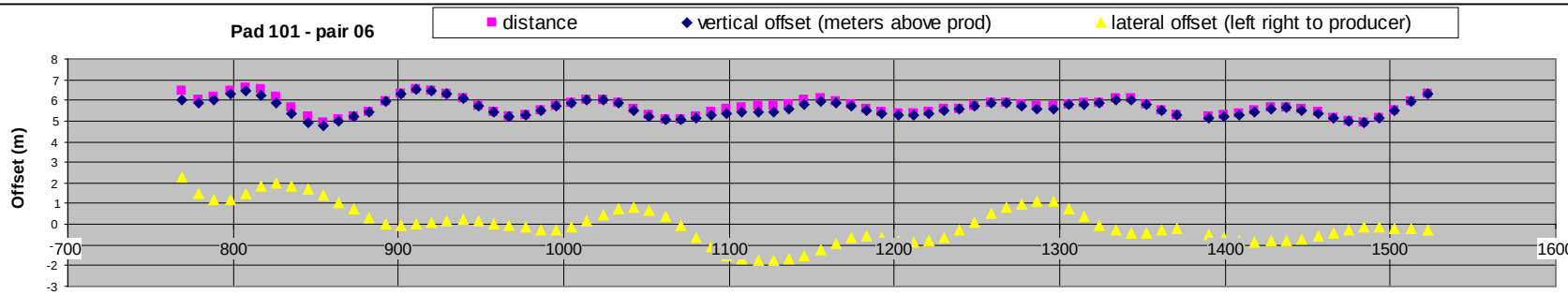


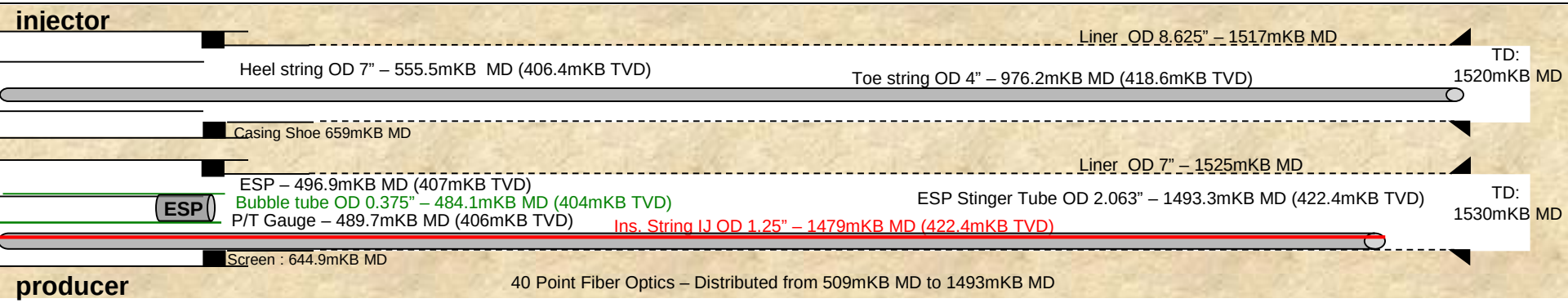
TC string installed on June 24, 2011
1st reading May 3, 2012

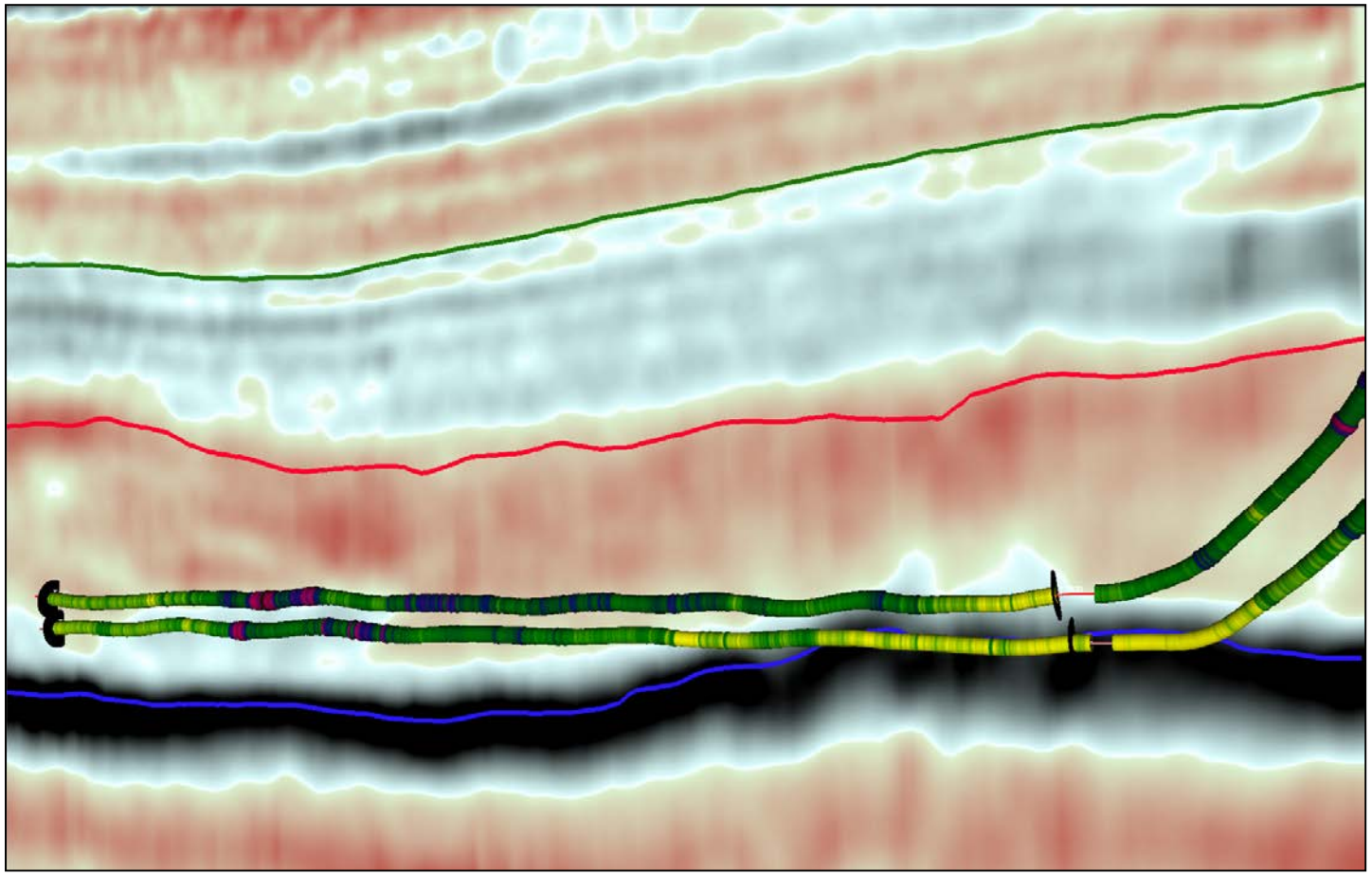
Well Pair 101-06 (101-13)



Offset







Horizons

= WAB

= TopResSeis

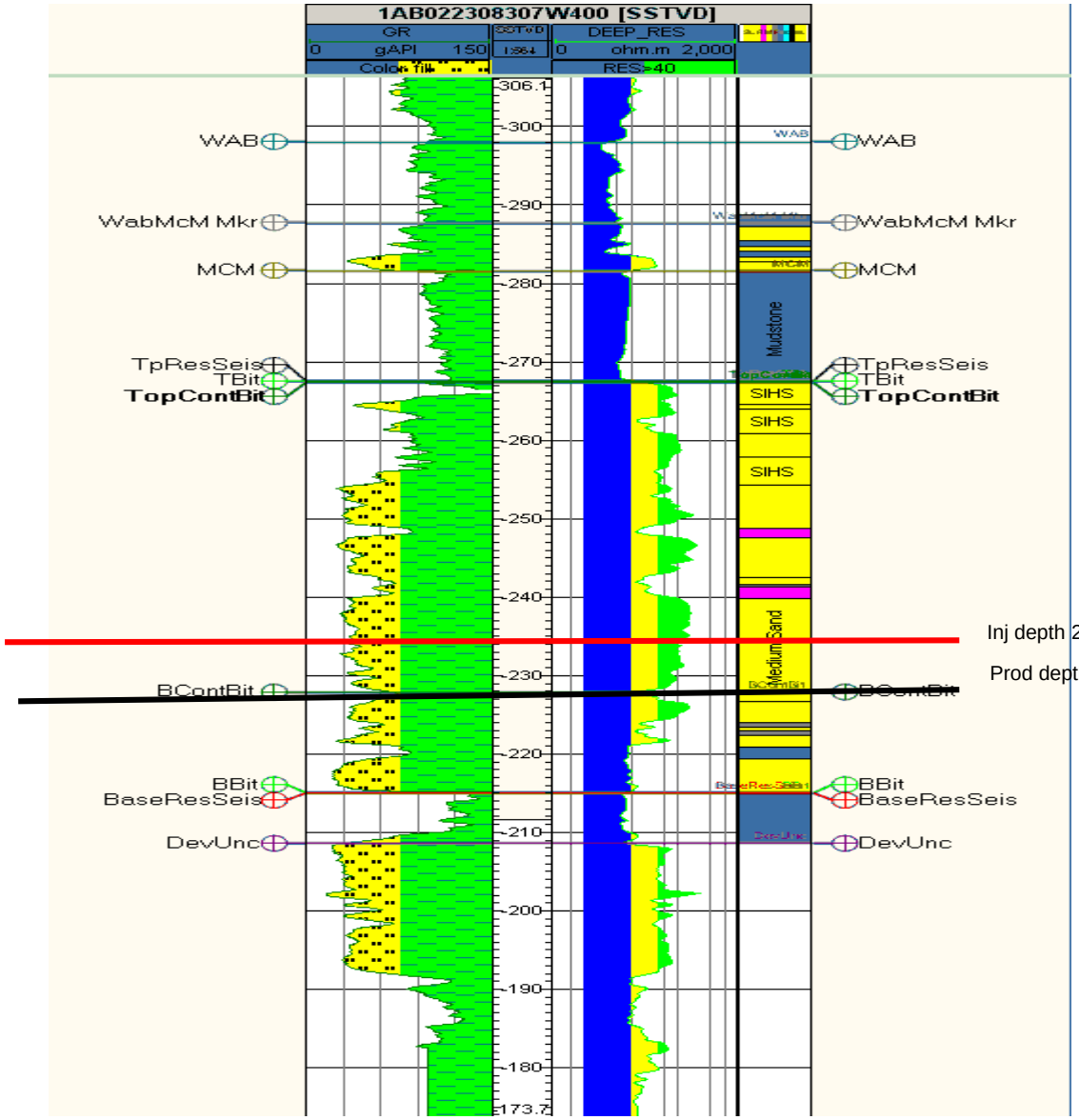
= BHL

Picks

= Casing Point

Gamma Ray Color Scale (API)

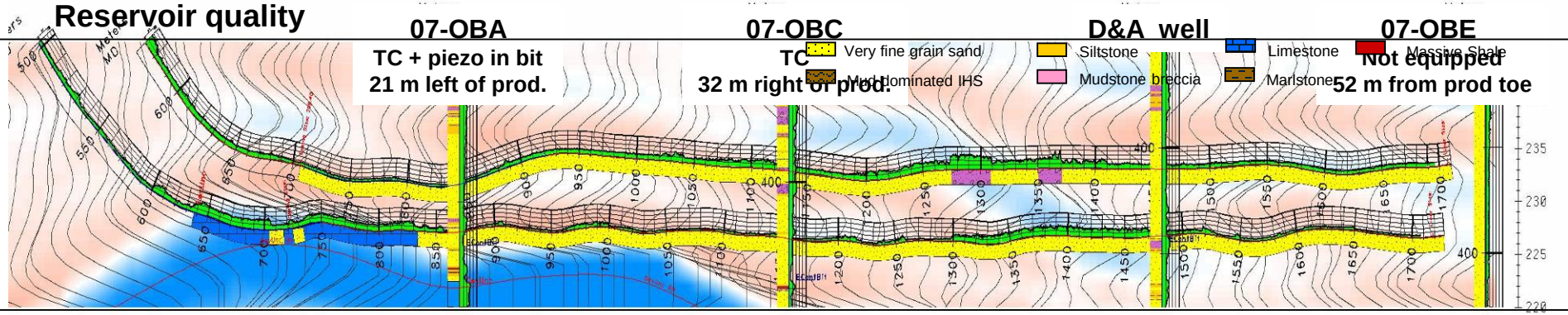
Integrated Seismic Trace



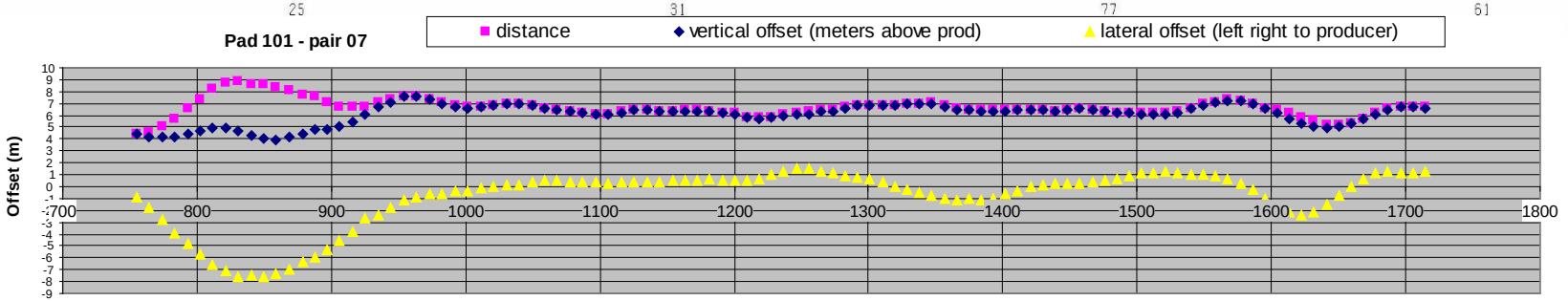
1. Started up in Apr. 2011
2. Converted to SAGD mode in Nov. 2011
3. No observation well associated

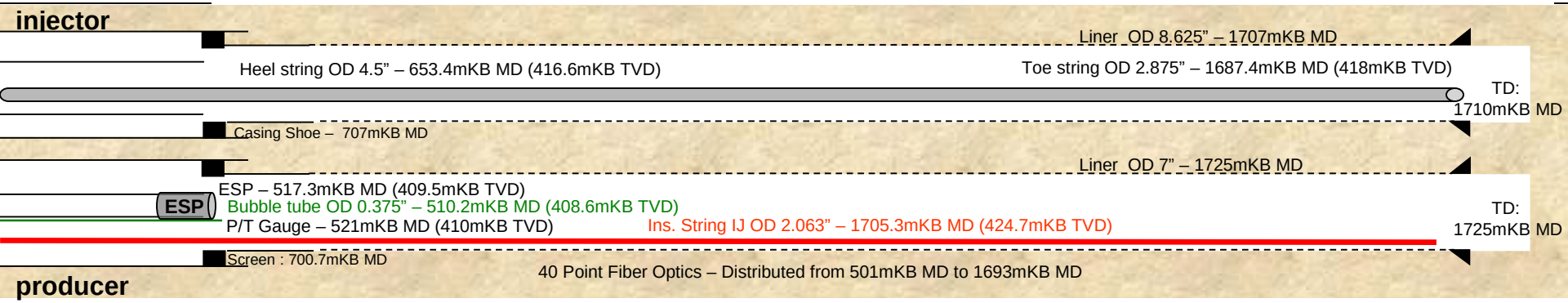
Well Pair 101-07 (101-16) (1000 m long)

Reservoir quality

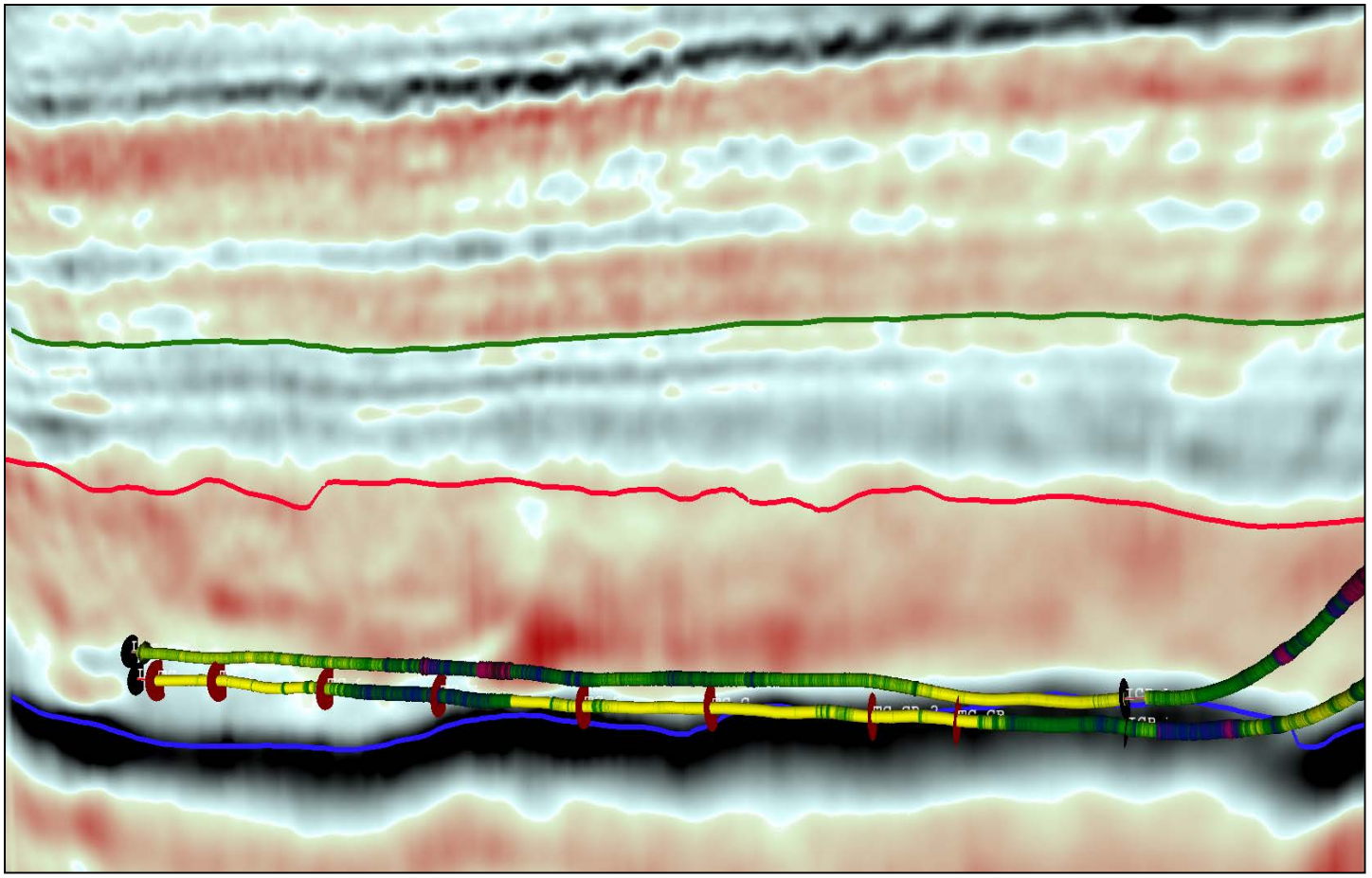


Offset





Well Pair 101-07 (101-16) (1000 m long)



Horizons

= WAB

= TopResSeis

= BHL

Picks

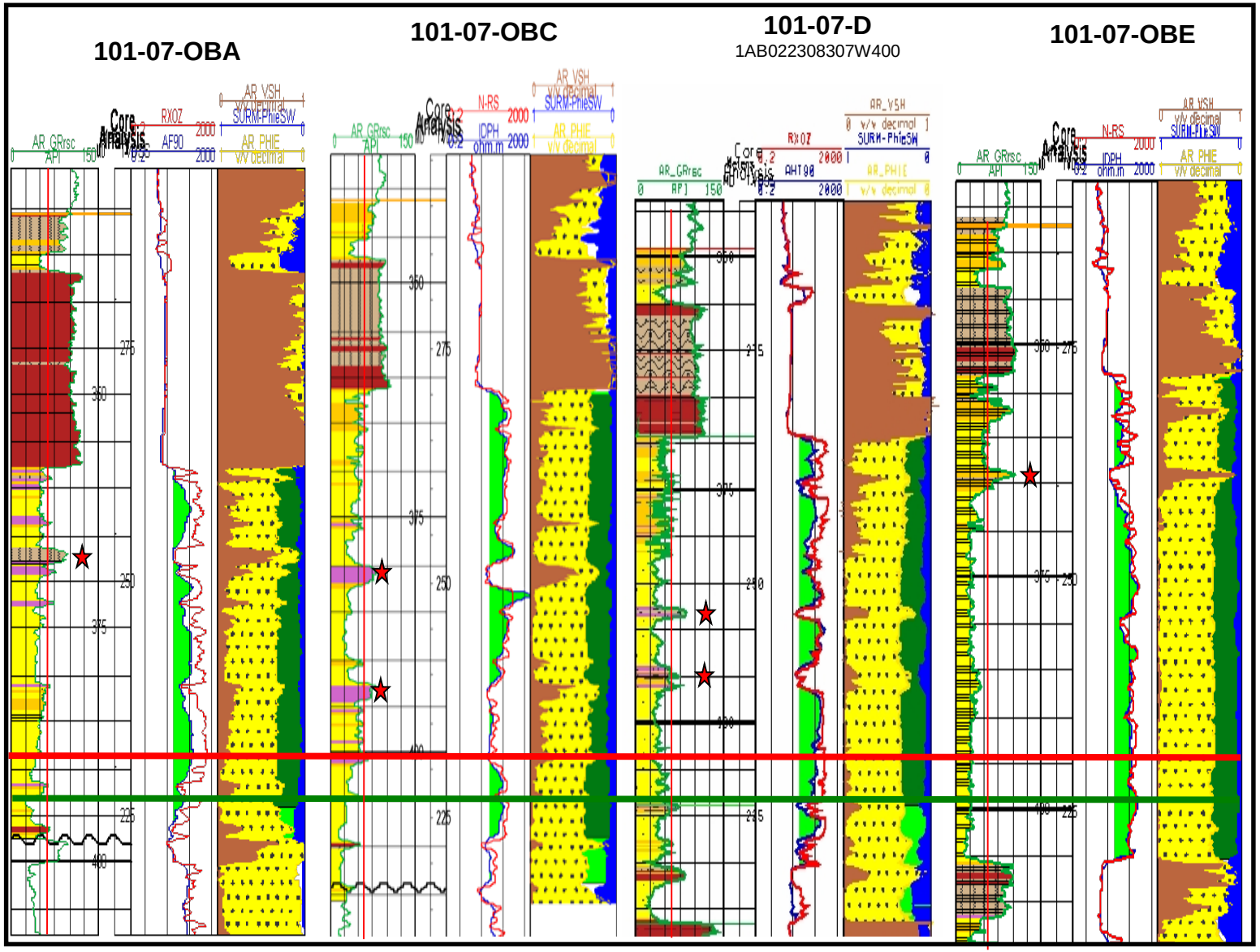
= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

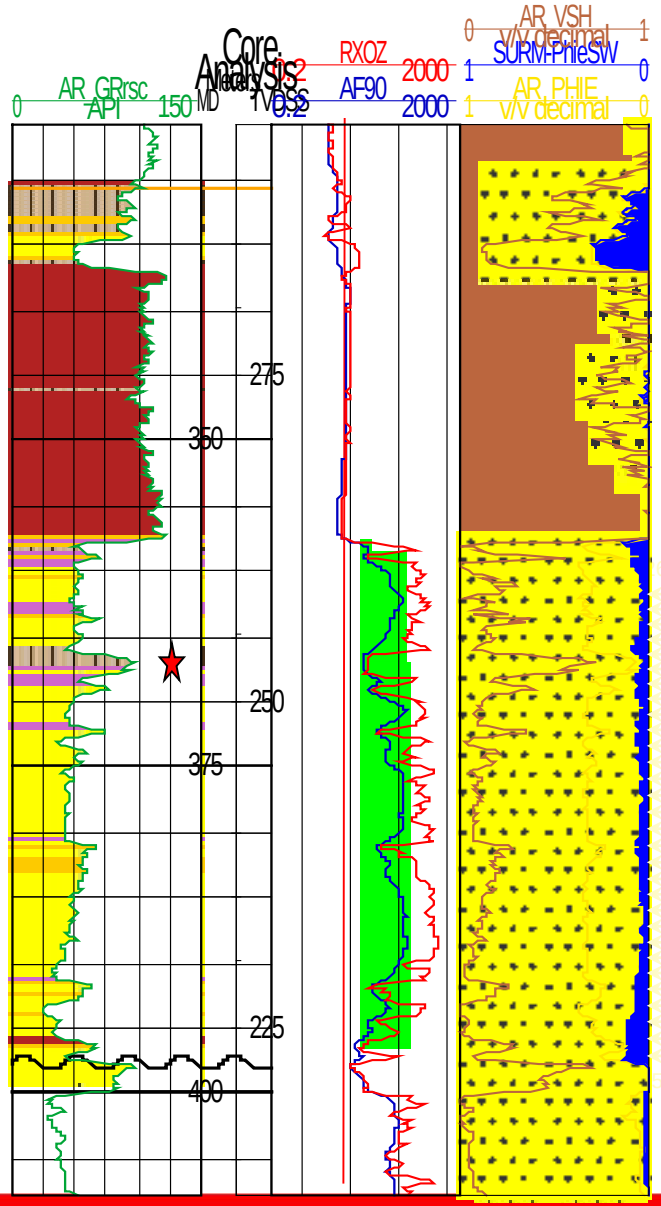
Integrated Seismic Trace

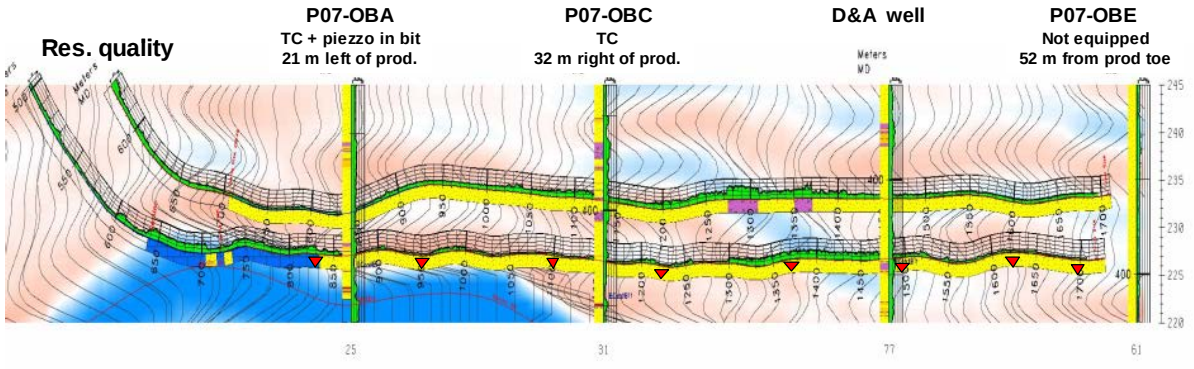
Well Pair 101-07 (101-16) (1000 m long)



Inj depth 238 mASL

Prod depth233 mASL





30 TC

June 23, 2011
New TC landing depth
271.1 mASL

Piezo 1:
256.4
mASL

Piezo 2:
241.7
mASL

Piezo 3:
231.8
mASL

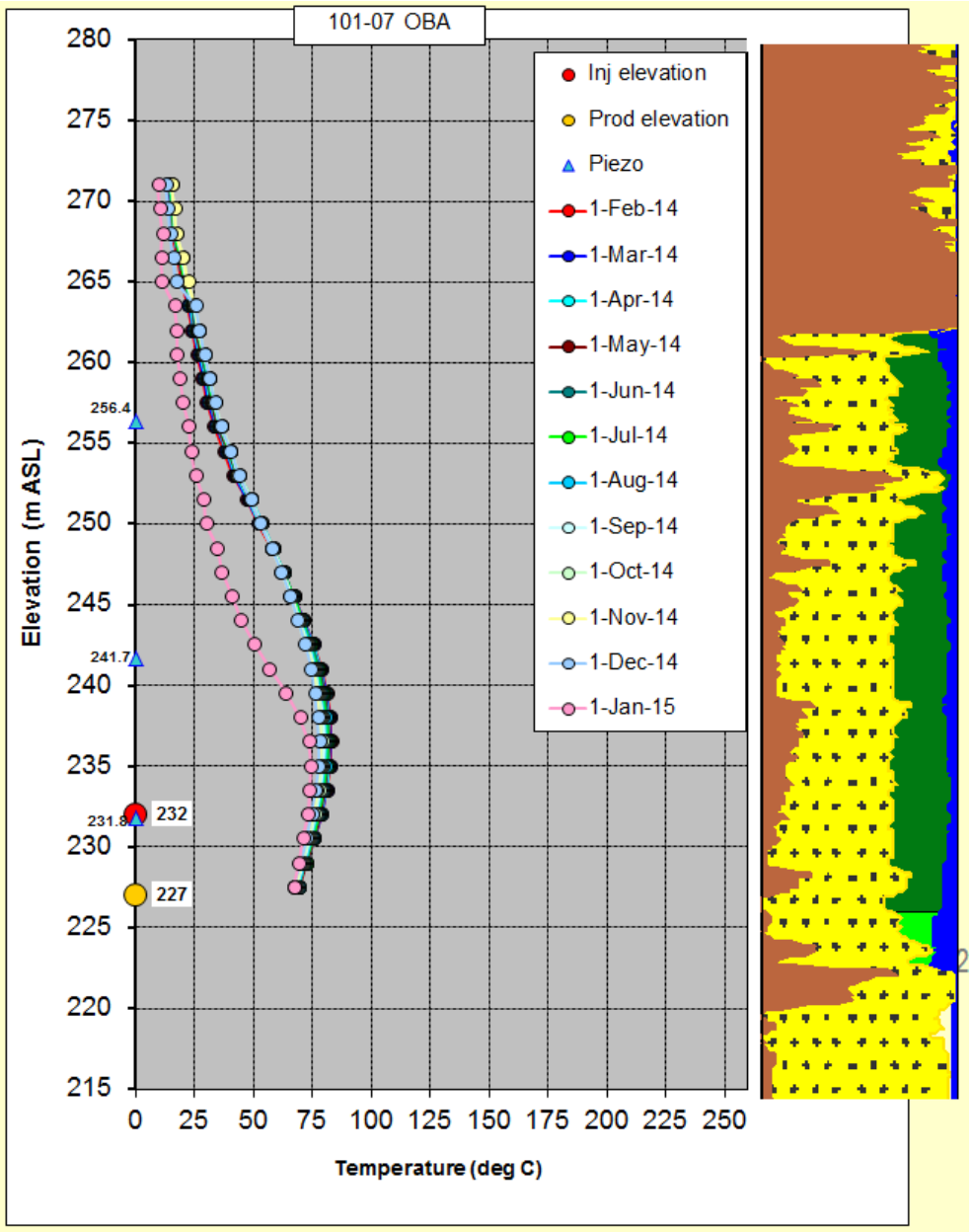
Inj 232 mASL

Prod 227 mASL

227.6 mASL

West of prod 21 m

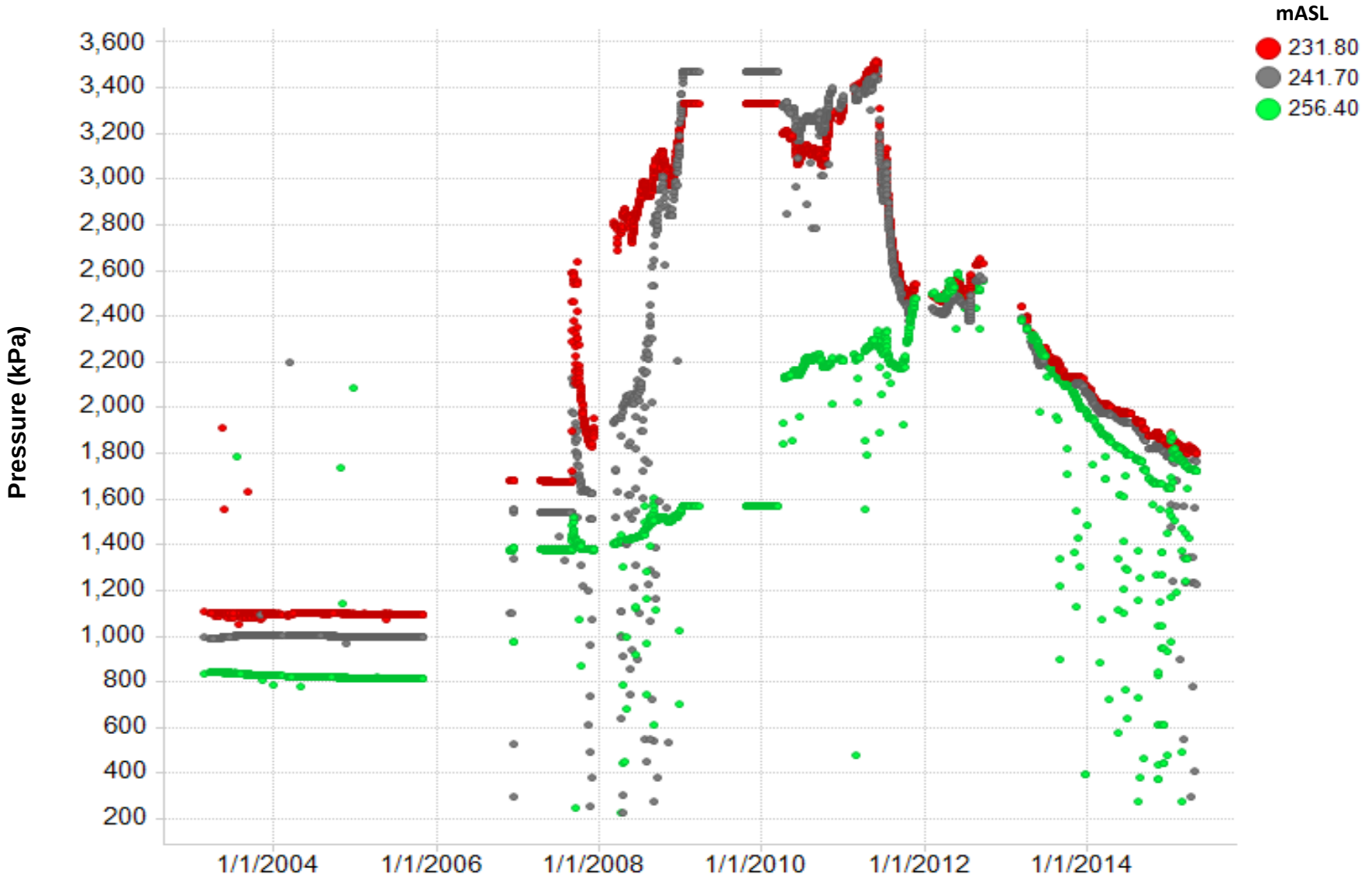
101-07 OBA
Temperature vs. Depth

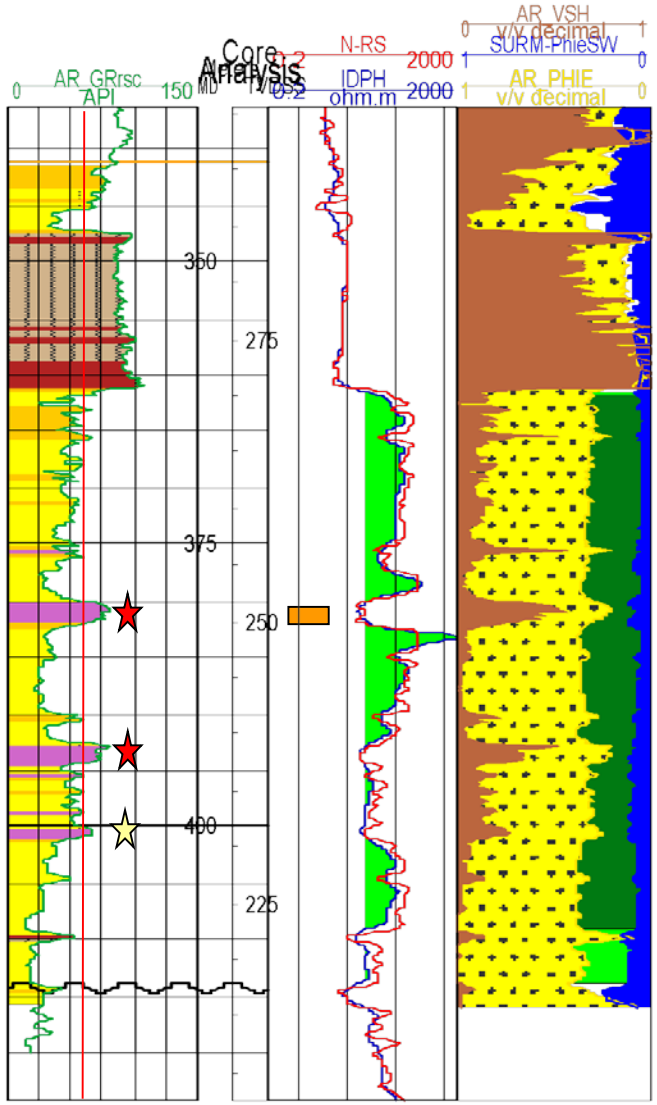


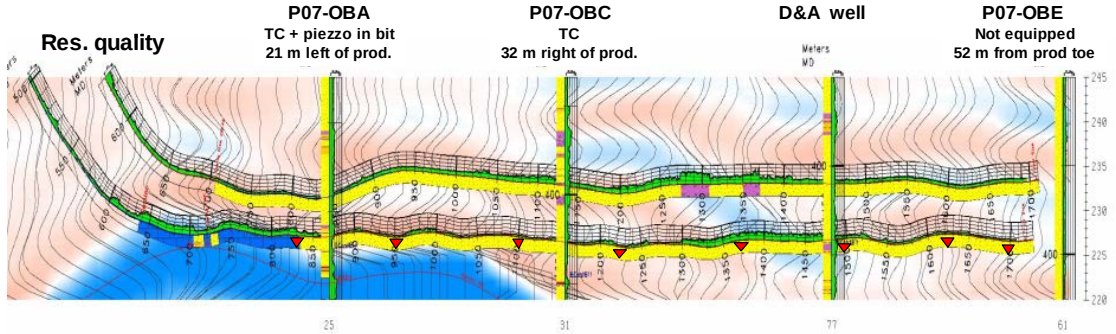
TC string replaced June 23, 2011.

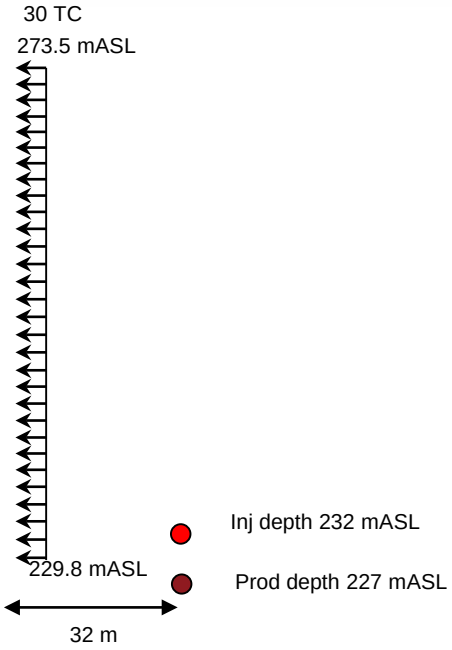
Ground condition and reservoir ranking list delayed surface connection until February 9, 2012.

101-07 OBA Pressure vs. Time

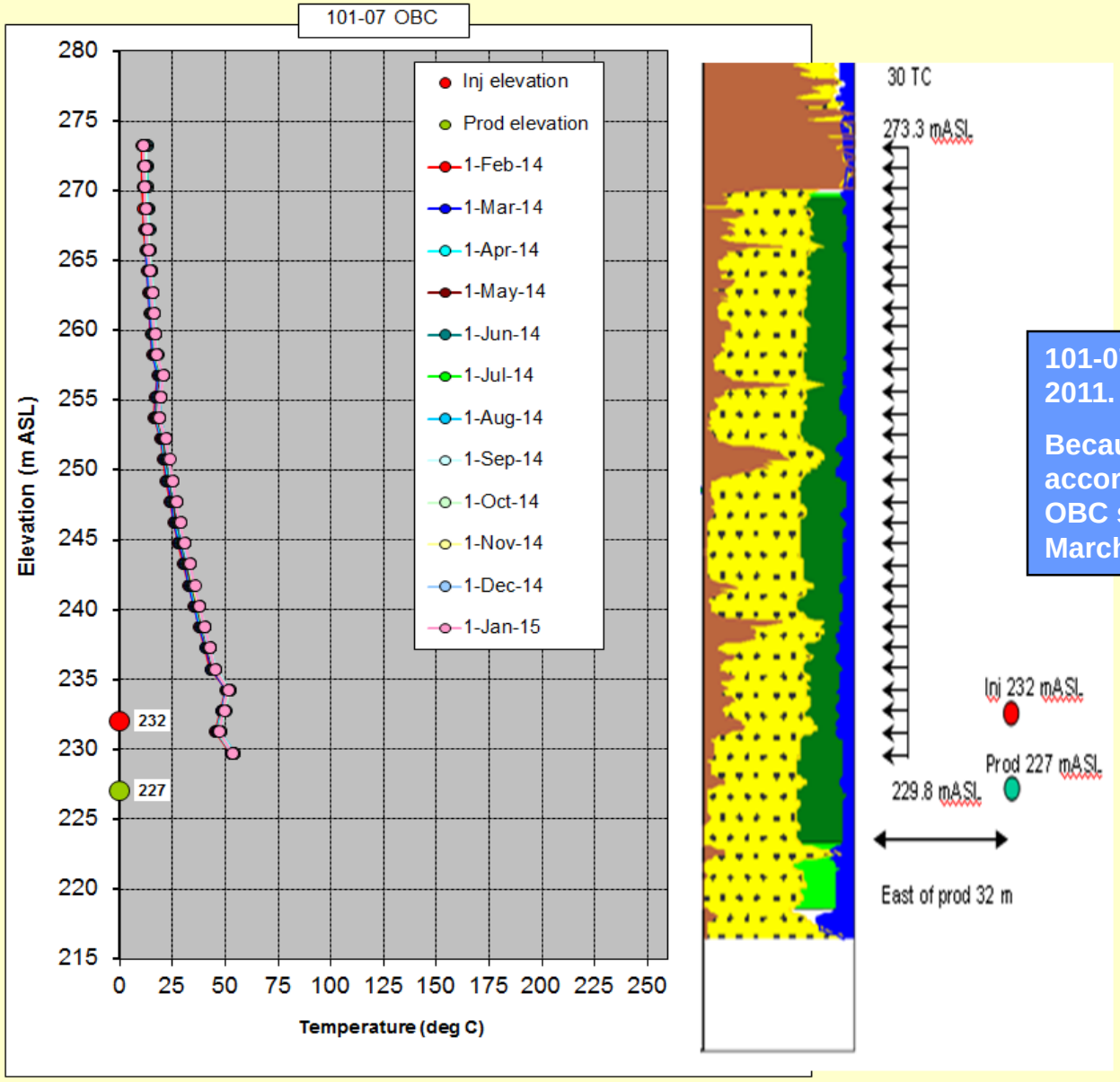



AR_GRrsc
API
0
150
Core Analysis
MD
N-RS
0.2
2000
IDPH
ohm.m
0.2
2000
AR_VSH
v/v decimal
0
1
SURM-PhieSW
1
0
AR_PHIE
v/v decimal
1
0
350
375
400
275
250
225


Res. quality
P07-OBA
TC + piezzo in bit
21 m left of prod.
P07-OBC
TC
32 m right of prod.
D&A well
P07-OBE
Not equipped
52 m from prod toe
Meters MD

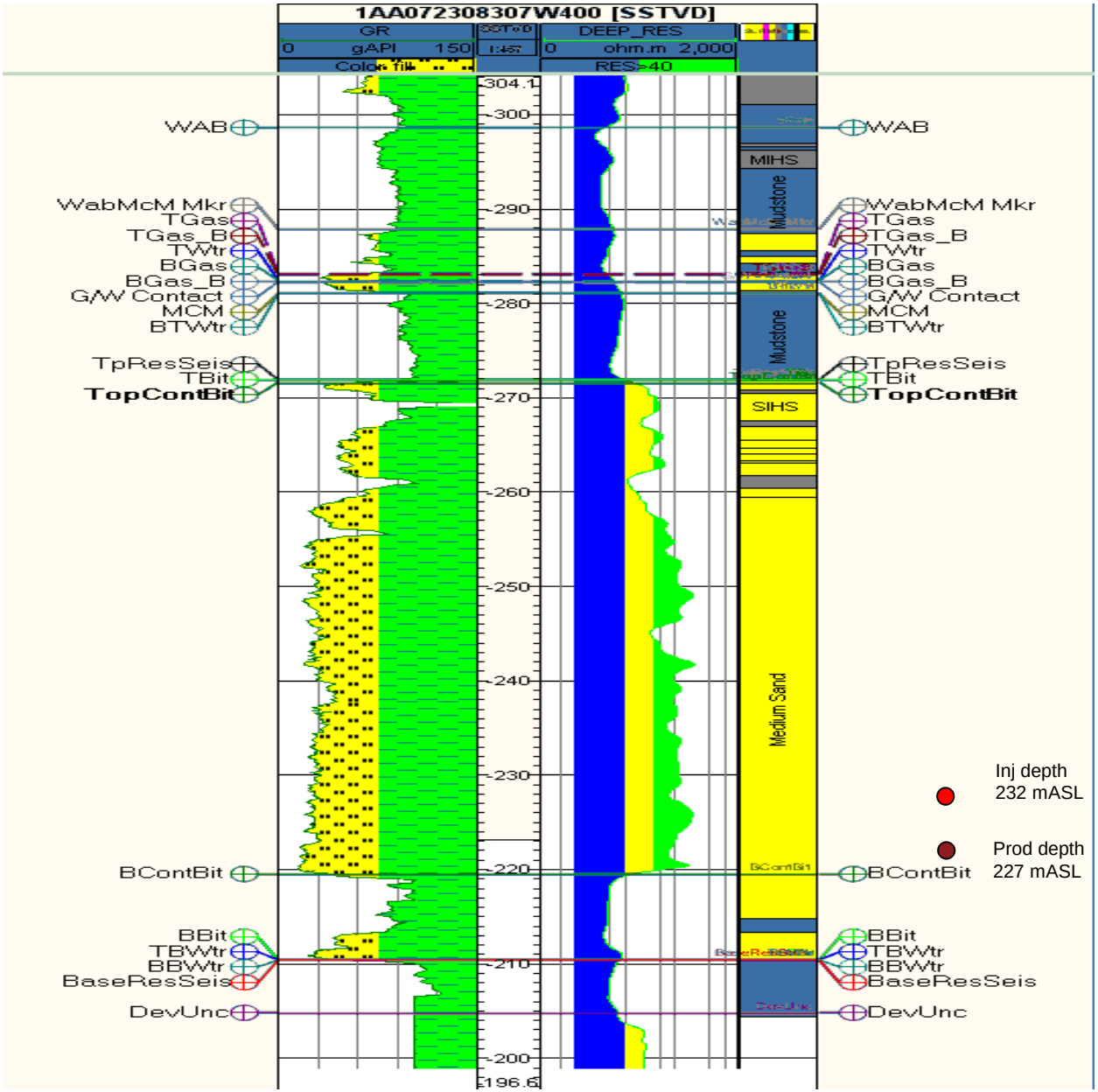

30 TC
273.5 mASL
229.8 mASL
32 m
Inj depth 232 mASL
Prod depth 227 mASL

101-07 OBC
Temperature vs. Depth

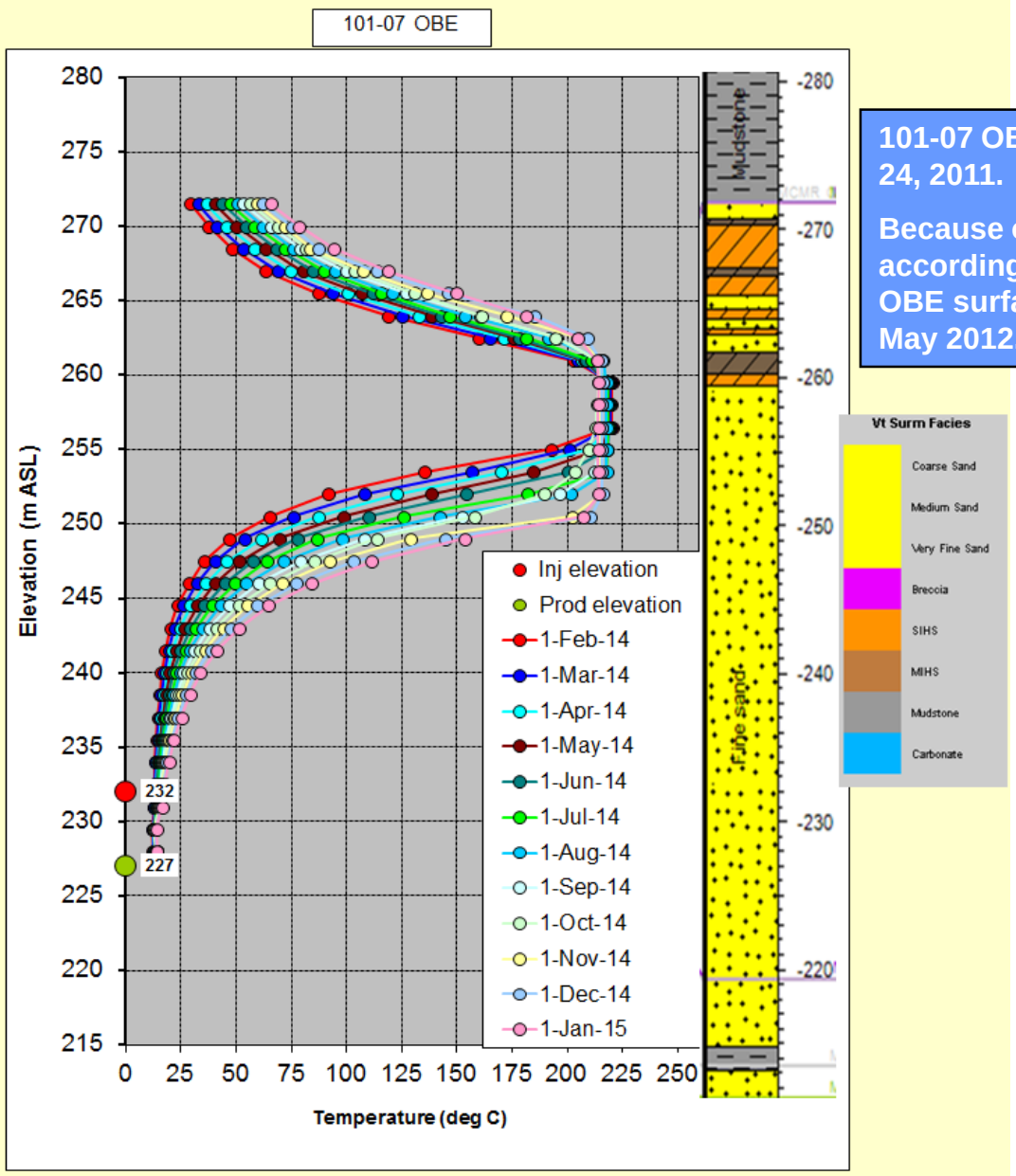


101-07 OBC TC string replaced June 23, 2011.

Because of ground condition and according to reservoir ranking list, 101-07 OBC surface connection was completed March 2012.


1AA072308307W400 [SSTVD]
GR
0 gAPI 150
DEEP_RES
0 ohm.m 2,000
RES>40
304.1
300
290
280
270
260
250
240
230
220
210
200
196.6
WAB
WabMcM Mkr
TGas
TGas_B
TWtr
BGas
BGas_B
G/W Contact
MCM
BTWtr
TpResSeis
TBit
TopContBit
BContBit
BBit
TBWtr
BBWtr
BaseResSeis
DevUnc
MIHS
Mudstone
SIHS
Medium Sand
Inj depth
232 mASL
Prod depth
227 mASL

101-07 OBE
Temperature vs. Depth

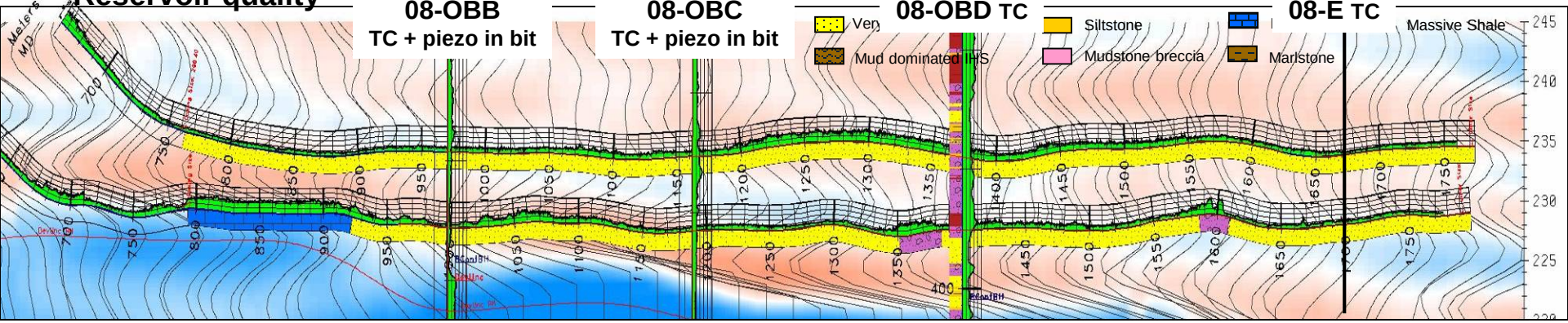


101-07 OBE TC string replaced February 24, 2011.

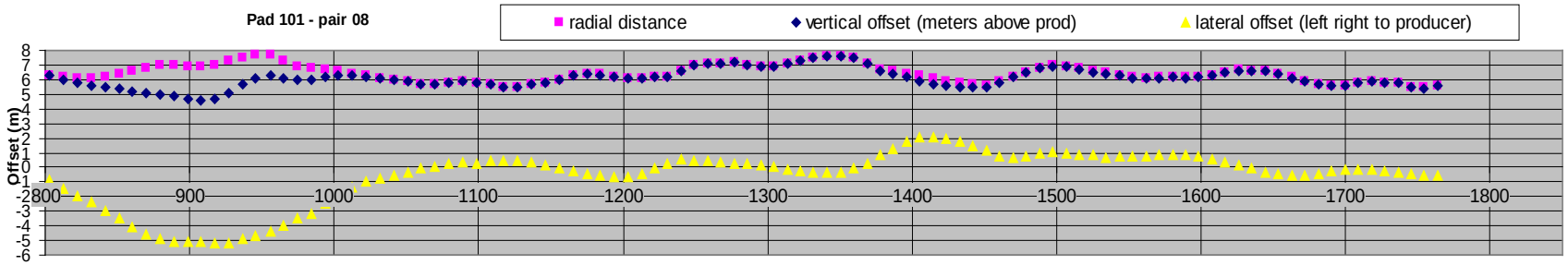
Because of ground condition and according to reservoir ranking list, 101-07 OBE surface connection was completed May 2012.

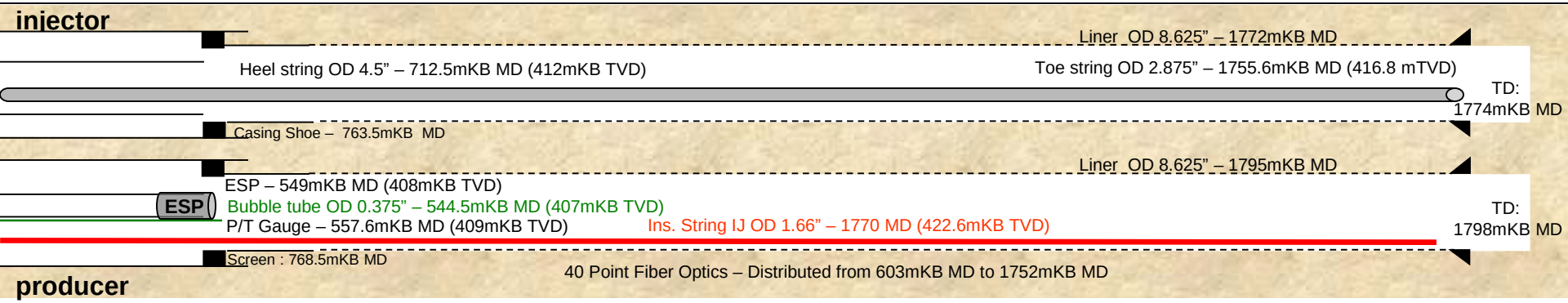
Well Pair 101-08
(101-17) (1000 m long, larger liner)

Reservoir quality



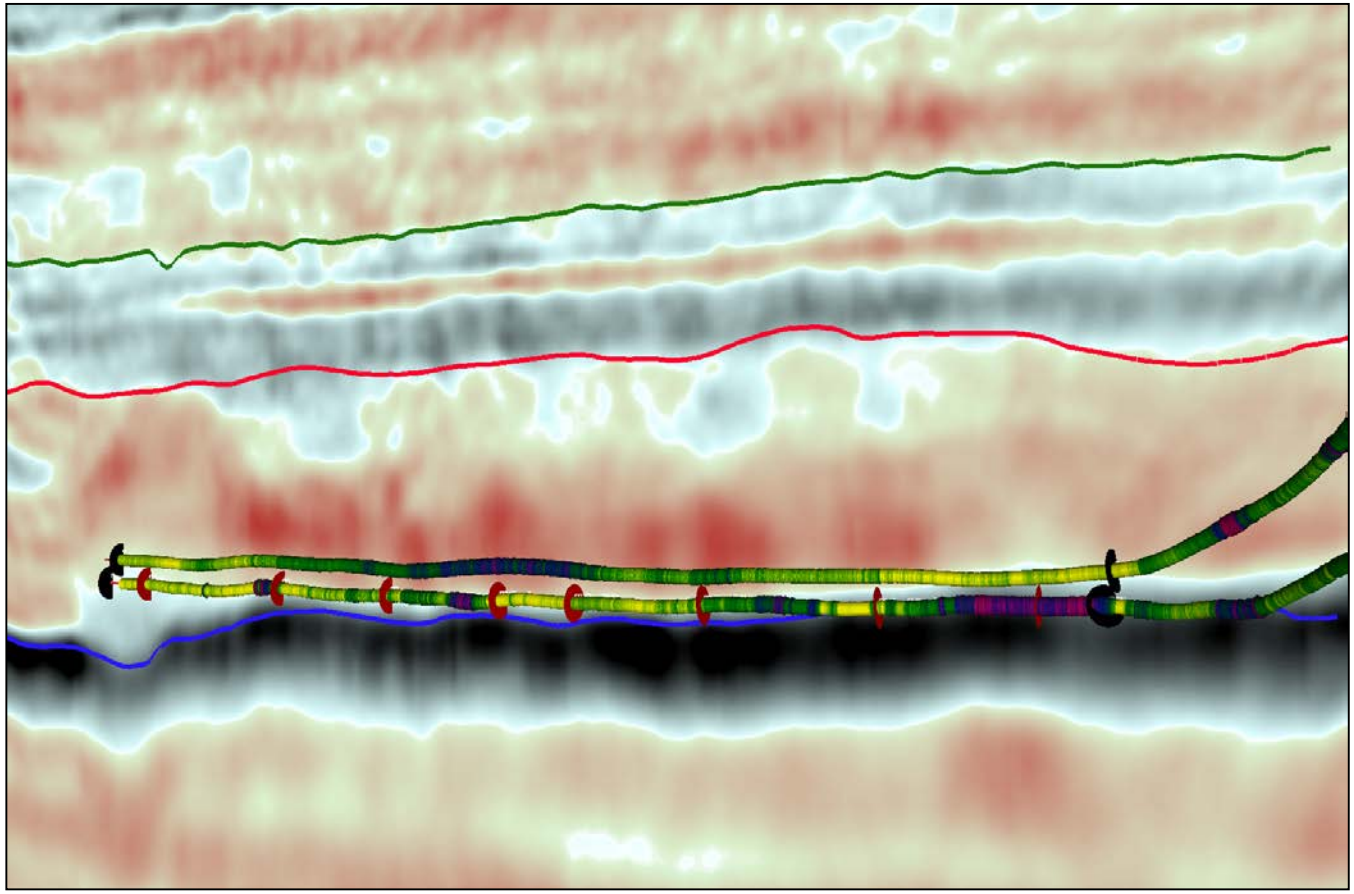
Offset





ConocoPhillips

Well Pair 101-08
(101-17) (1000 m long, larger liner)



Horizons

= WAB

= TopResSeis

= BHL

Picks

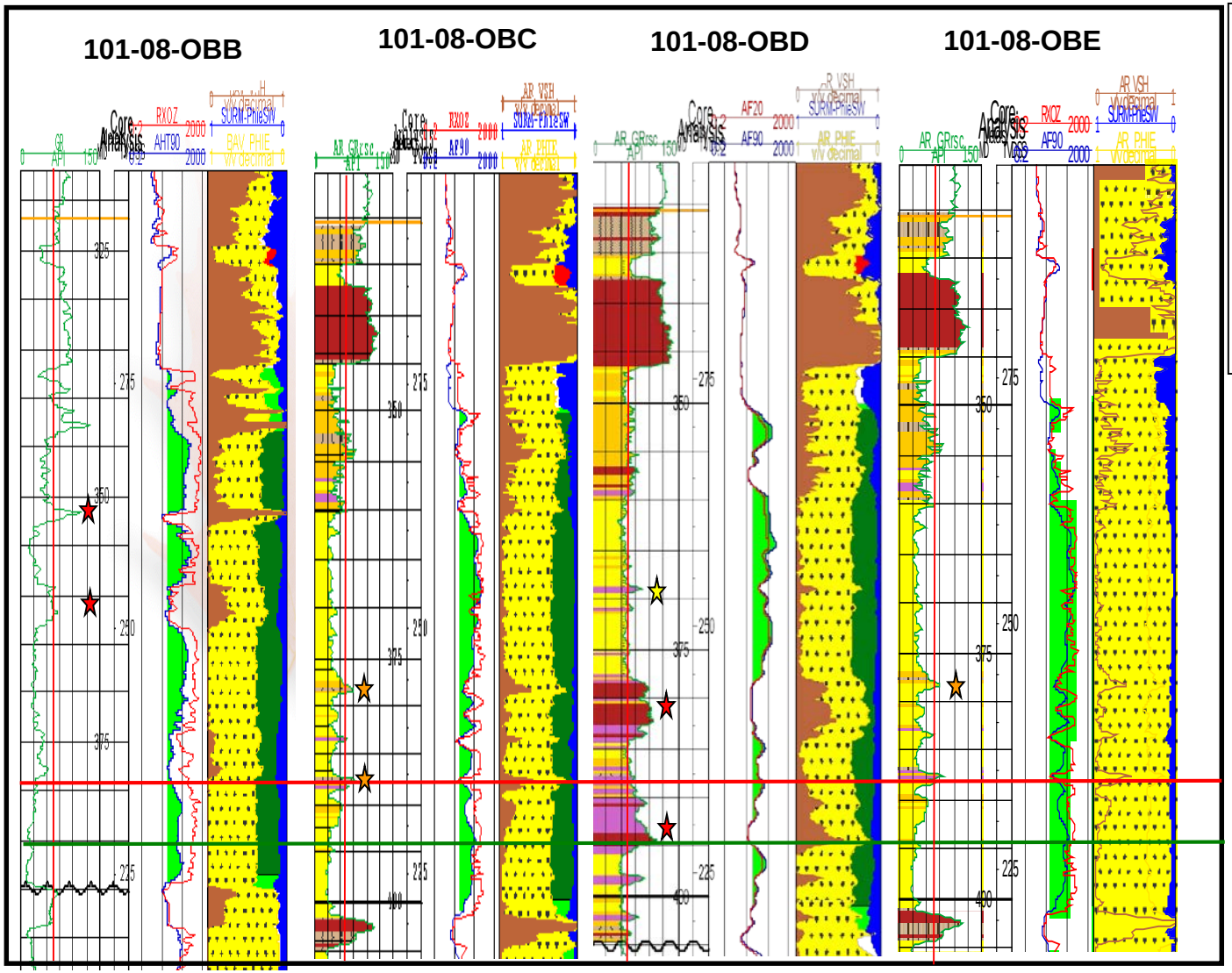
= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

Well Pair 101-08 (101-17) (1000 m long, larger liner)



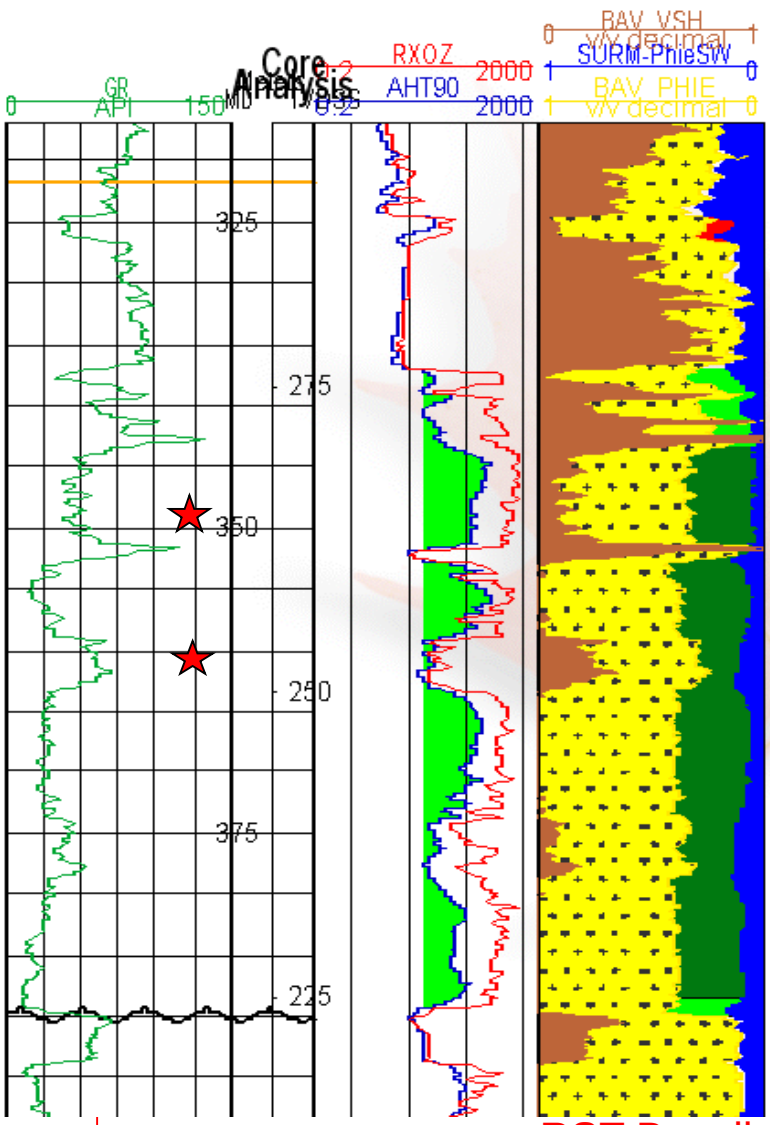
heel

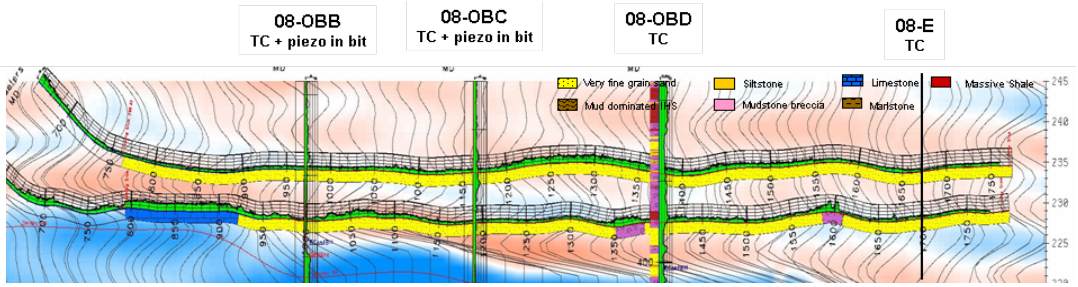
toe

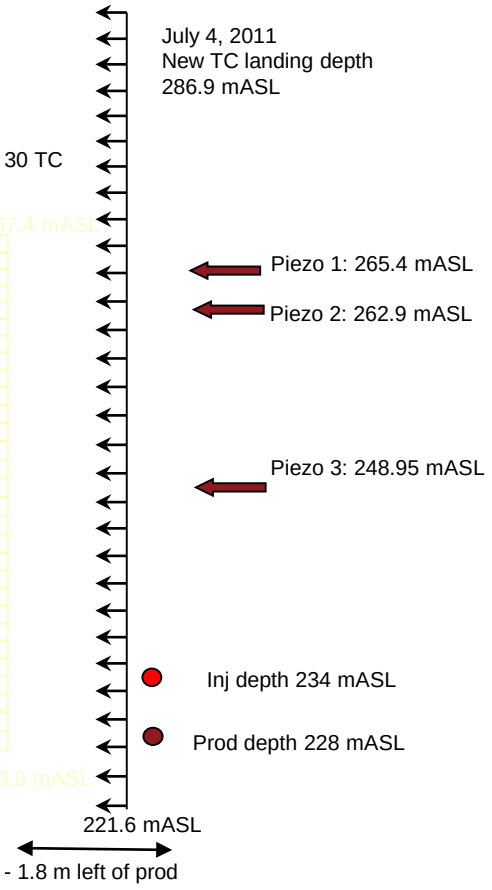
1. Edge well, radial distance around 6m
2. High CPV
3. Tight area at mid section

Inj depth 234 mASL

Prod depth228 mASL

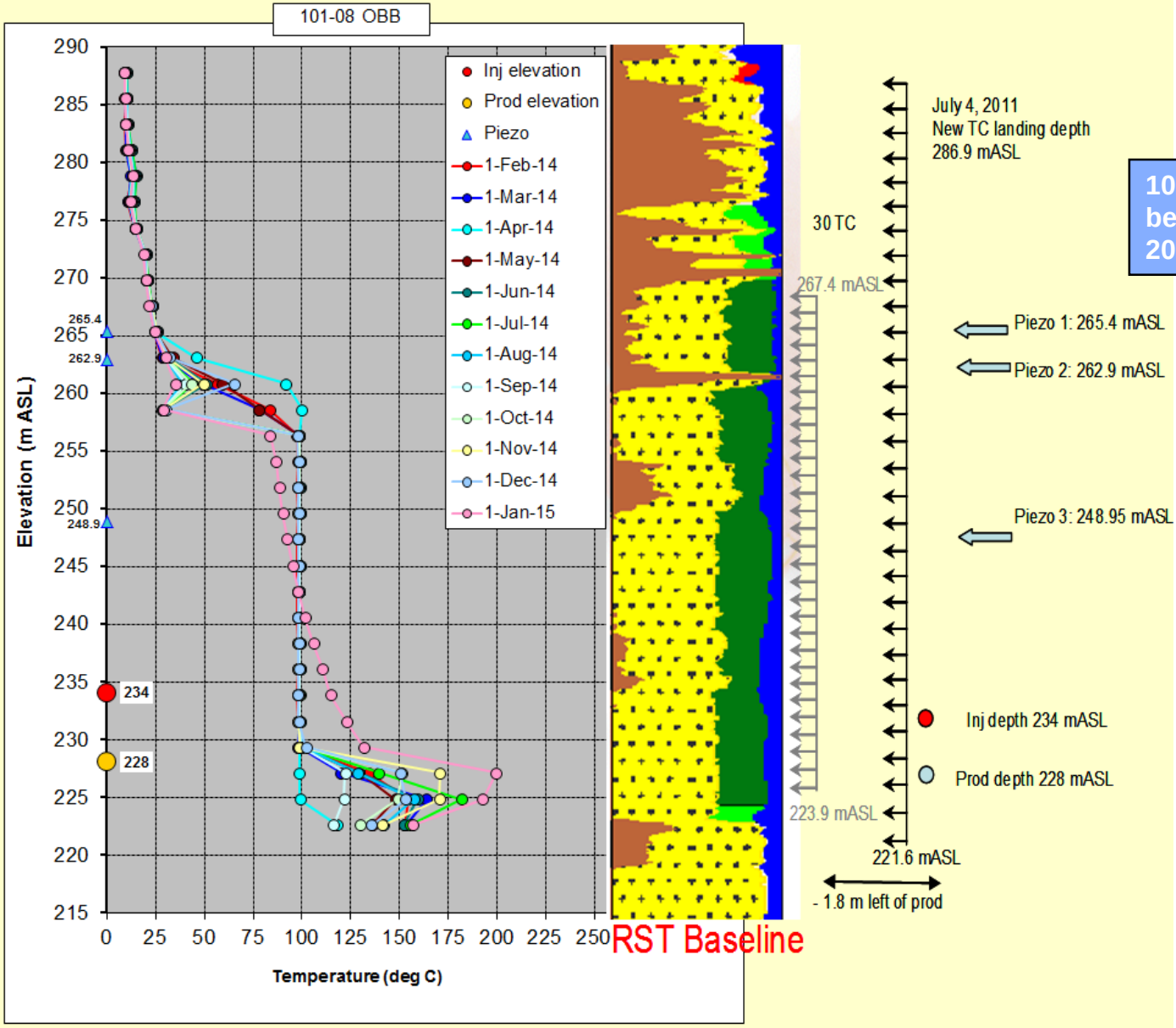




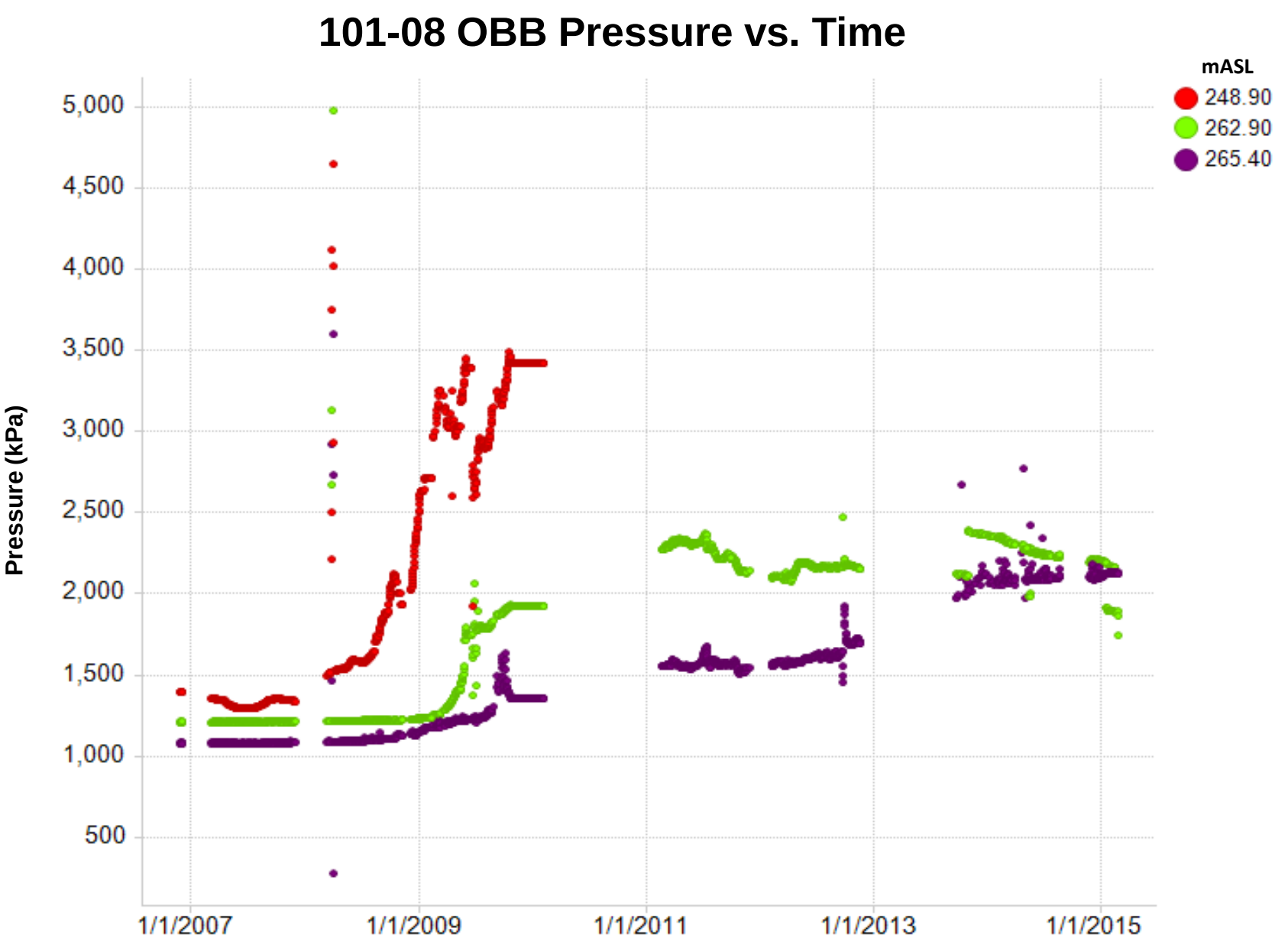


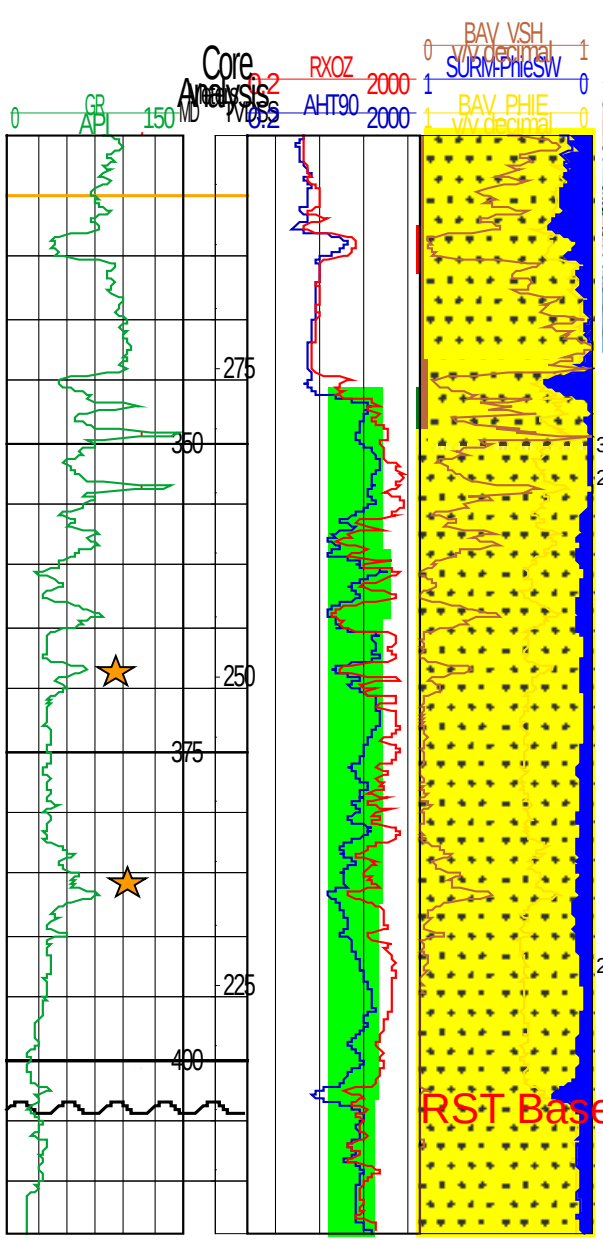
RST Baseline

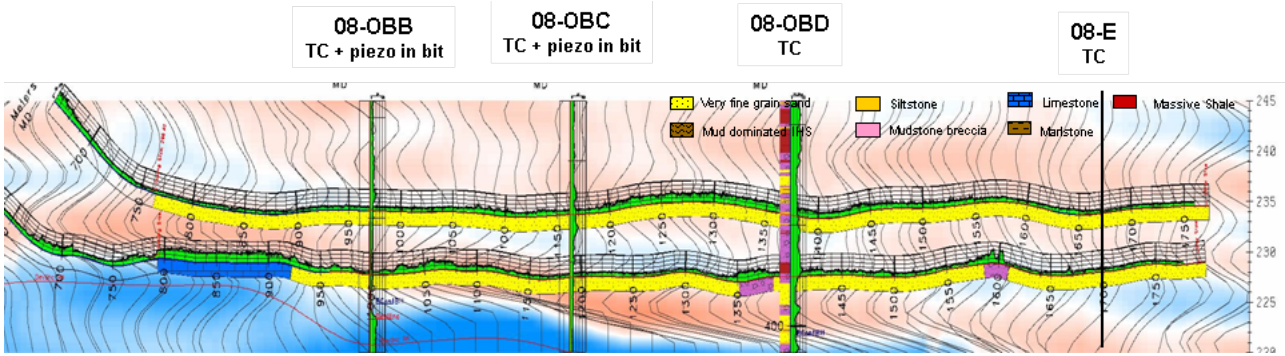
101-08 OBB
Temperature vs. Depth



101-08 OBB TC string has been replaced August 19, 2013.


101-08 OBB Pressure vs. Time
mASL
248.90
262.90
265.40
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
1/1/2007
1/1/2009
1/1/2011
1/1/2013
1/1/2015





30 TC
276 mASL

Piezo 1: 273.5 mASL

Piezo 2: 263.0 mASL

Piezo 3: 252.5 mASL

232.5 mASL

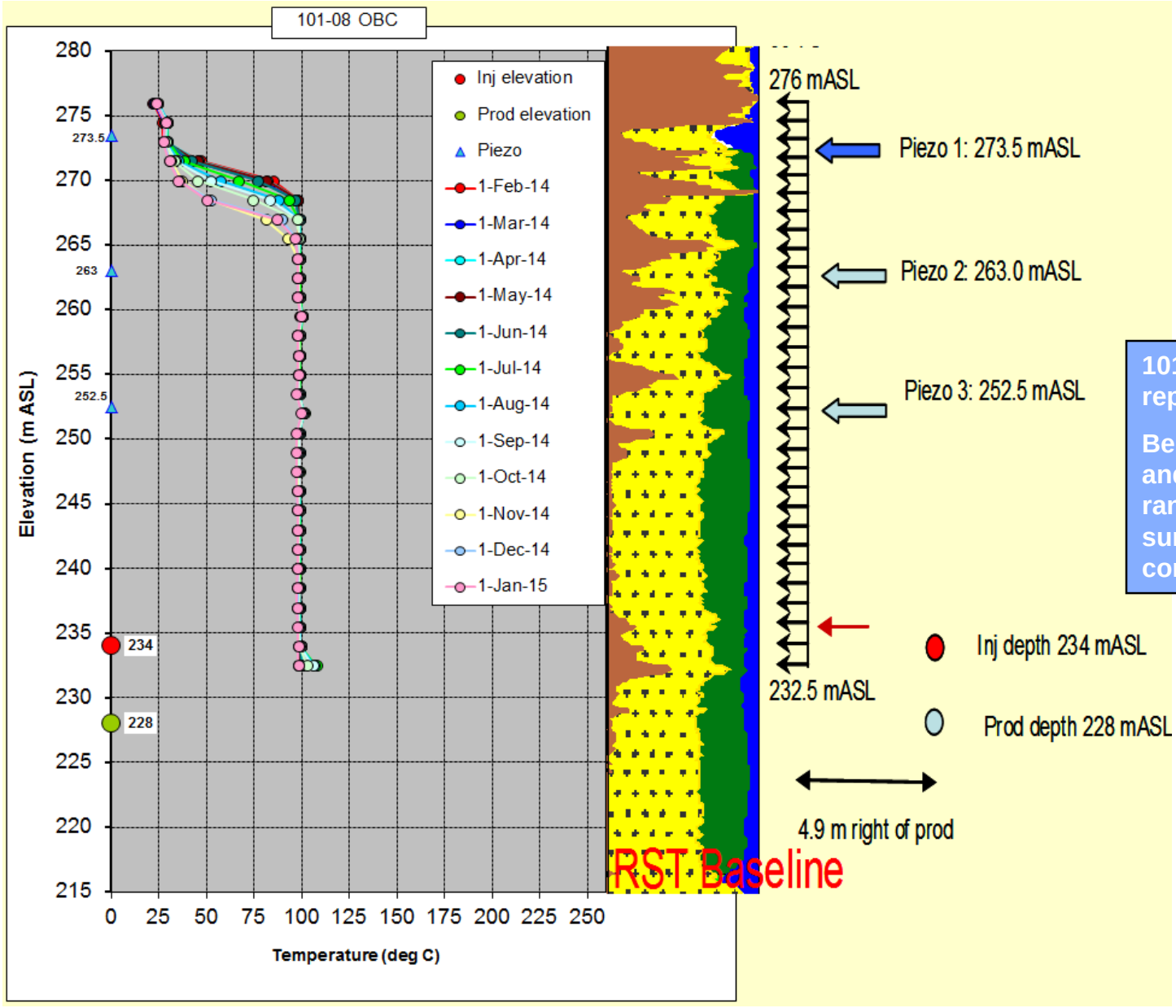
Inj depth 234 mASL

Prod depth 228 mASL

4.9 m right of prod

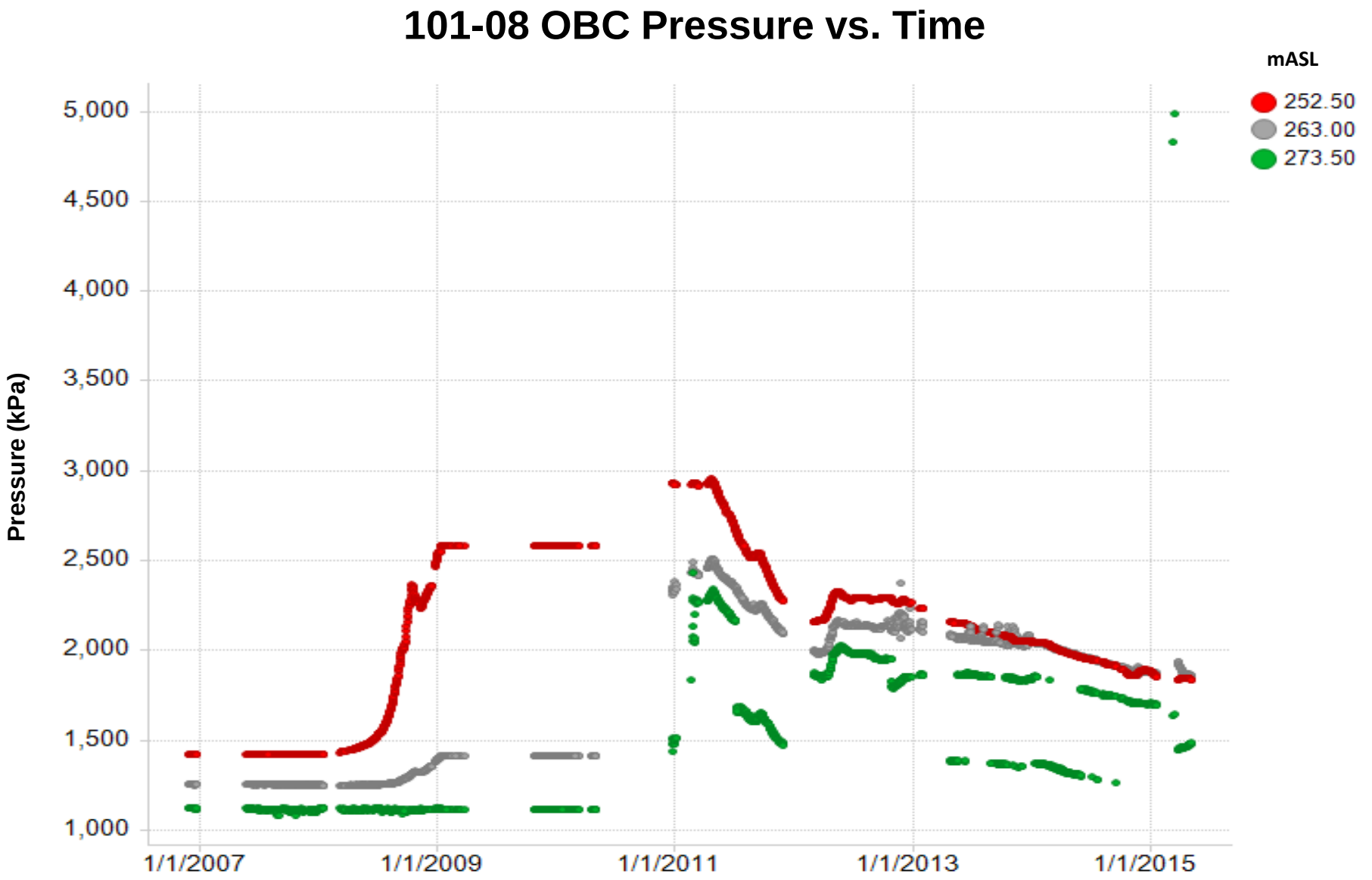
RST Baseline

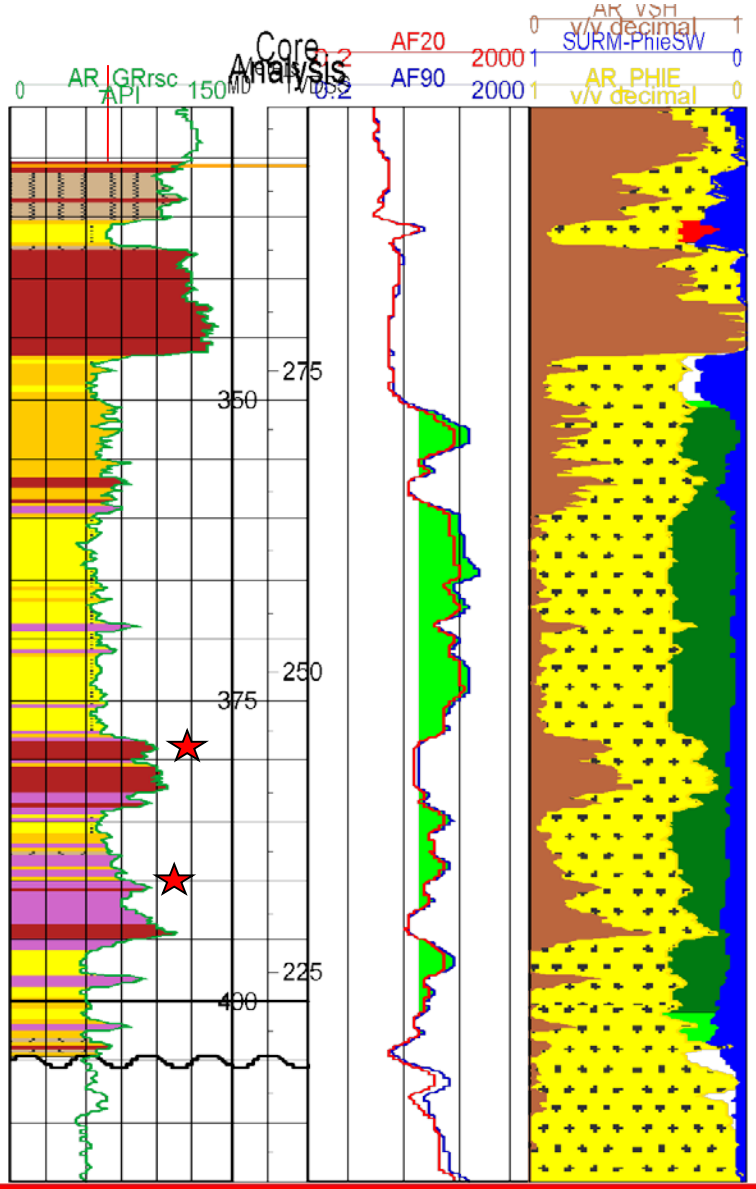
101-08 OBC
Temperature vs. Depth

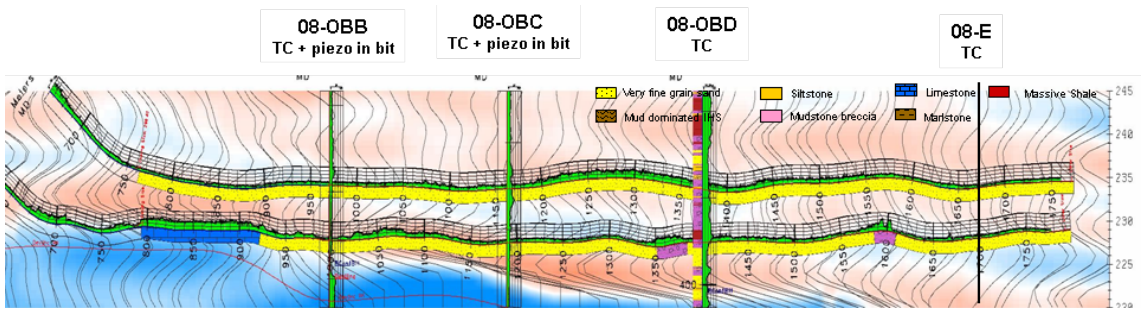


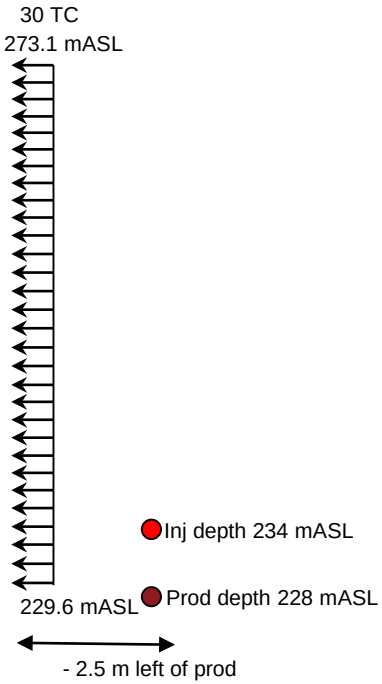
101-08 OBC TC string replaced 23March 2011.

Because of ground condition and according to reservoir ranking list, 101-08 OBC surface connection was completed March 1, 2012.

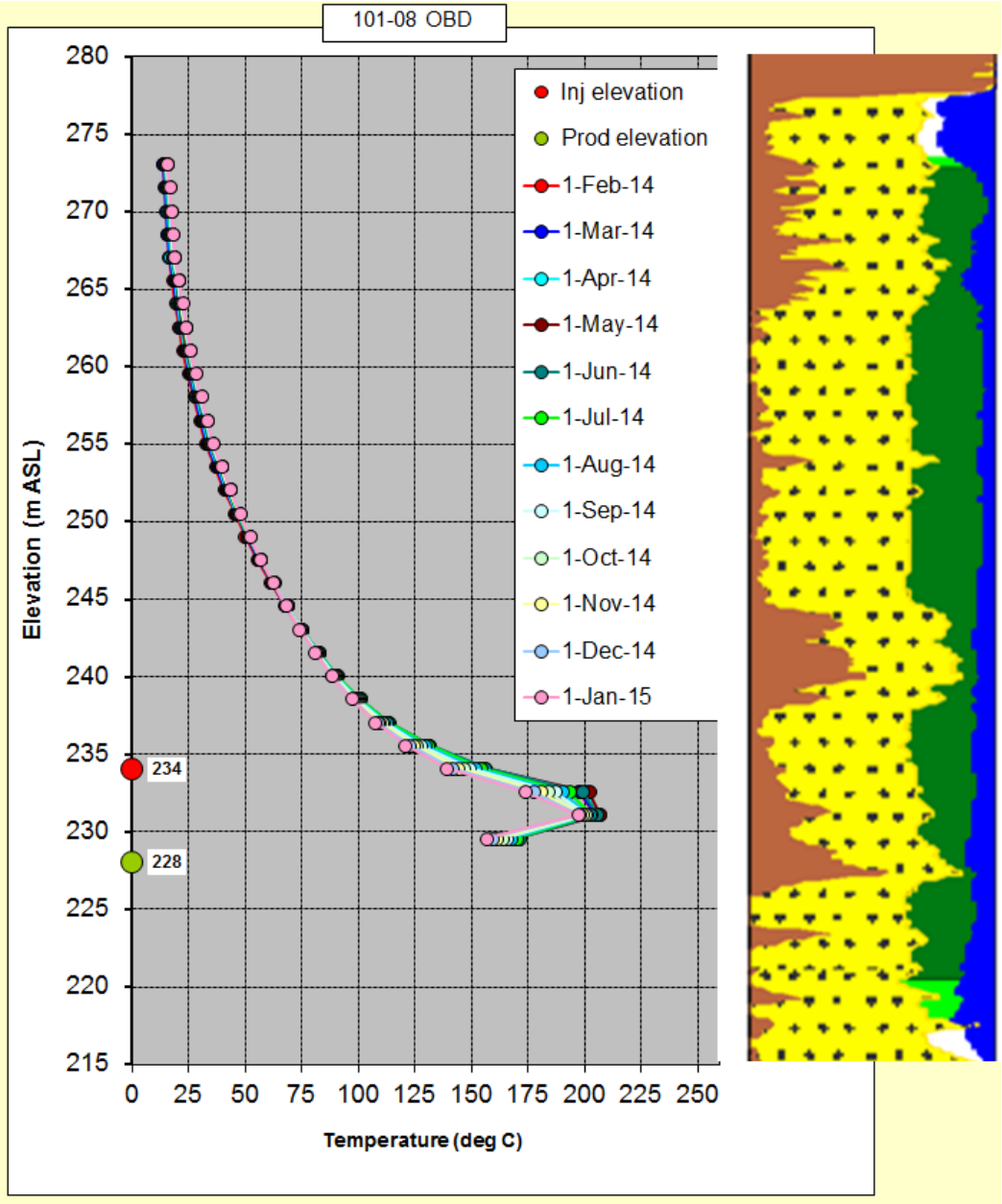

101-08 OBC Pressure vs. Time
mASL
252.50
263.00
273.50
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
1/1/2007
1/1/2009
1/1/2011
1/1/2013
1/1/2015


Core Analysis
AR_GRrsc
API
MD
TVD SS
AF20
AF90
2000
AR_VSH
v/v decimal
SURM-PhieSW
AR_PHIE
v/v decimal
275
350
250
375
225
400


08-OBB
TC + piezo in bit
08-OBC
TC + piezo in bit
08-OBD
TC
08-E
TC
Very fine grain sand
Mud dominated HS
Siltstone
Mudstone breccia
Limestone
Marlstone
Massive Shale

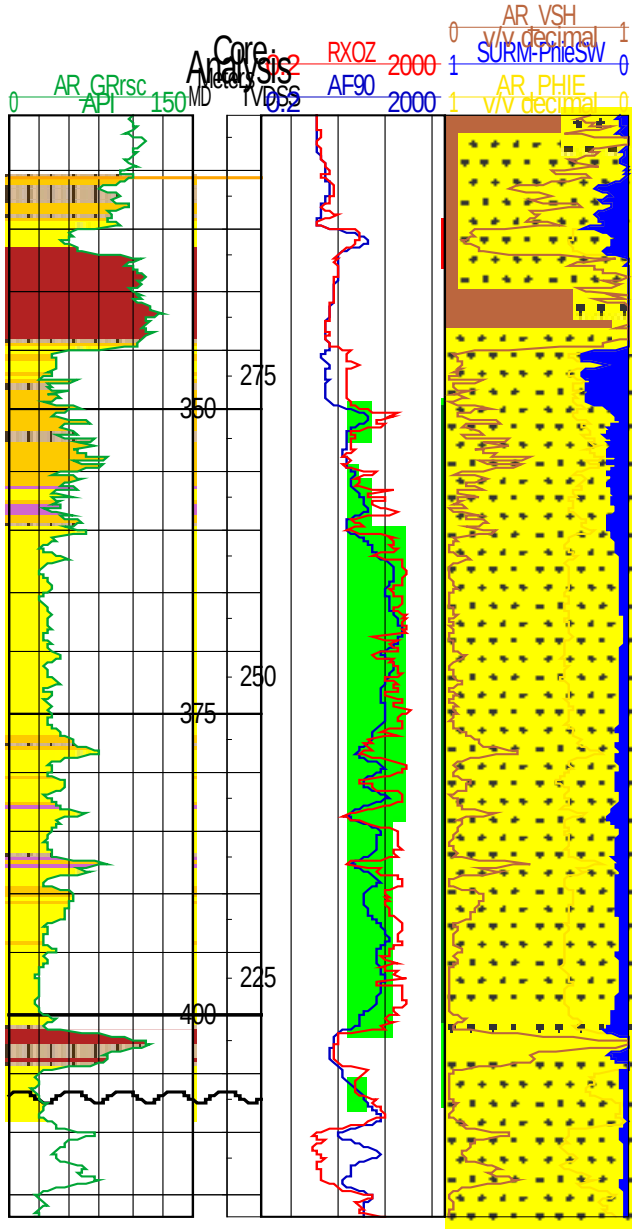

30 TC
273.1 mASL
229.6 mASL
Inj depth 234 mASL
Prod depth 228 mASL
- 2.5 m left of prod

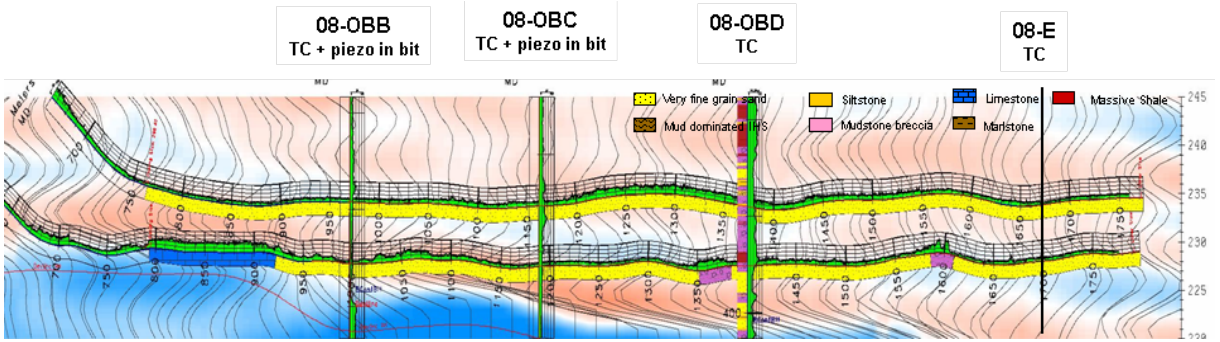
101-08 OBD
Temperature vs. Depth

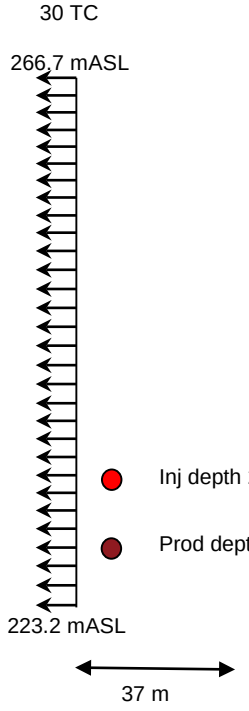


TC string replaced March 29, 2011.

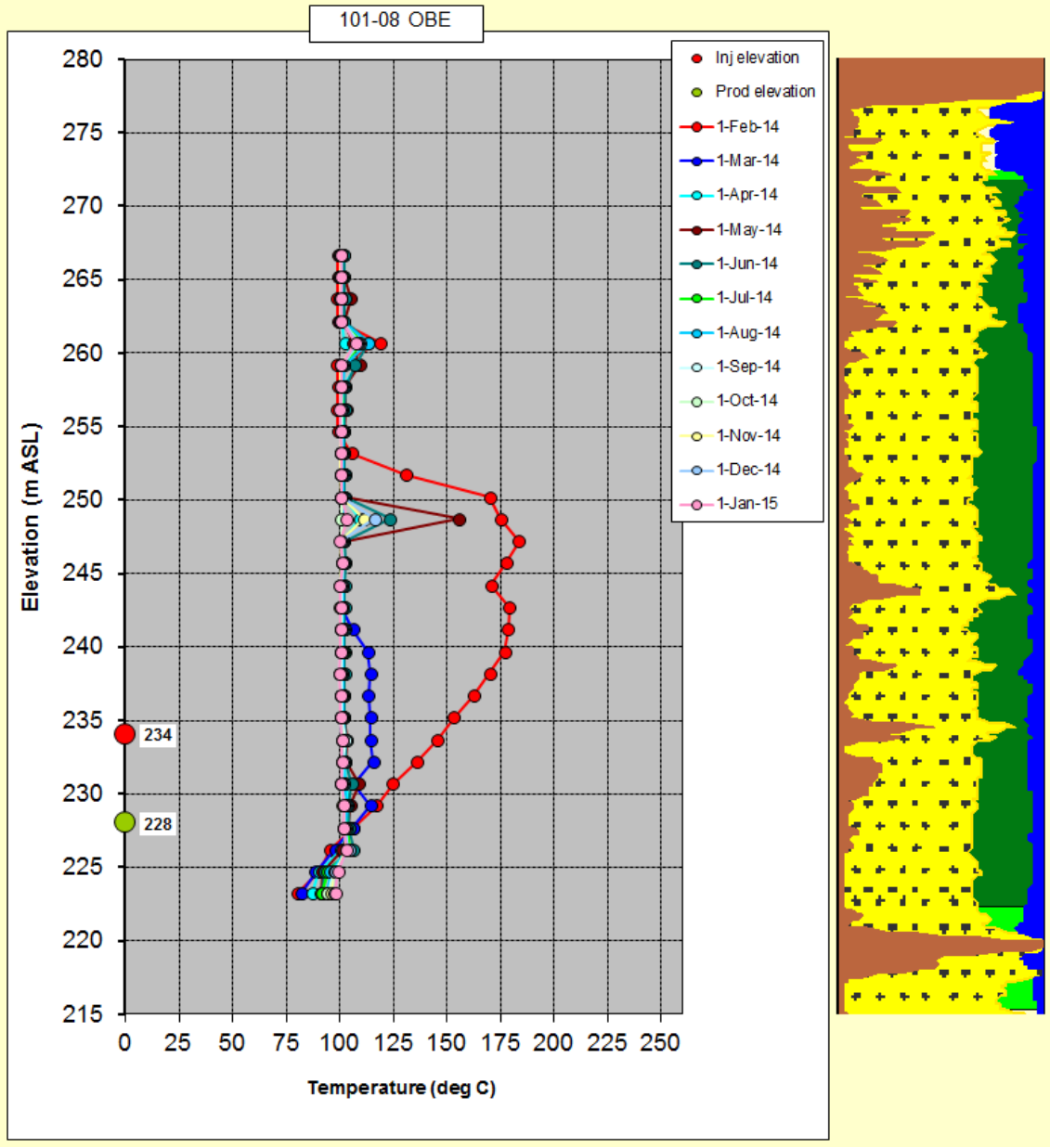
Because of ground condition and according to reservoir ranking list, 101-08 OBD surface connection was completed February 6, 2012.


Core Analysis
AR_GRrsc
API
150
MD
TVDSS
RXOZ
AF90
2000
0.2
AR_VSH
v/v decimal
SURM-PhieSW
AR_PHIE
275
350
250
375
225
400


08-OBB
TC + piezo in bit
08-OBC
TC + piezo in bit
08-OBD
TC
08-E
TC
Very fine grain sand
Mud dominated HRS
Siltstone
Mudstone breccia
Limestone
Marlstone
Massive Shale


30 TC
266.7 mASL
223.2 mASL
Inj depth 234 mASL
Prod depth 228 mASL
37 m

101-08 OBE
Temperature vs. Depth

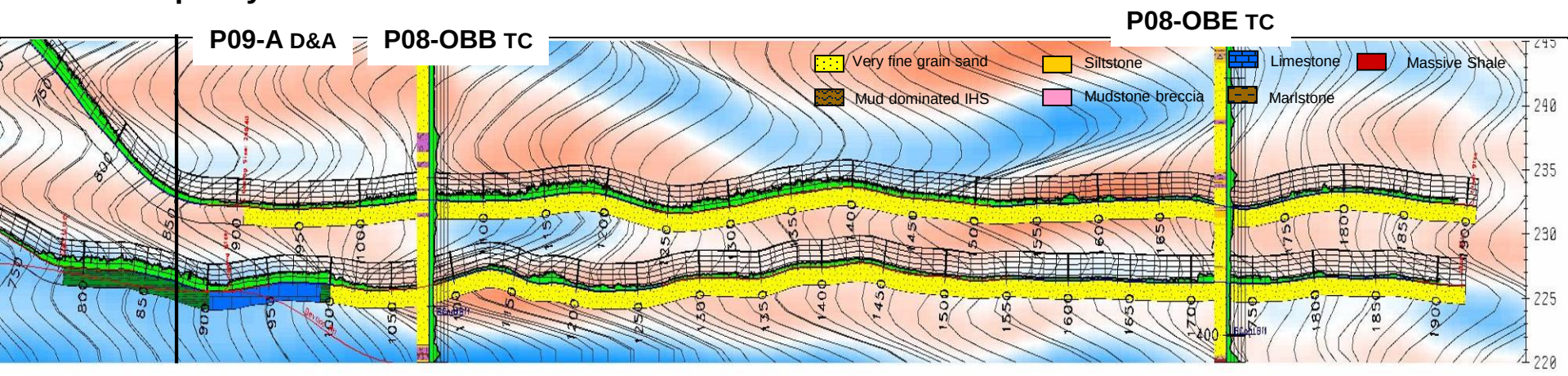


TC string replaced February 19, 2011.

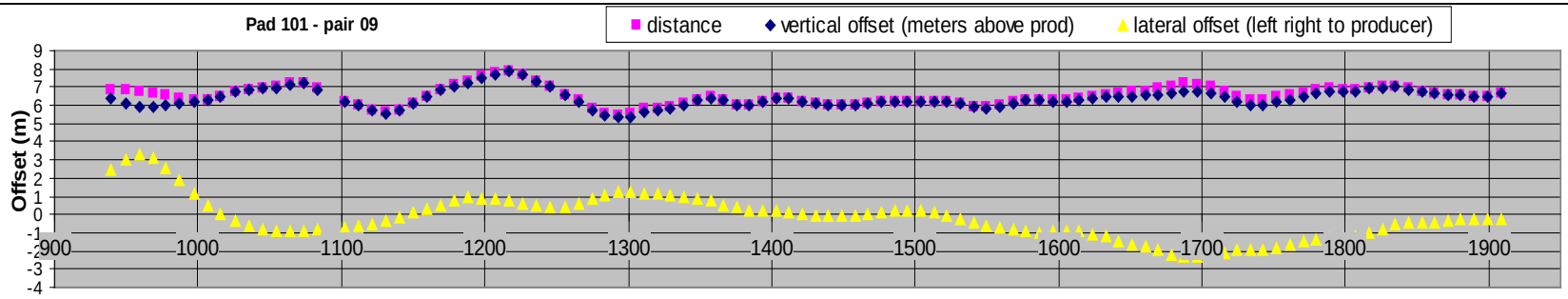
Because of ground condition and according to reservoir ranking list, 101-08 OBE surface connection was completed February 6, 2012.

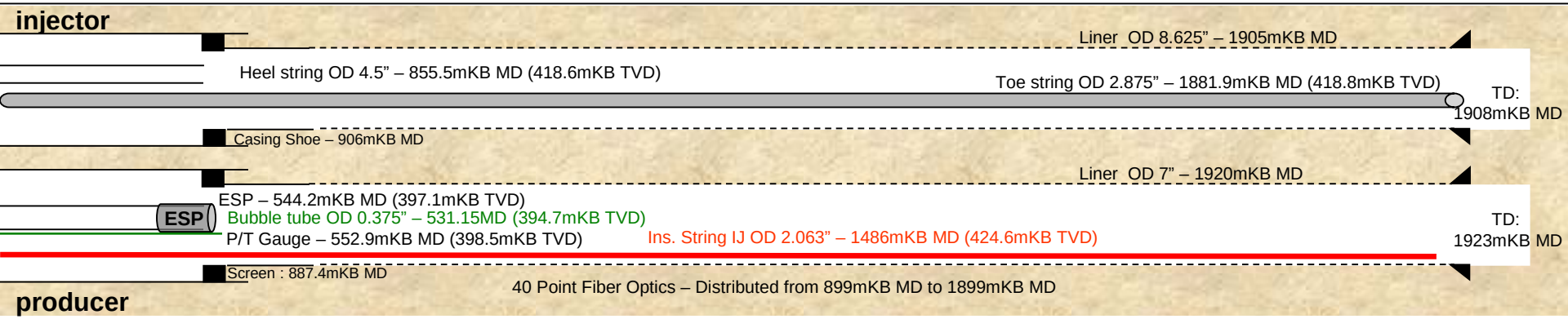
Well Pair 101-09
(101-18) (1000 m long, fiber optic)

Reservoir quality

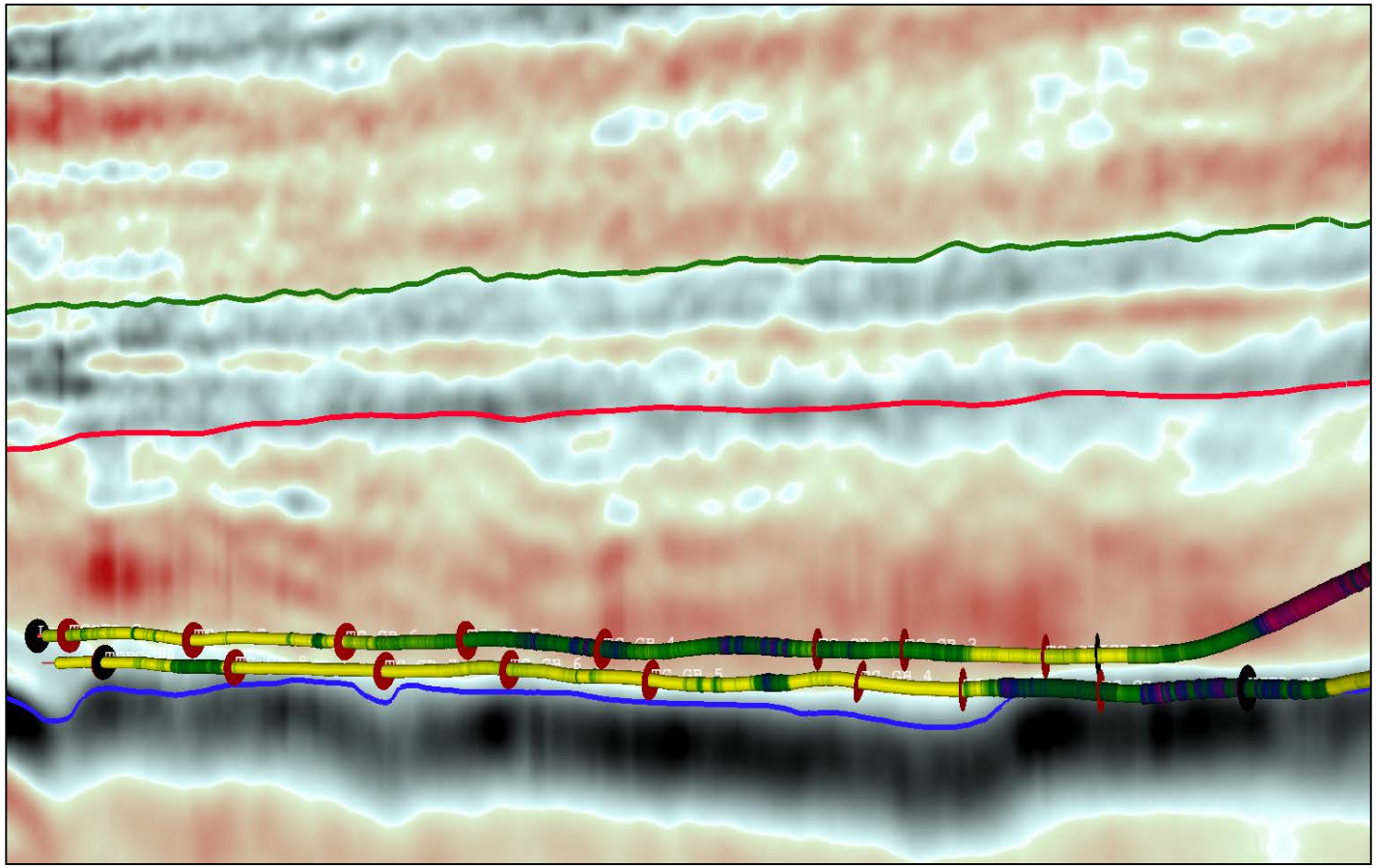


Offset





ConocoPhillips



Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

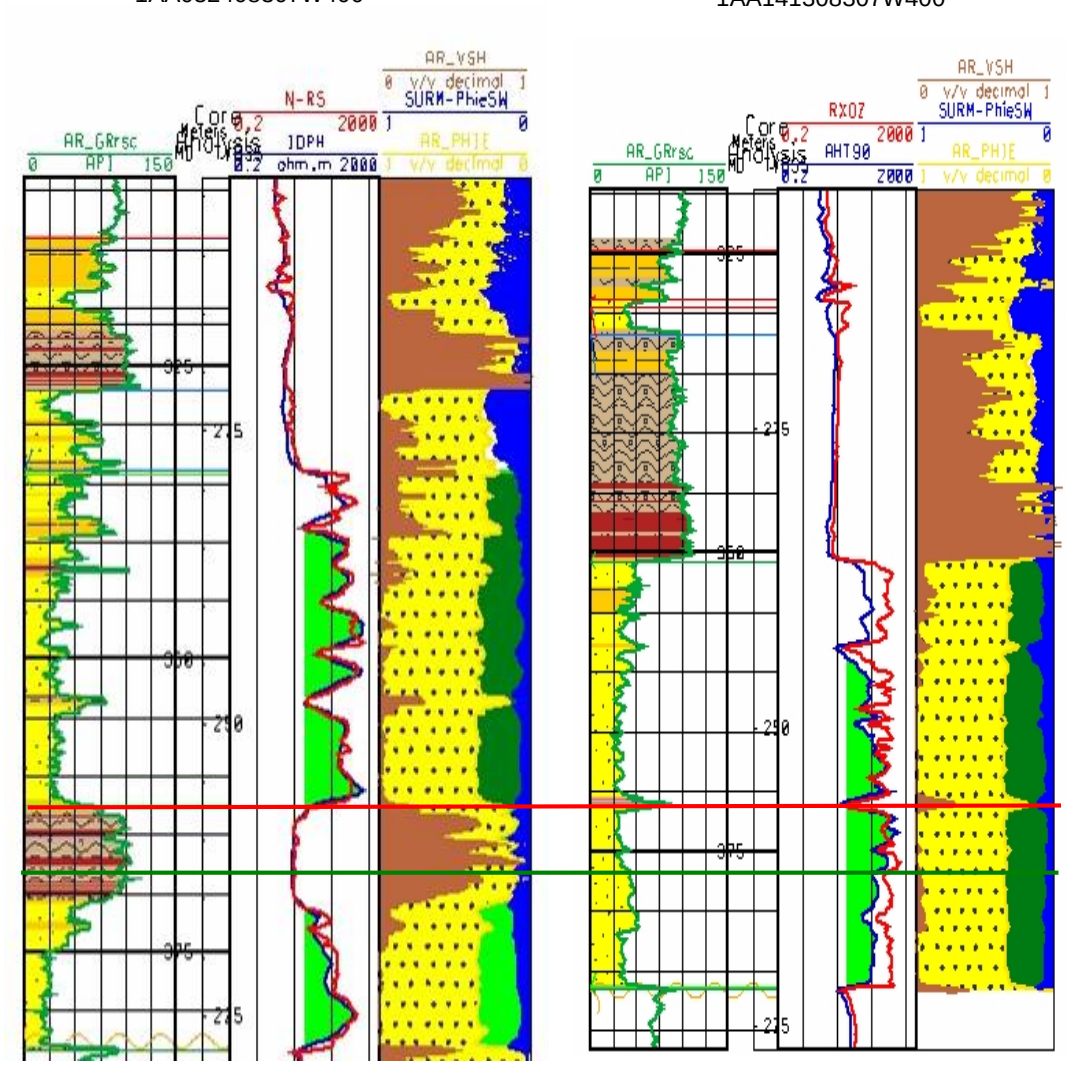
= Casing Point

Gamma Ray Color Scale (API)

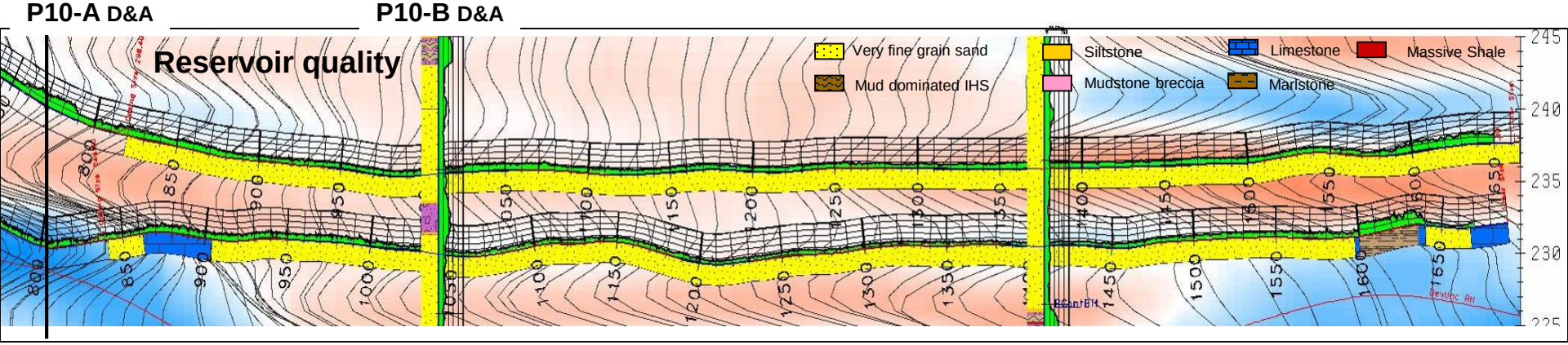
Integrated Seismic Trace

101-P09-A
1AA032408307W400

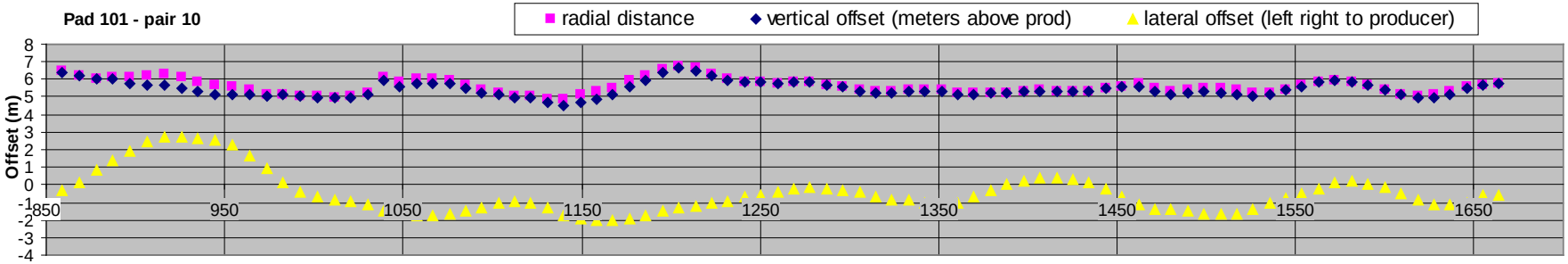
101-P10-A
1AA141308307W400

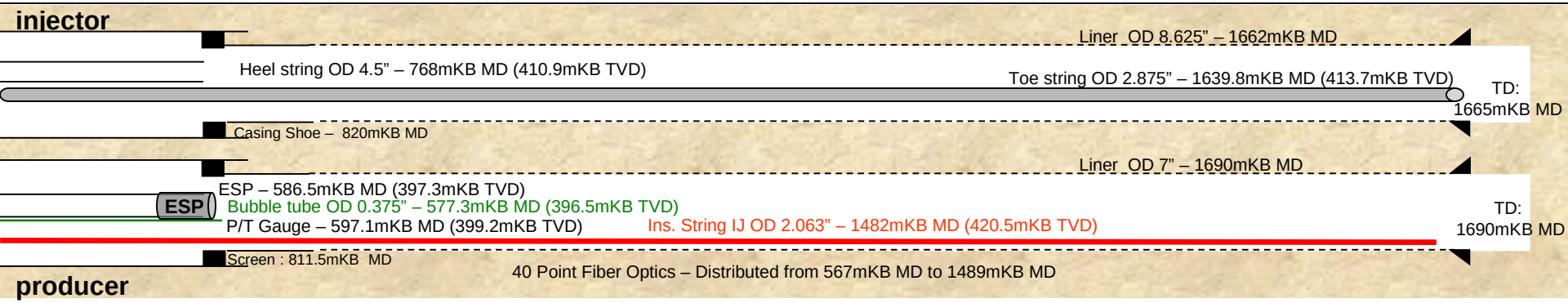


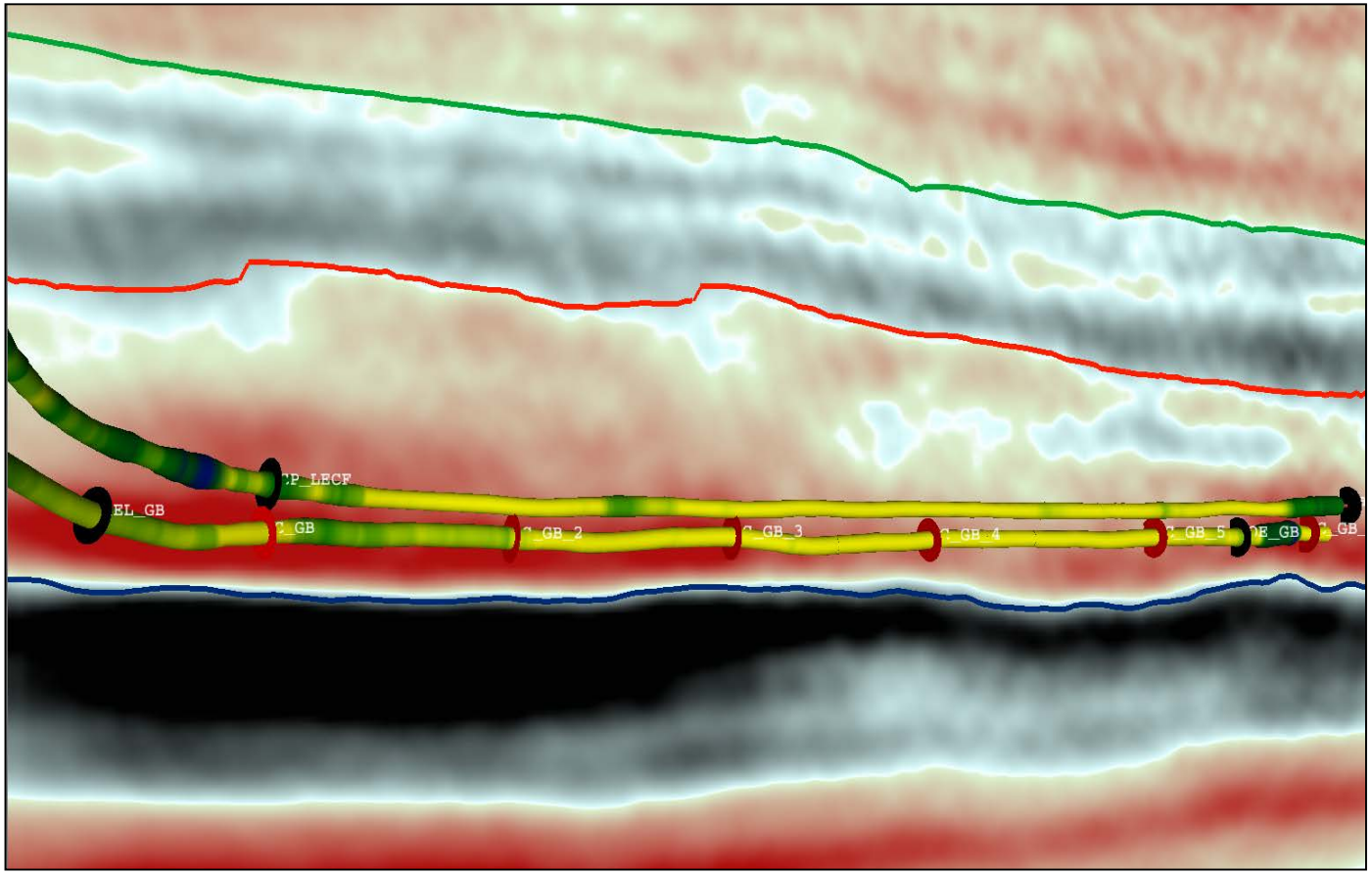
1. Edge well, radial distance around 6m
2. High CPV
3. Tight area at mid section
4. Fiber optic
5. No monitoring


P10-A D&A
P10-B D&A
Reservoir quality
Very fine grain sand
Mud dominated IHS
Siltstone
Mudstone breccia
Limestone
Massive Shale
Marlstone

Offs


Pad 101 - pair 10
radial distance
vertical offset (meters above prod)
lateral offset (left right to producer)
Offset (m)
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
850
950
1050
1150
1250
1350
1450
1550
1650


injector
Liner OD 8.625" – 1662mKB MD
Heel string OD 4.5" – 768mKB MD (410.9mKB TVD)
Toe string OD 2.875" – 1639.8mKB MD (413.7mKB TVD)
TD:
1665mKB MD
Casing Shoe – 820mKB MD
Liner OD 7" – 1690mKB MD
ESP – 586.5mKB MD (397.3mKB TVD)
ESP
Bubble tube OD 0.375" – 577.3mKB MD (396.5mKB TVD)
P/T Gauge – 597.1mKB MD (399.2mKB TVD)
Ins. String IJ OD 2.063" – 1482mKB MD (420.5mKB TVD)
TD:
1690mKB MD
Screen : 811.5mKB MD
40 Point Fiber Optics – Distributed from 567mKB MD to 1489mKB MD
producer



Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

= Casing Point

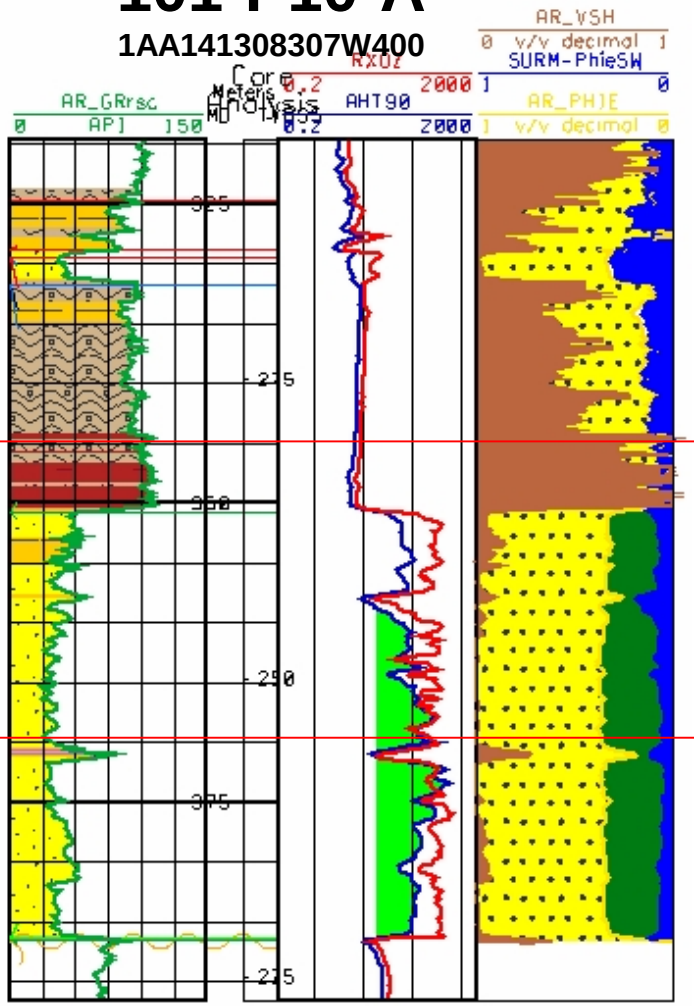
No changes in 2011

Gamma Ray Color Scale (API)

Integrated Seismic Trace

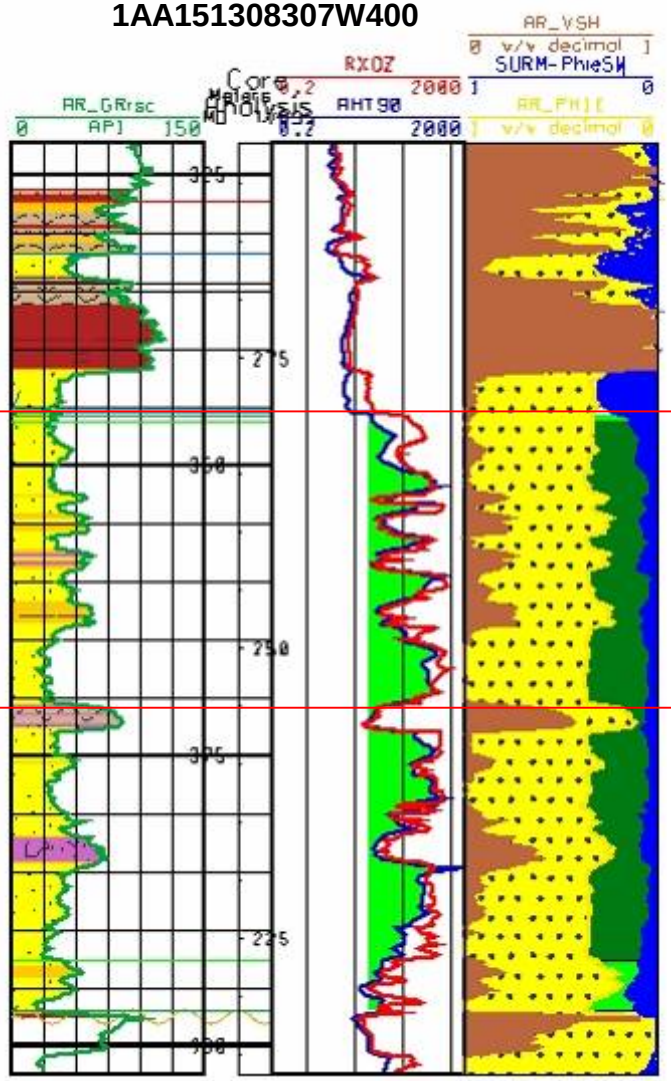
101-P10-A

1AA141308307W400

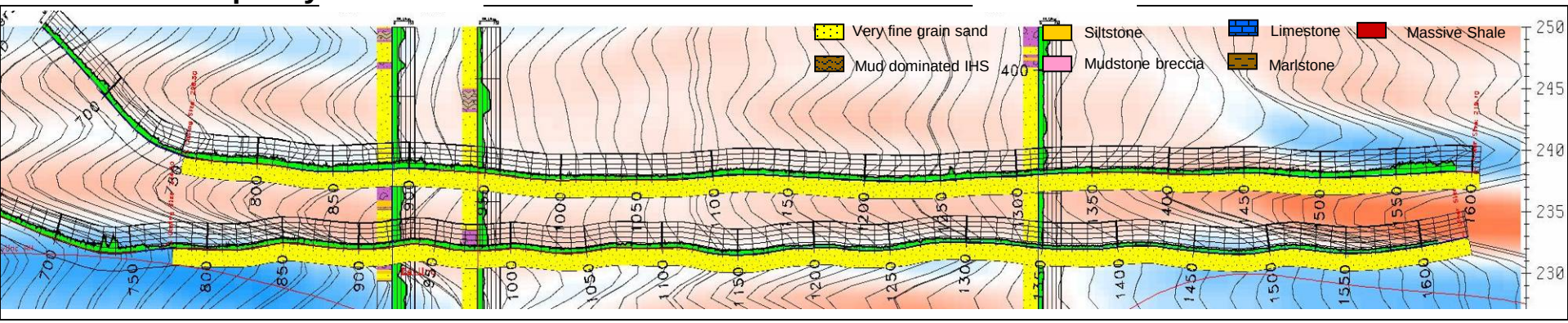


101-P10-B

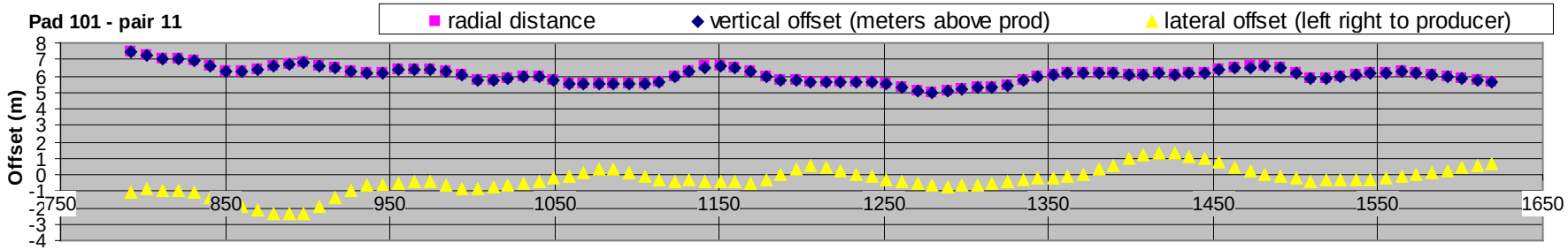
1AA151308307W400

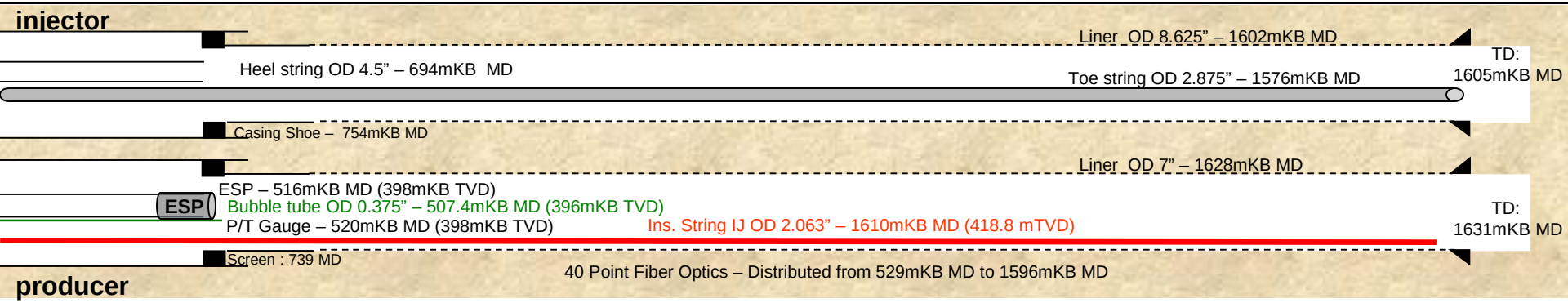


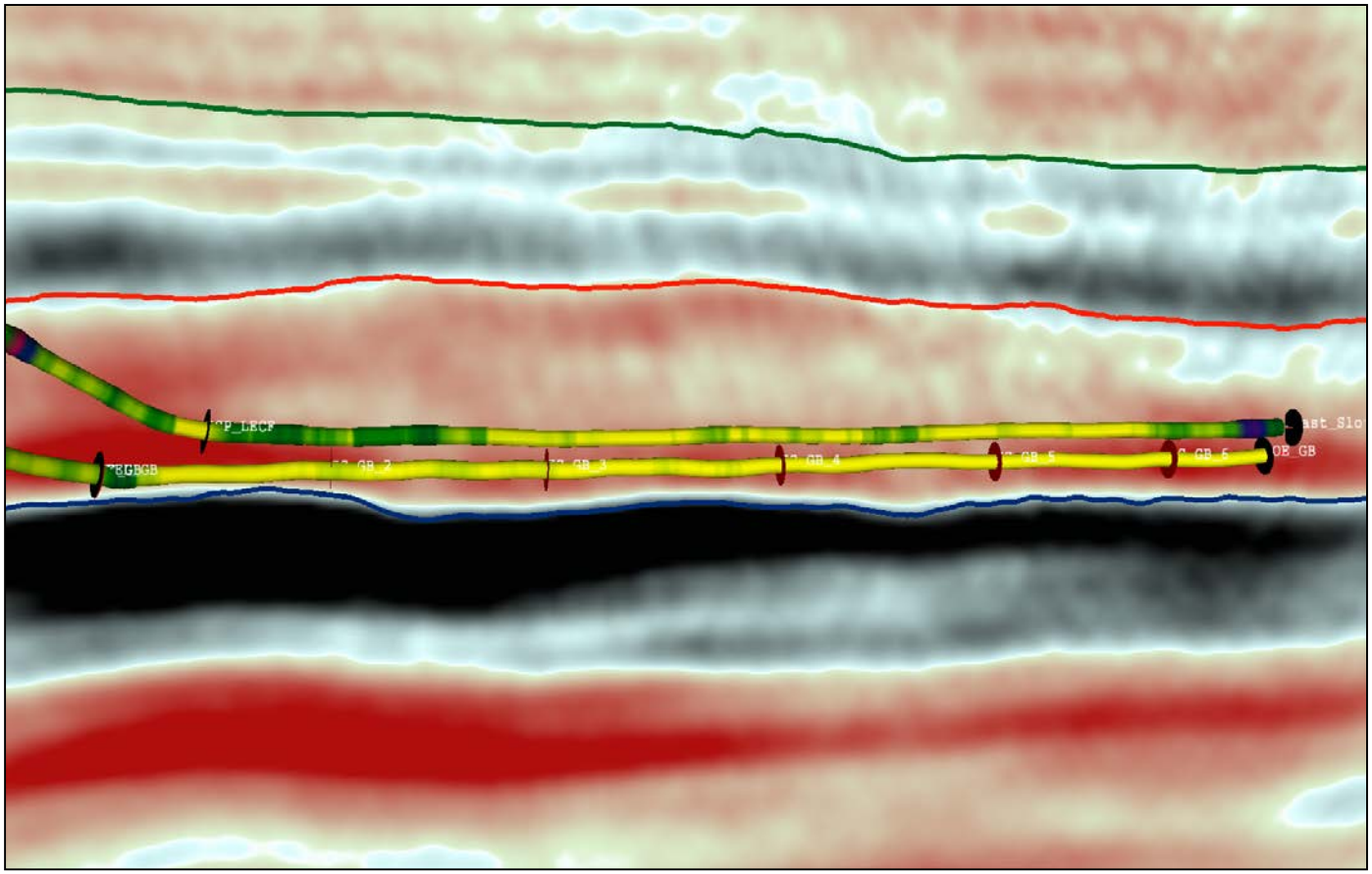
Reservoir quality 11-OBA TC — P12-D D&A



Offset







Horizons

= WAB

= TopResSeis

= BHL

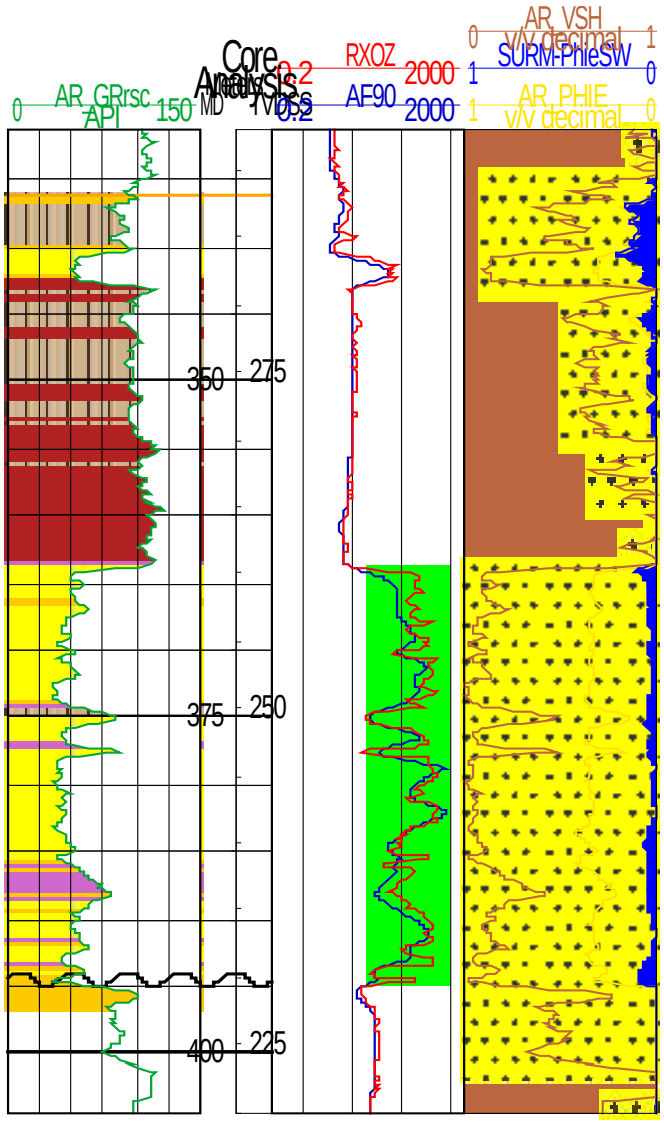
Picks

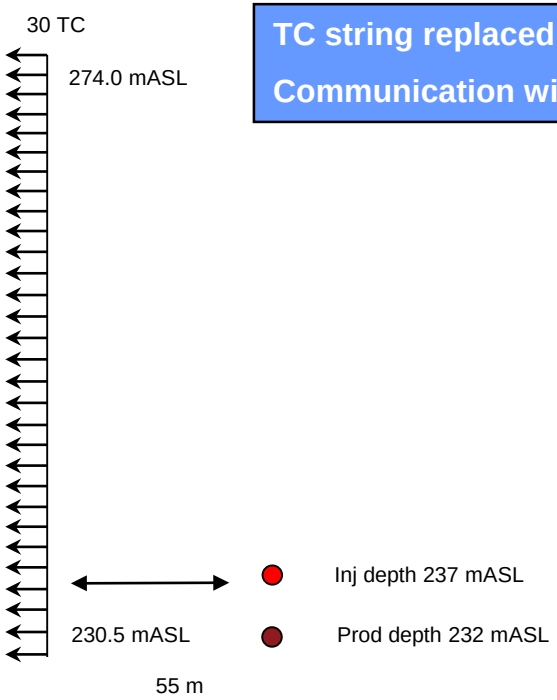
= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

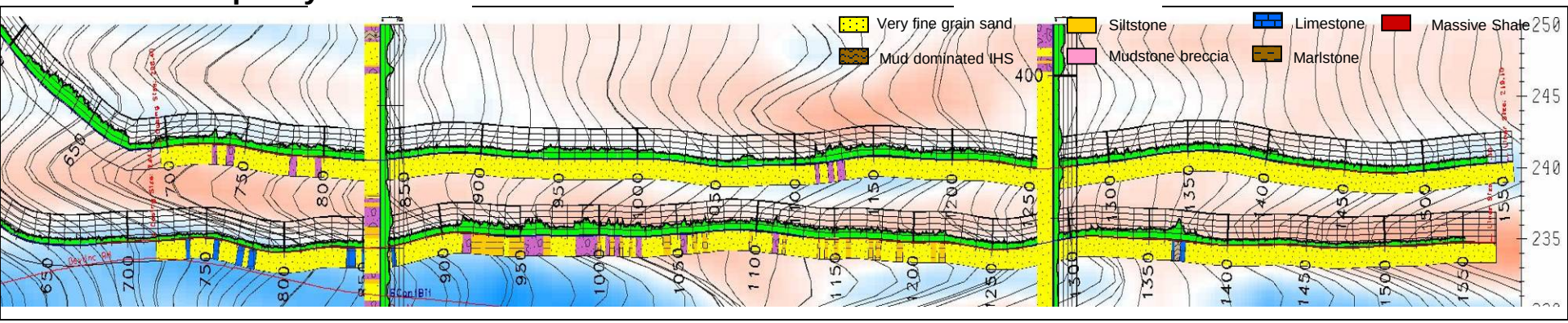


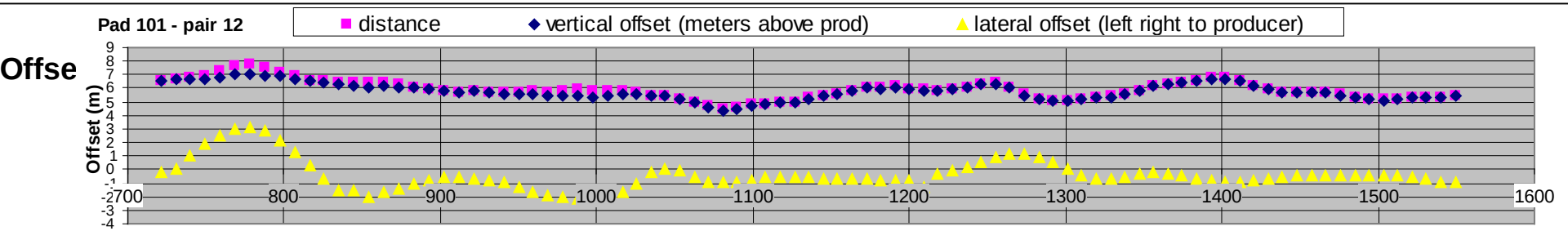


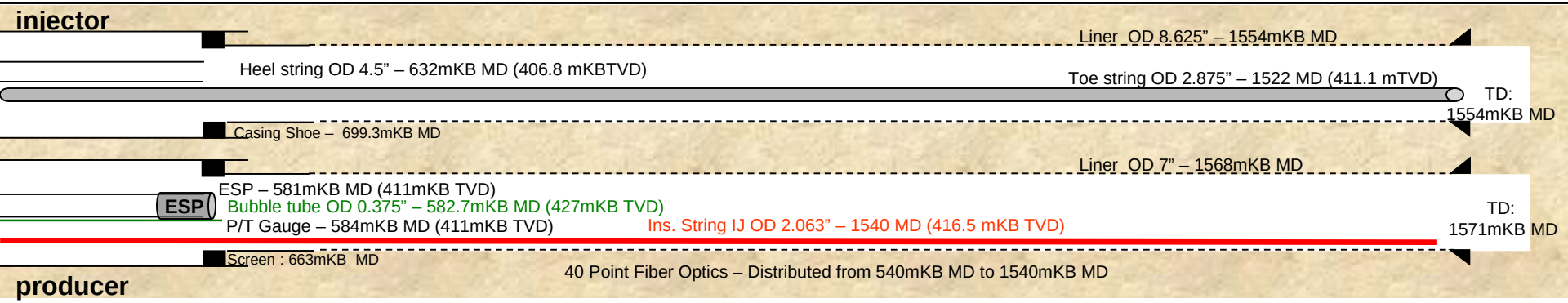
TC string replaced March 30, 2011.

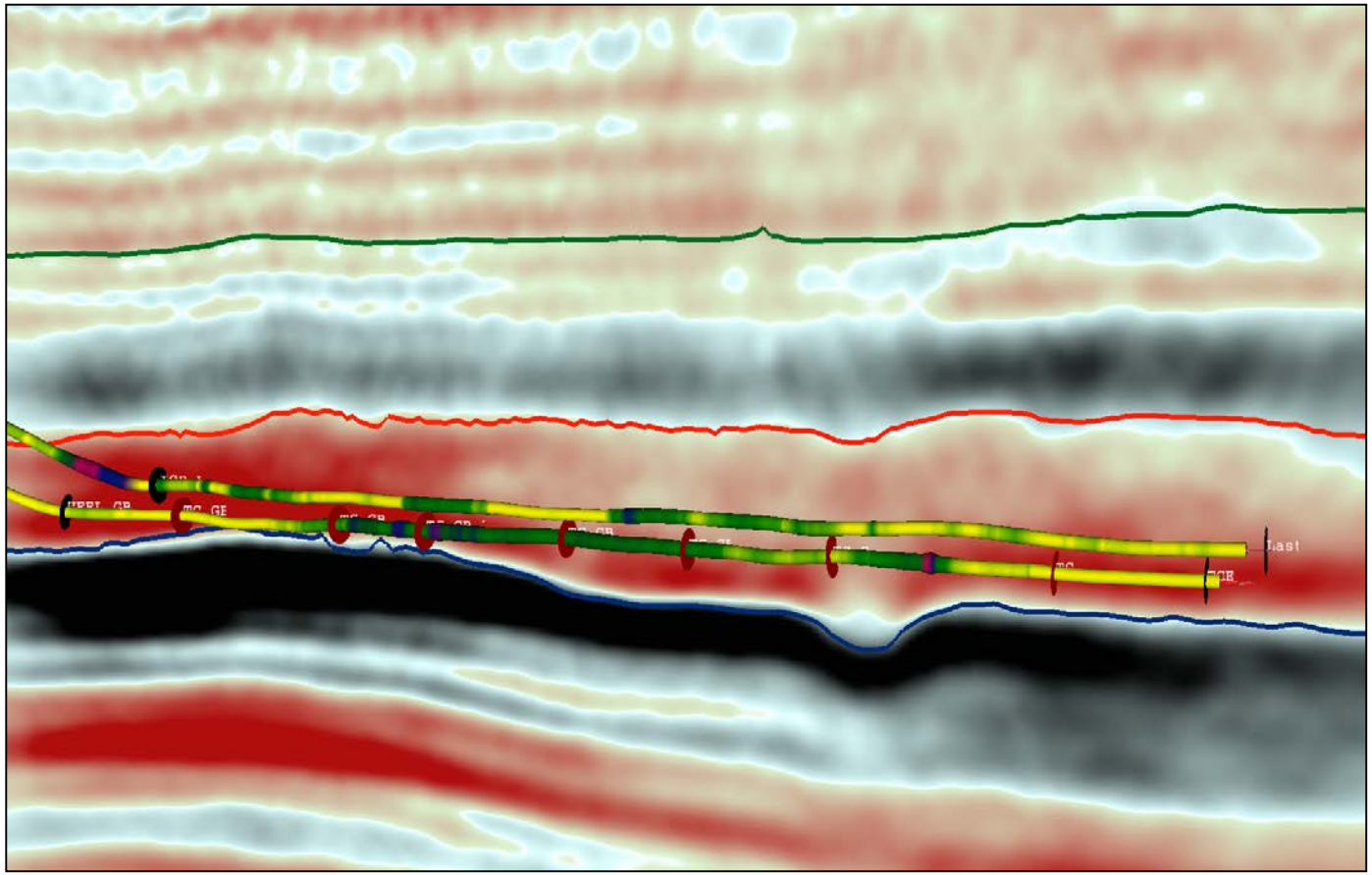
Communication with TC's not working.

Reservoir quality 11-OBA TC — P12-D D&A









Horizons

= WAB

= TopResSeis

= BHL

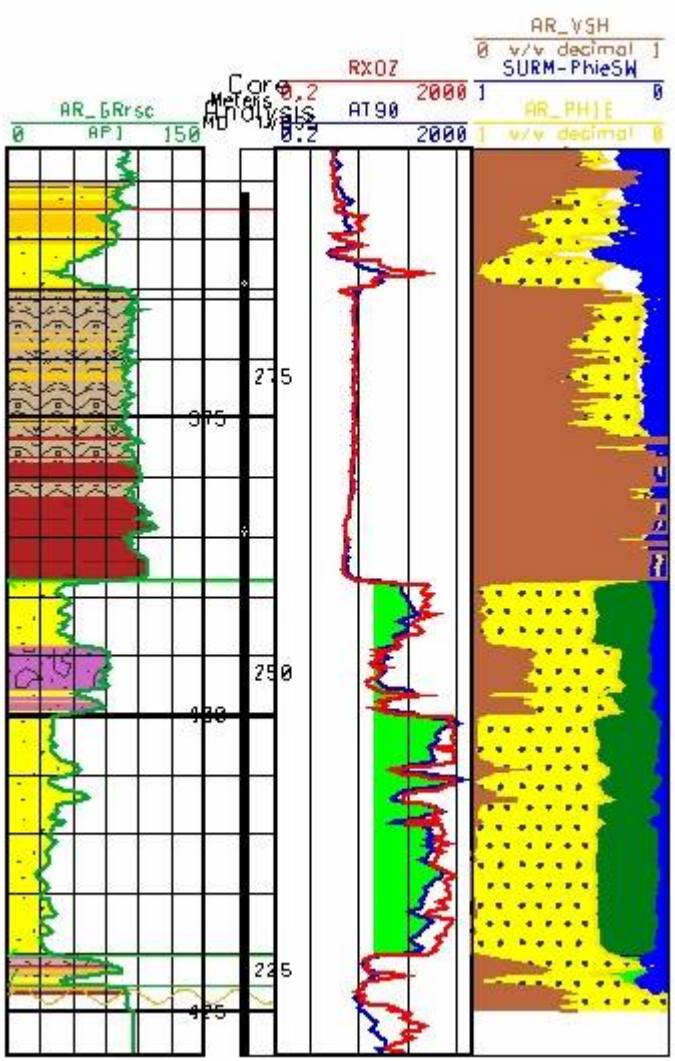
Picks

= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

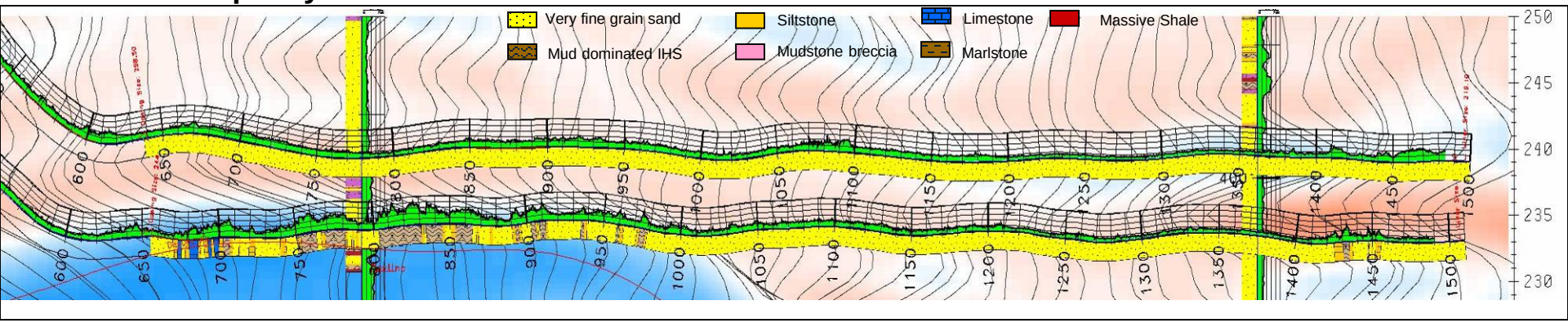
Integrated Seismic Trace

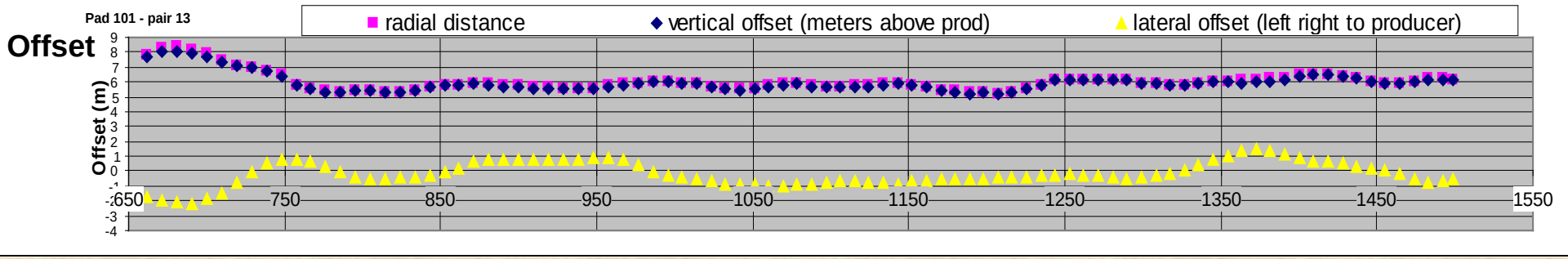


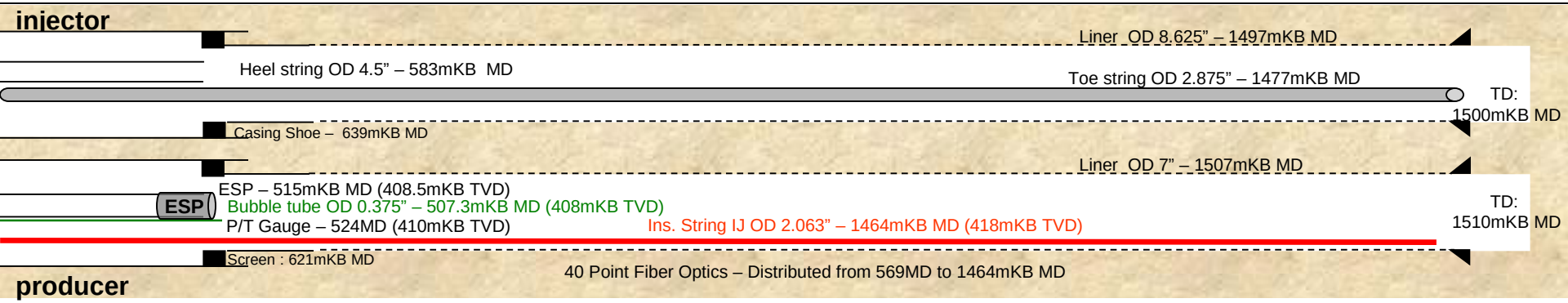
Inj depth 238 mASL

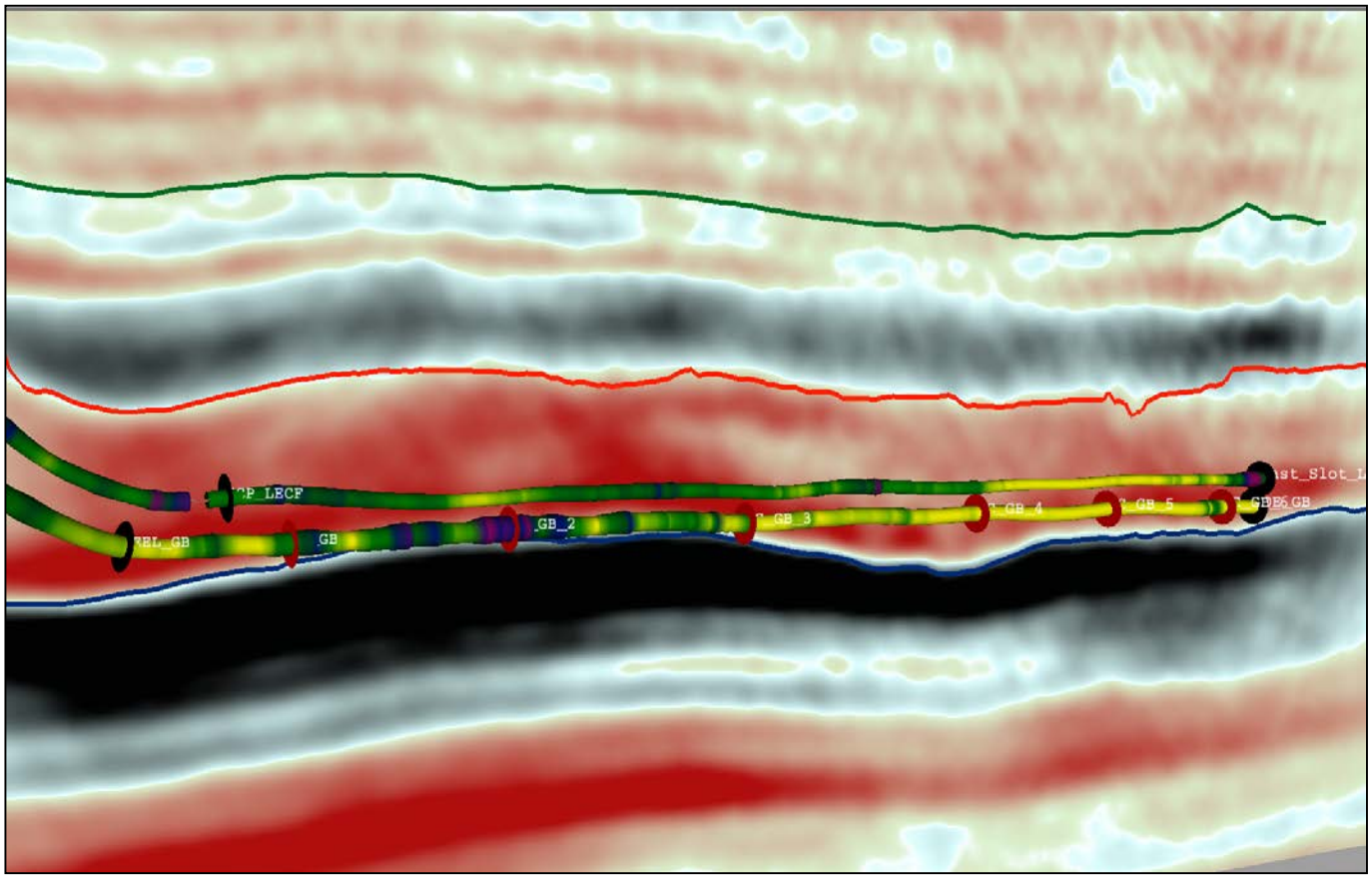
Prod depth234 mASL

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

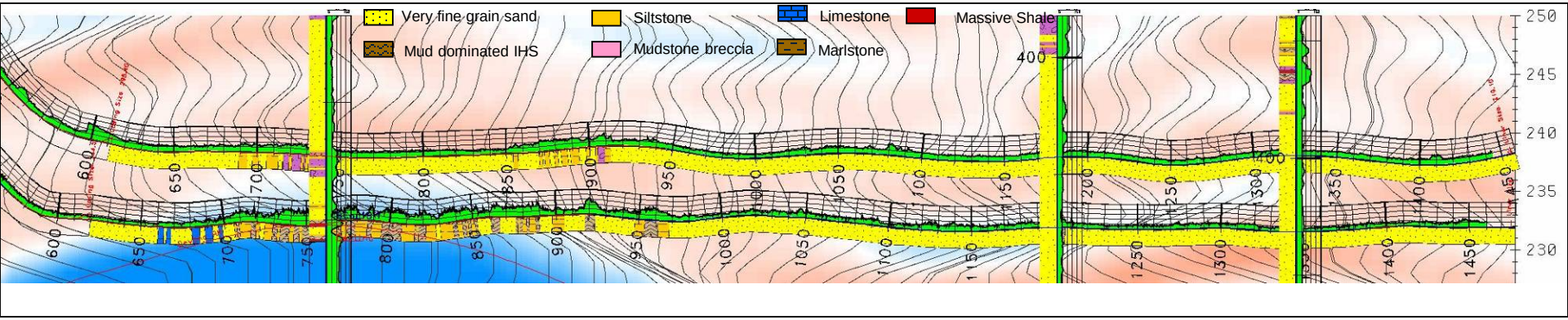
= Casing Point

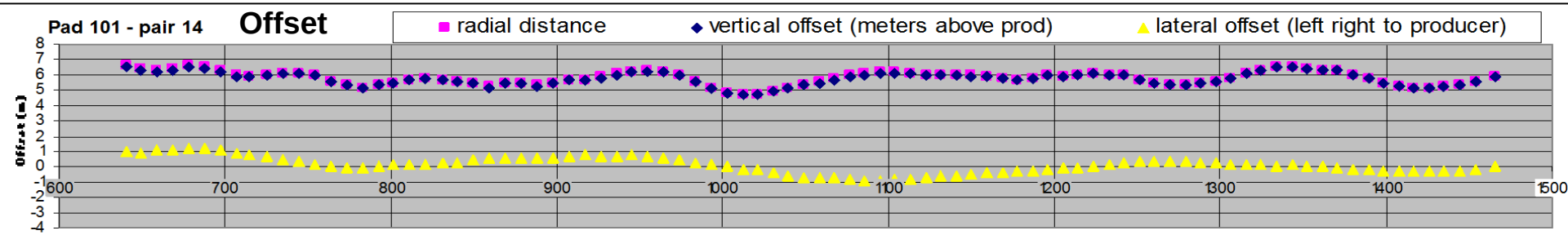
Gamma Ray Color Scale (API)

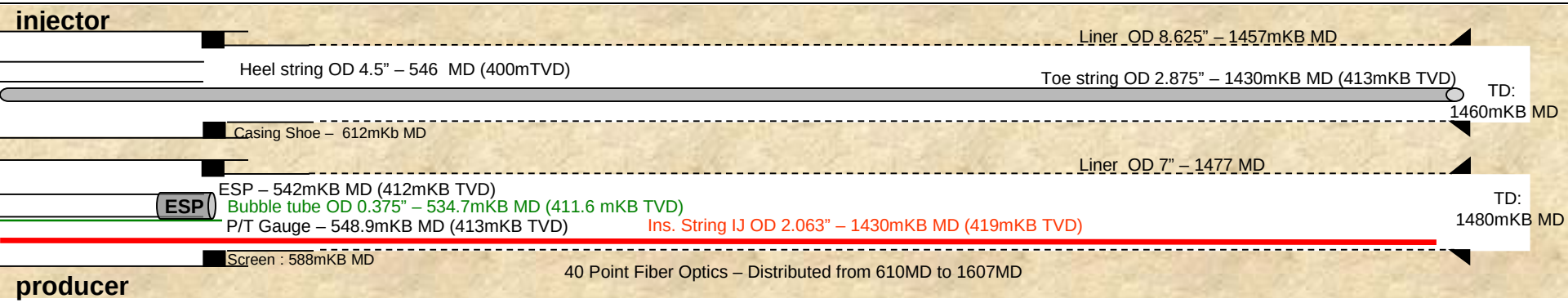
Integrated Seismic Trace

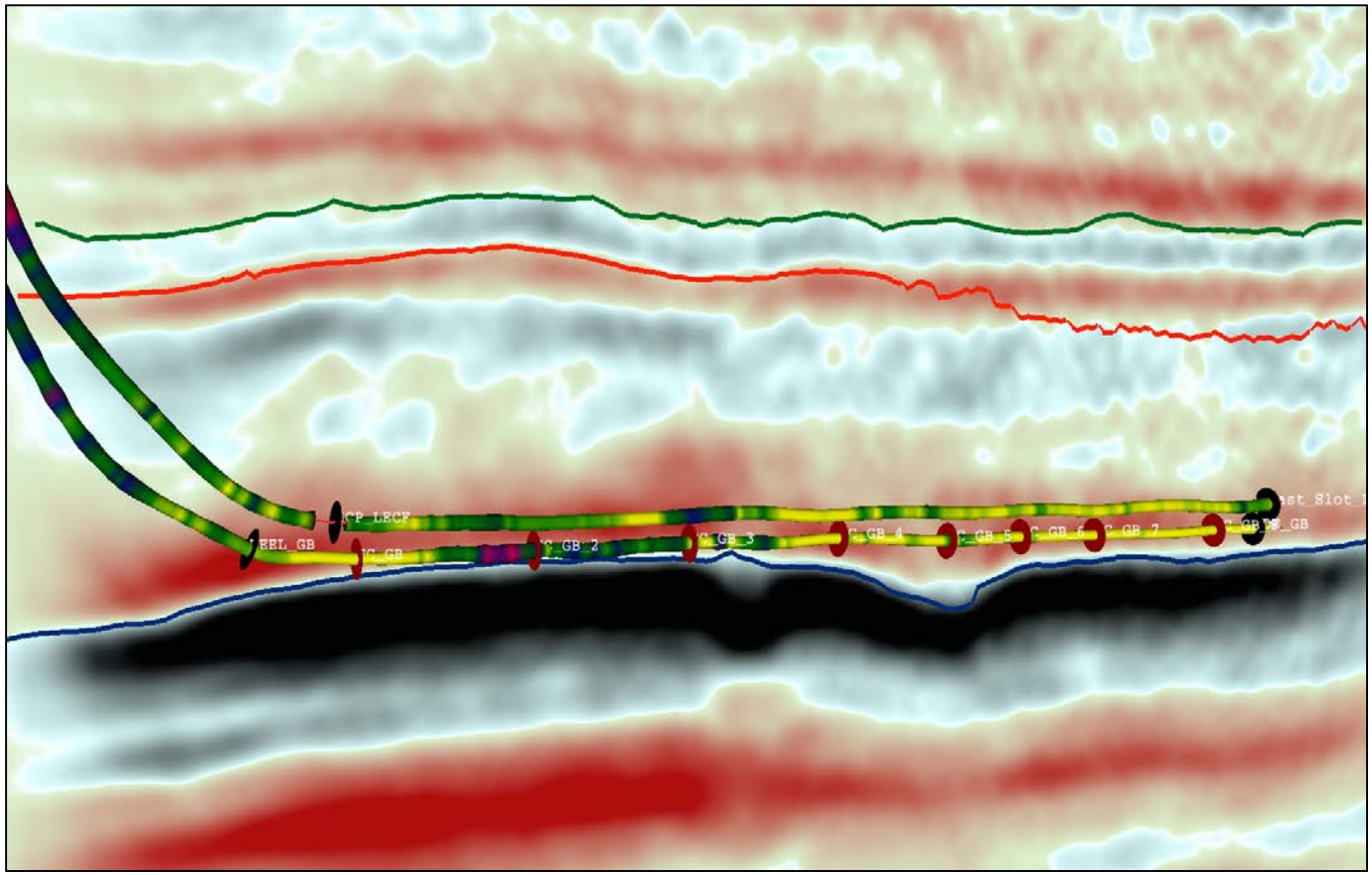
Reservoir quality

P14-OBA TC









Horizons

= WAB

= TopResSeis

= BHL

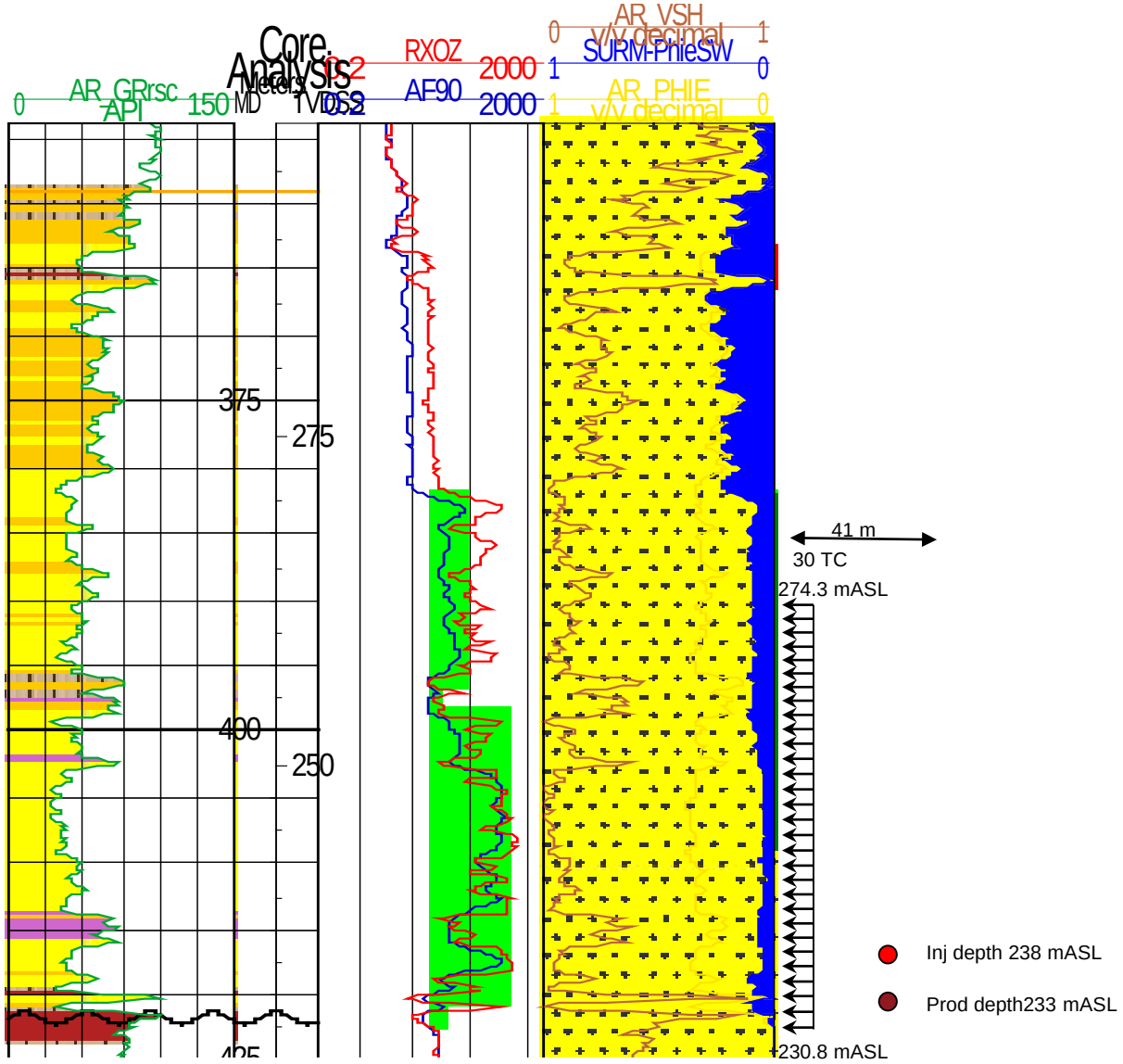
Picks

= Thermocouple

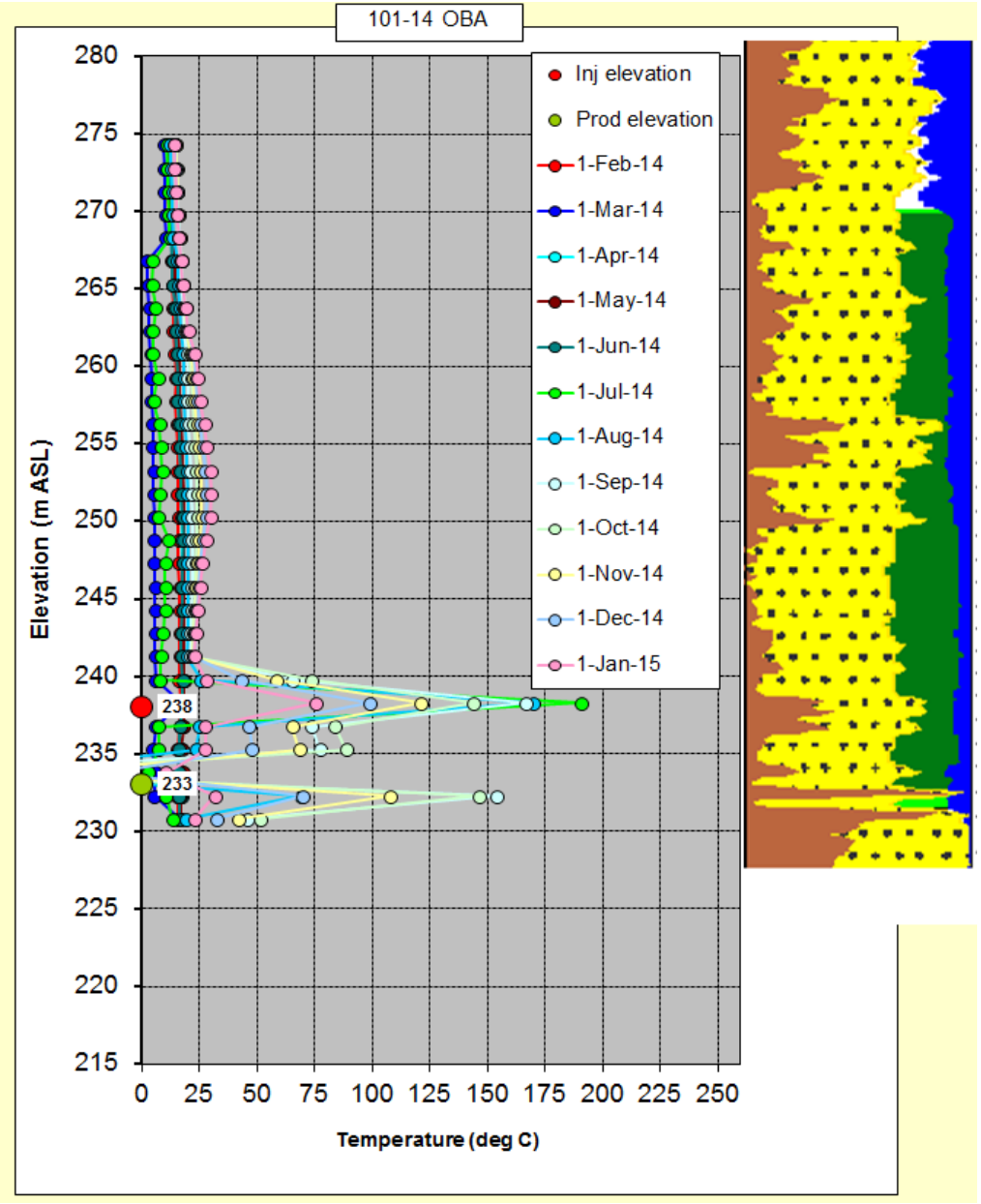
= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

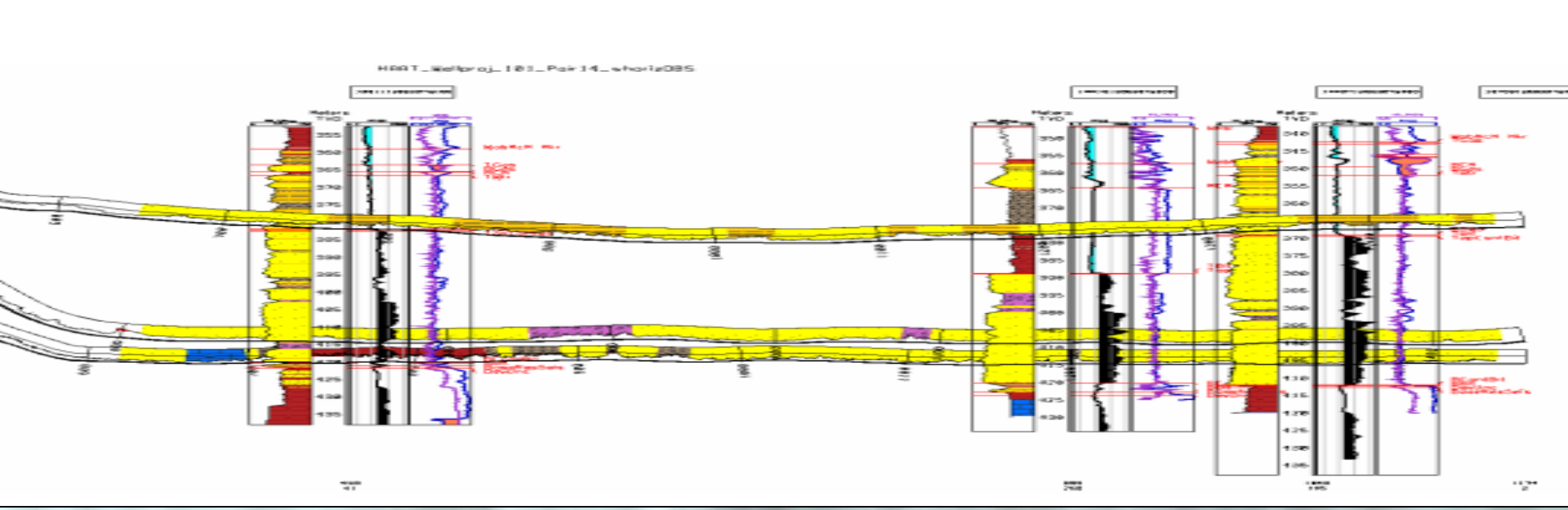

Core Analysis
AR_GRrsc
0
API
150
MD
Meters
TVD
AR_VSH
0
v/v decimal
1
SURM-PhieSW
1
0
AR_PHIE
1
v/v decimal
0
RXOZ
2
2000
AF90
2000
375
275
400
250
41 m
30 TC
274.3 mASL
230.8 mASL
Inj depth 238 mASL
Prod depth233 mASL

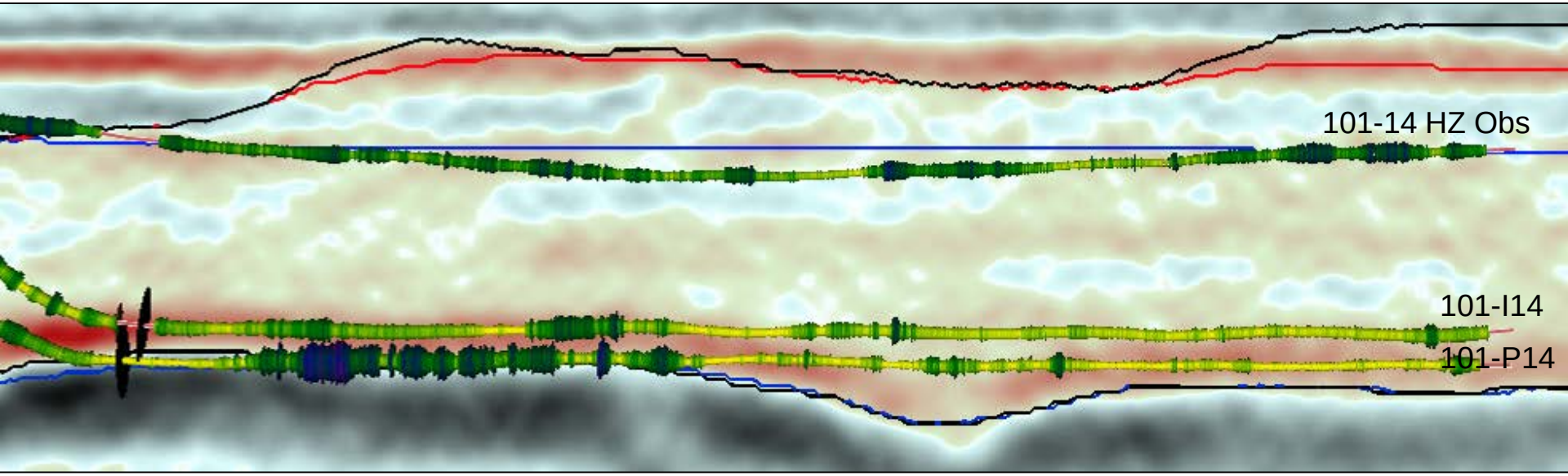
101-14 OBA
Temperature vs. Depth



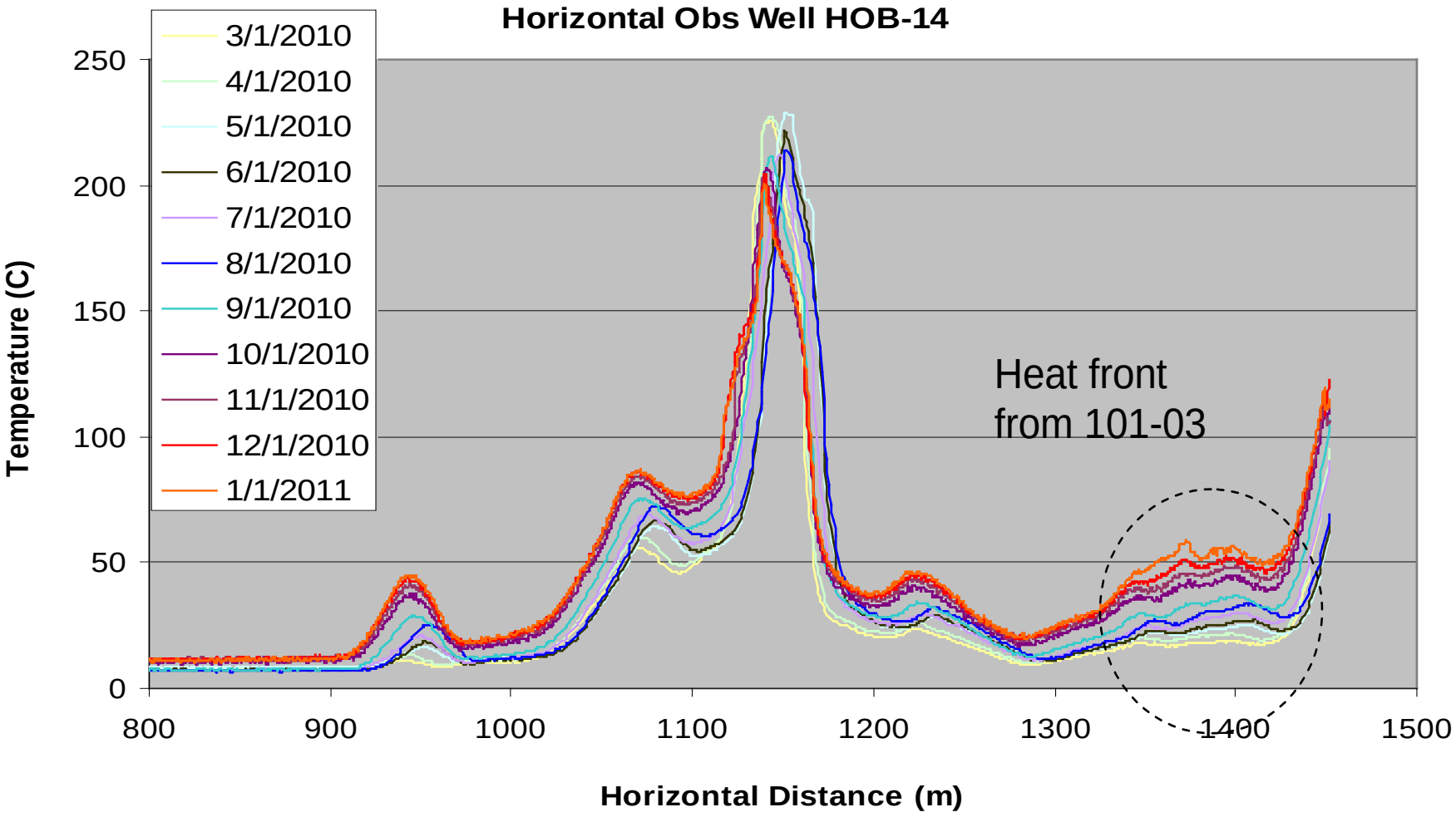
TC string replaced June 22, 2011.

Because of ground condition and according to reservoir ranking list, 101-14 OBA surface connection was completed February 11, 2012.



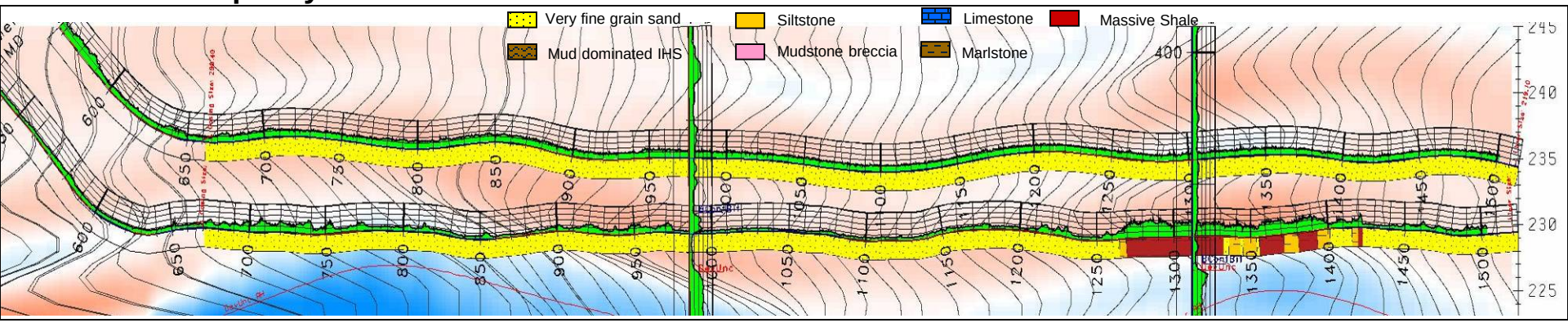

101-14 HZ Obs
101-I14
101-P14

Suspect Instrumentation failure – under investigation

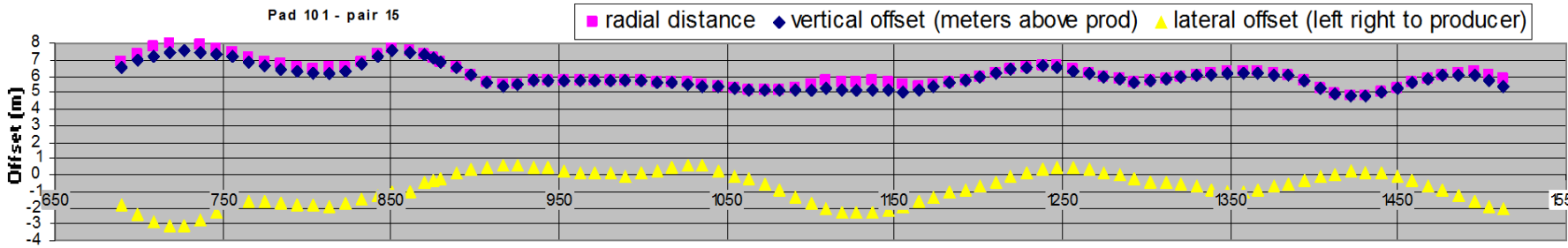


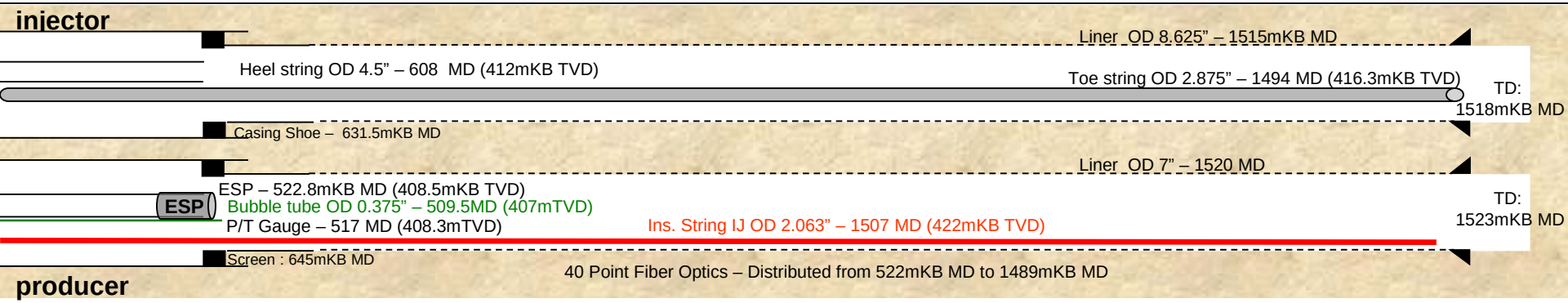
Reservoir quality

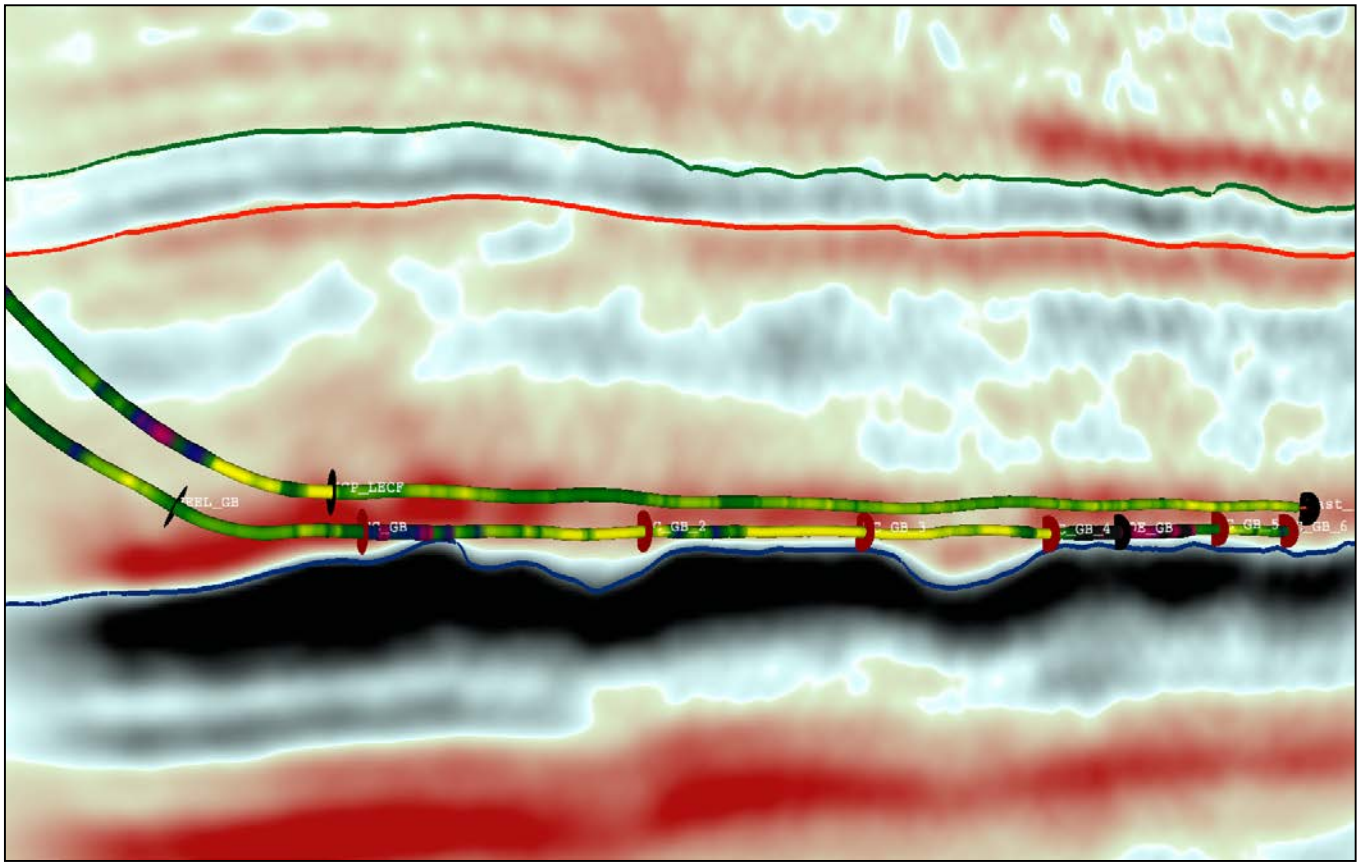
P15-OBB TC & Piezo **P15-OBD TC & Piezo**



Offset







Horizons

= WAB

= TopResSeis

= BHL

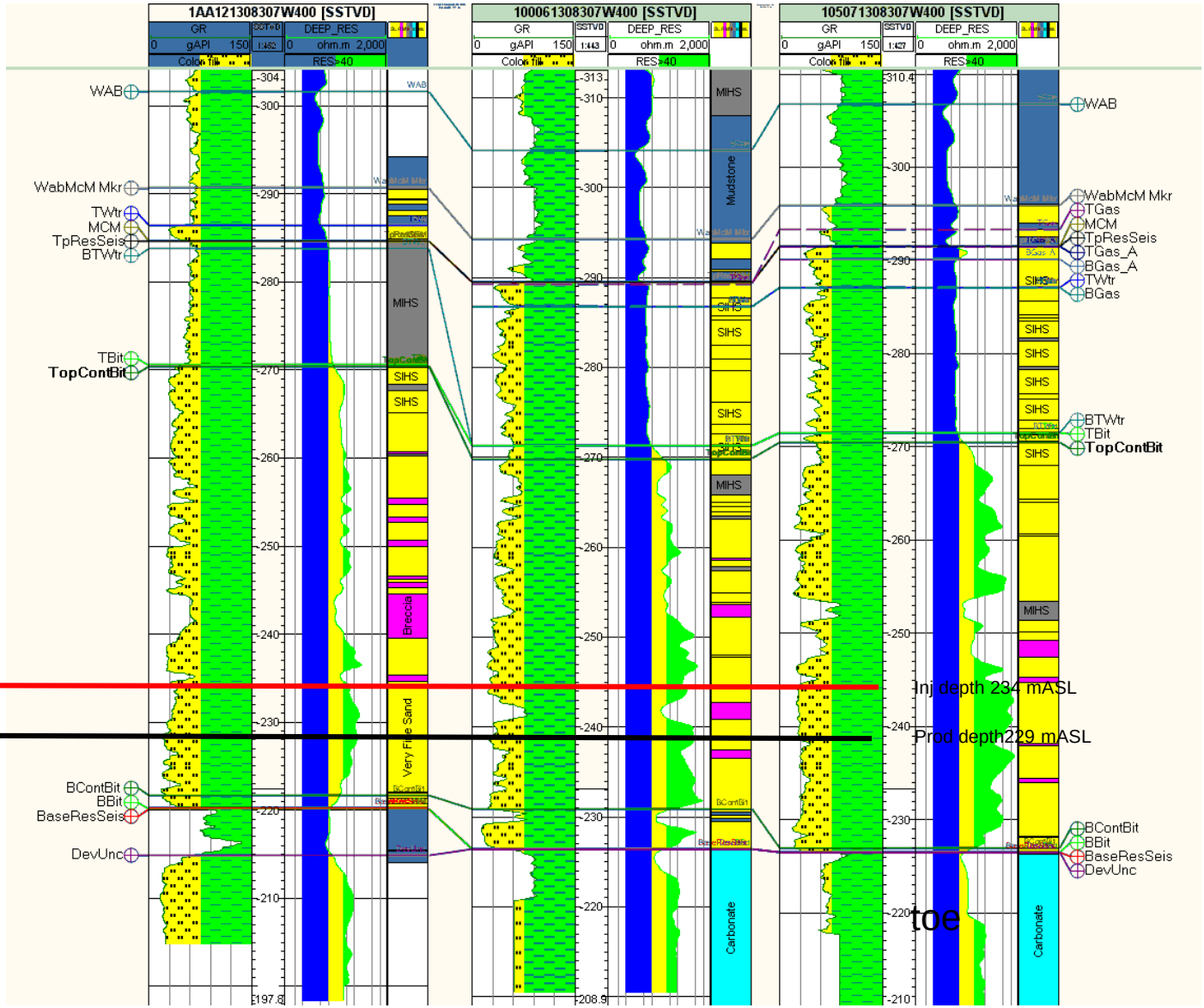
Picks

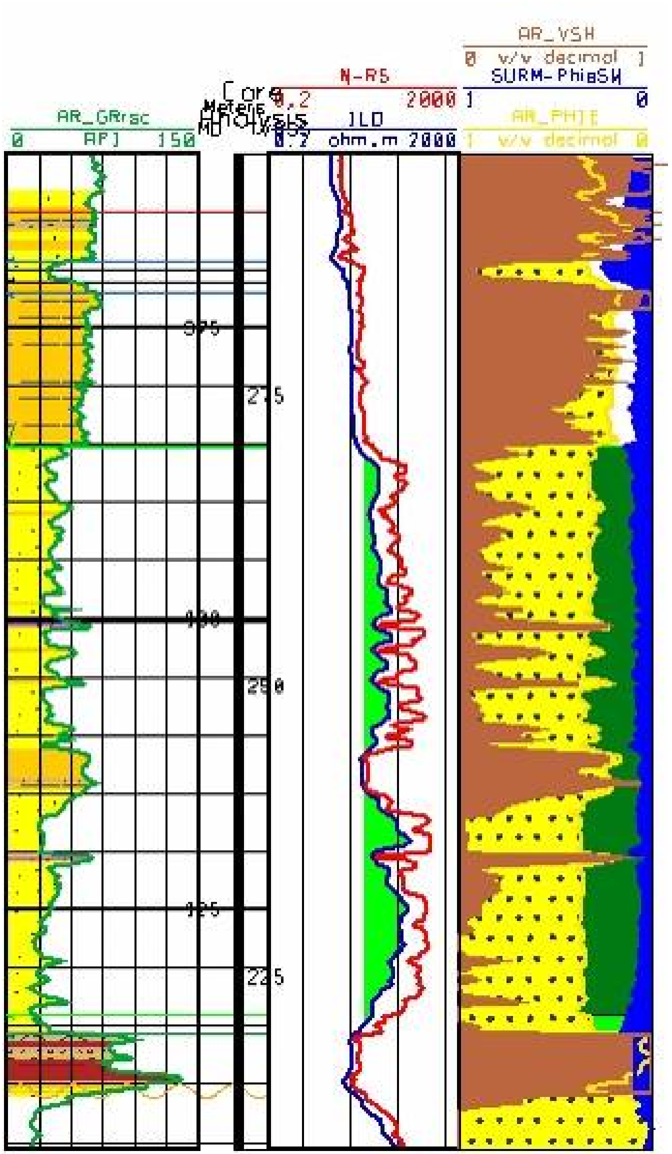
= Thermocouple

= Casing Point

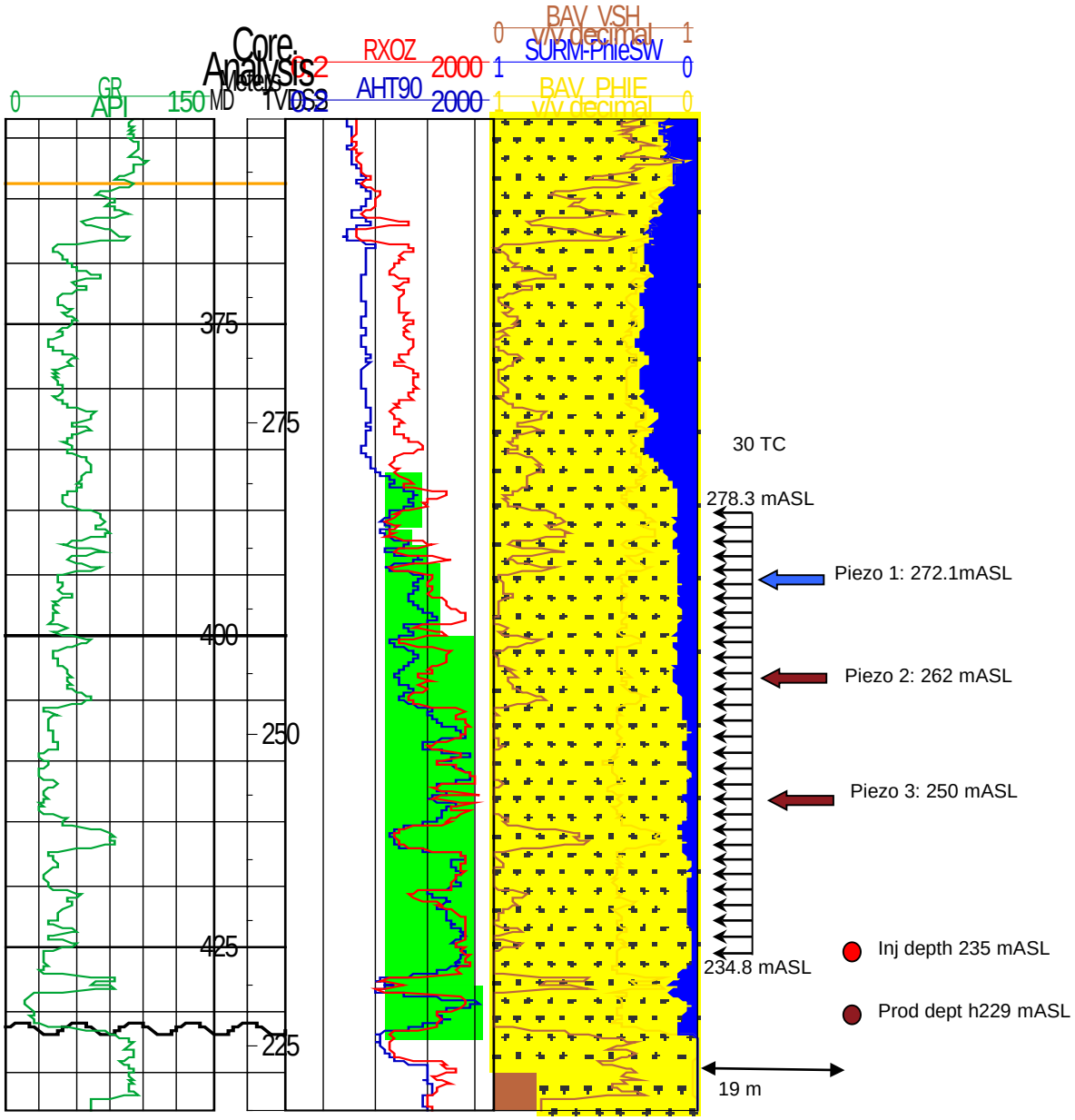
Gamma Ray Color Scale (API)

Integrated Seismic Trace

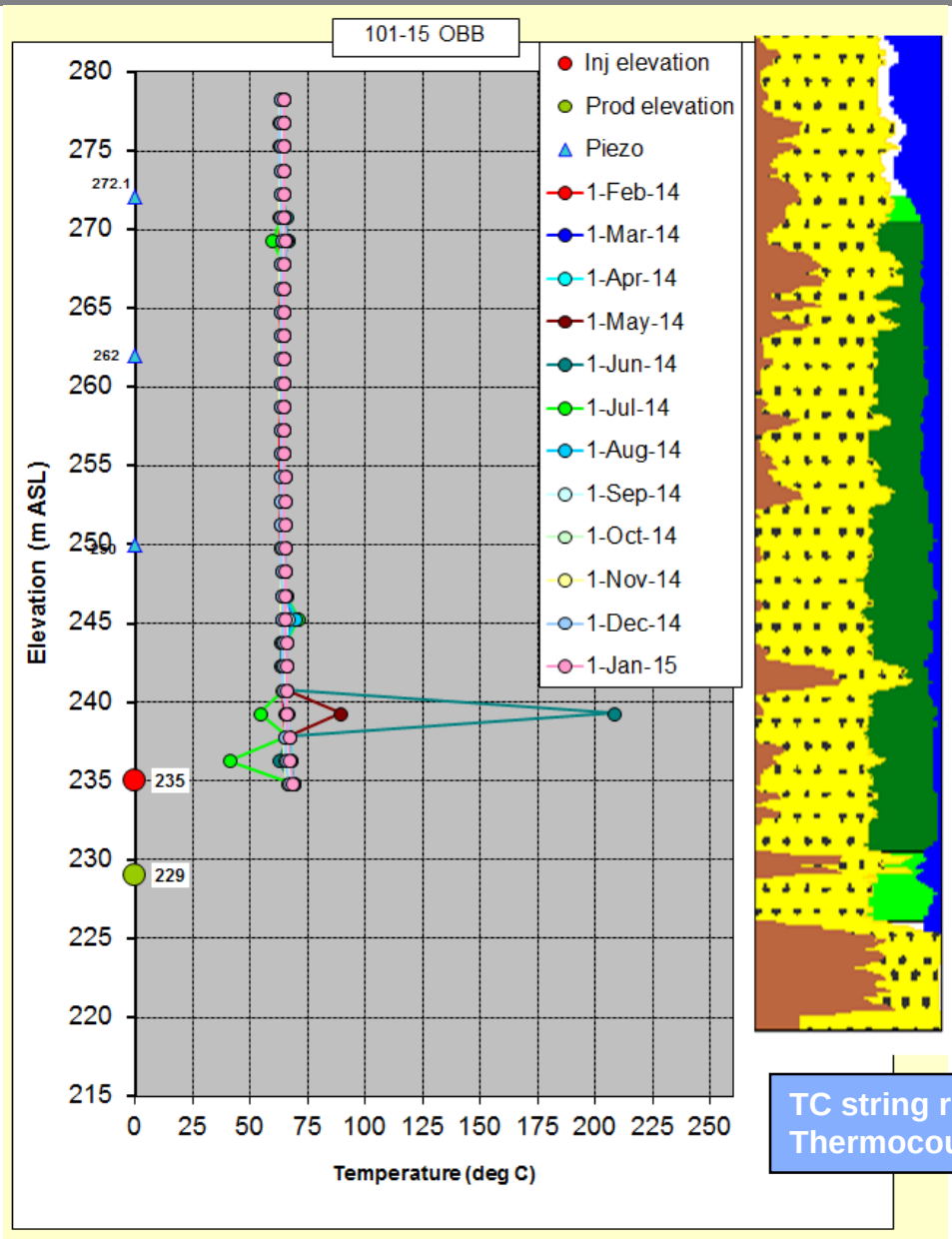




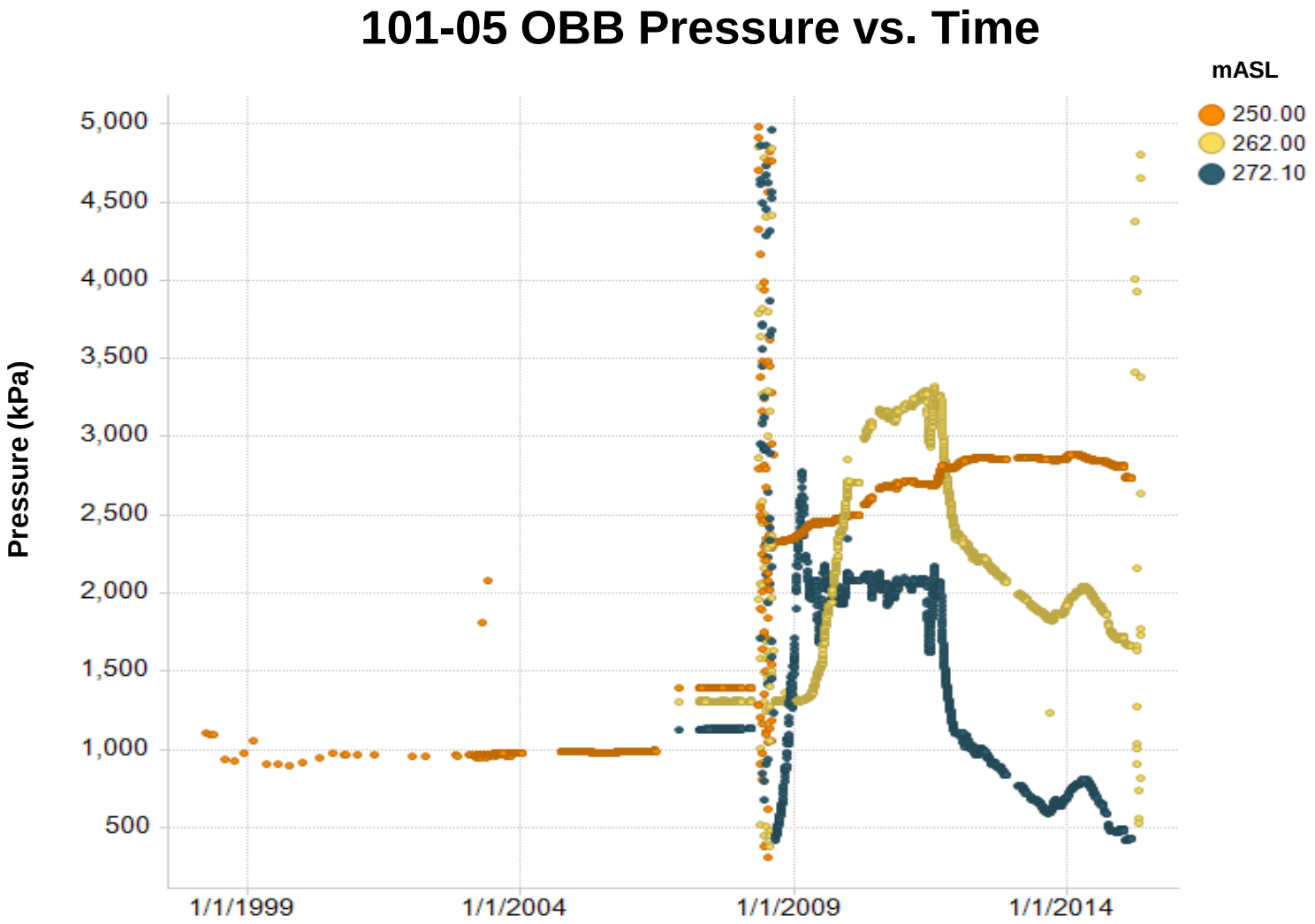
ConocoPhillips

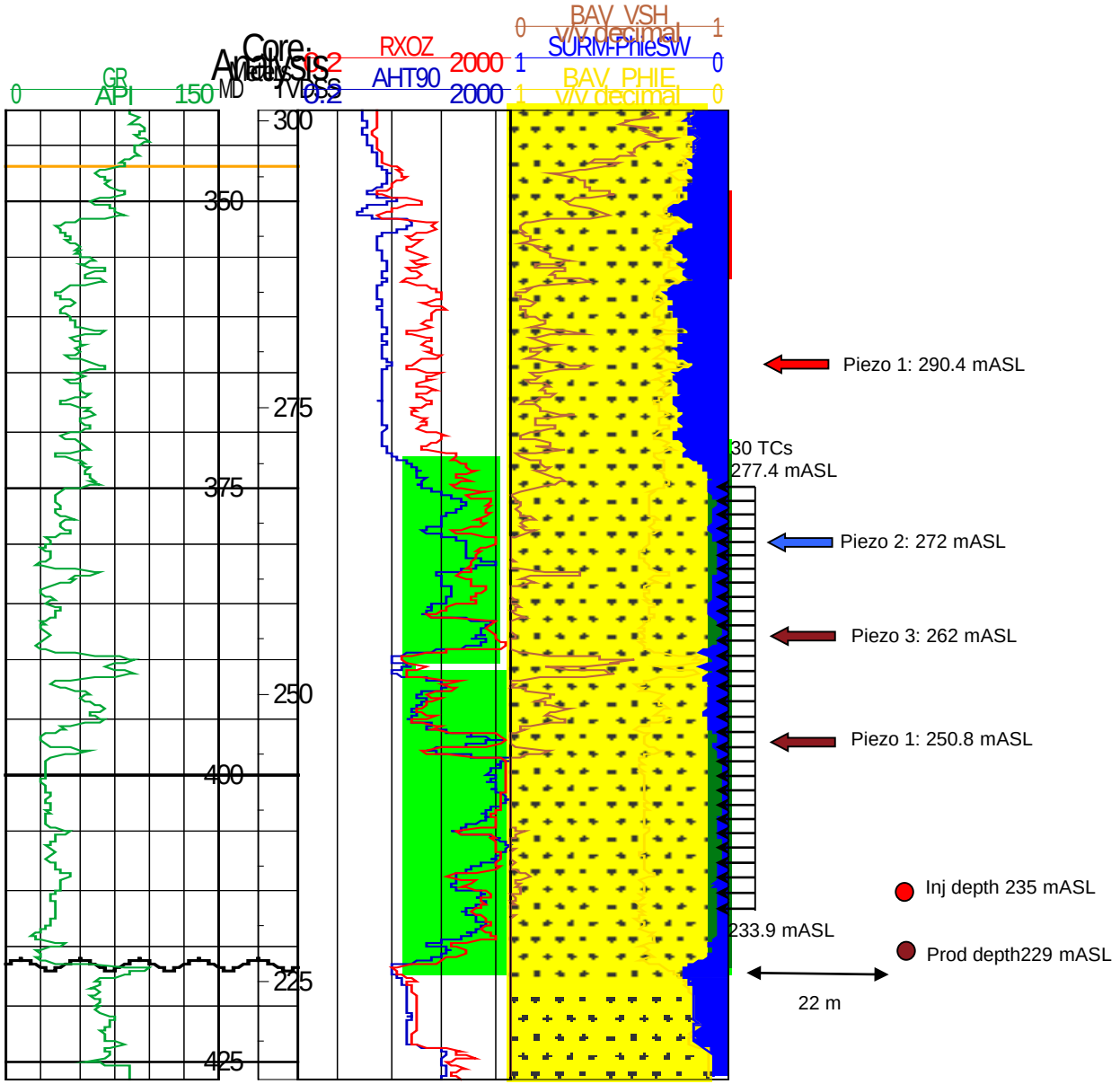

Core Analysis
GR
0
API
150
MD
Meters
TVD
RXOZ
2000
AHT90
2000
BAV_VSH
0
v/v decimal
1
SURM-PhieSW
1
0
BAV_PHIE
1
v/v decimal
0
375
275
400
250
425
225
30 TC
278.3 mASL
Piezo 1: 272.1mASL
Piezo 2: 262 mASL
Piezo 3: 250 mASL
234.8 mASL
Inj depth 235 mASL
Prod dept h229 mASL
19 m

101-15 OBB
Temperature vs. Depth

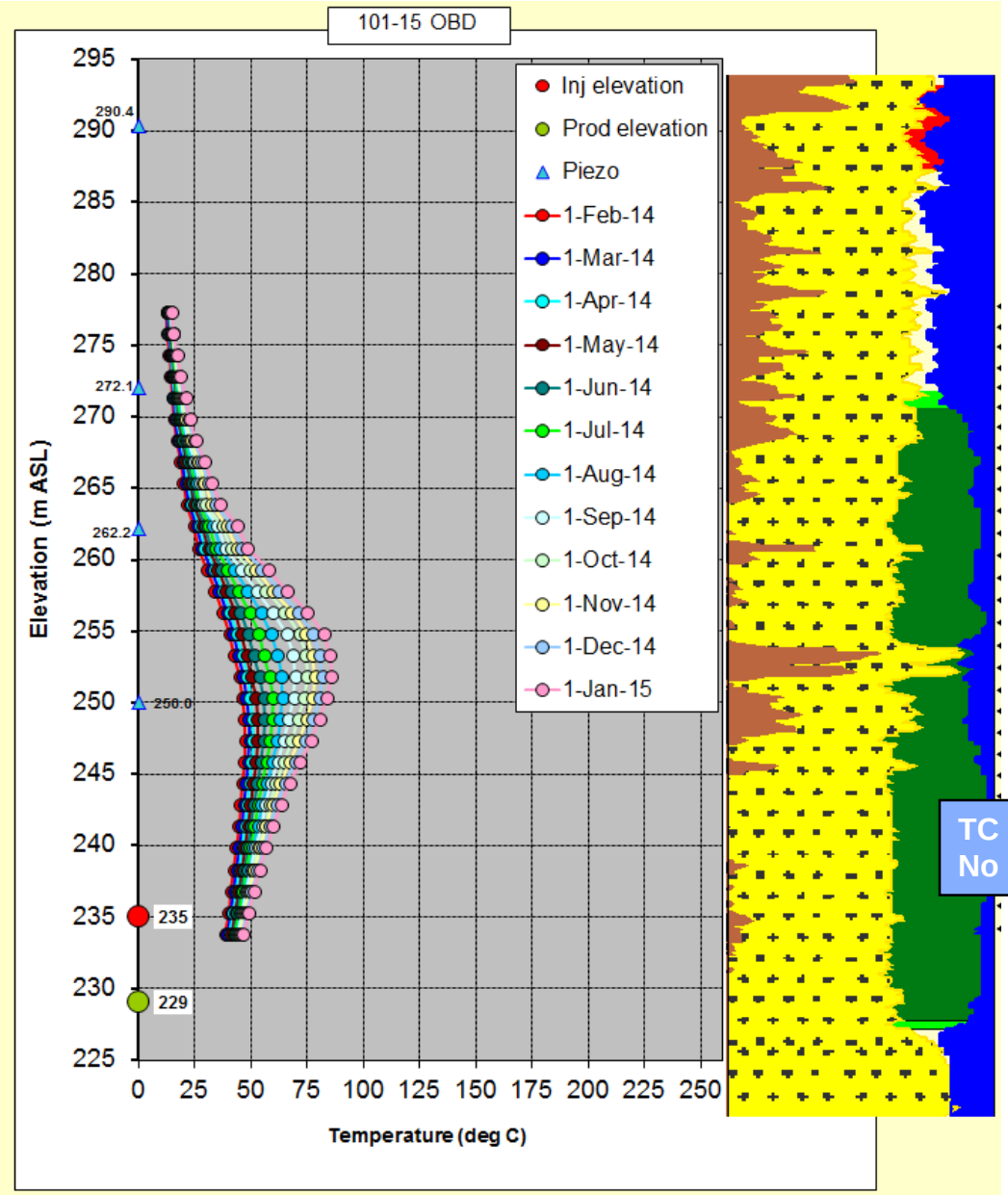


TC string replaced March 23, 2011.
Thermocouple issues since January 2010.

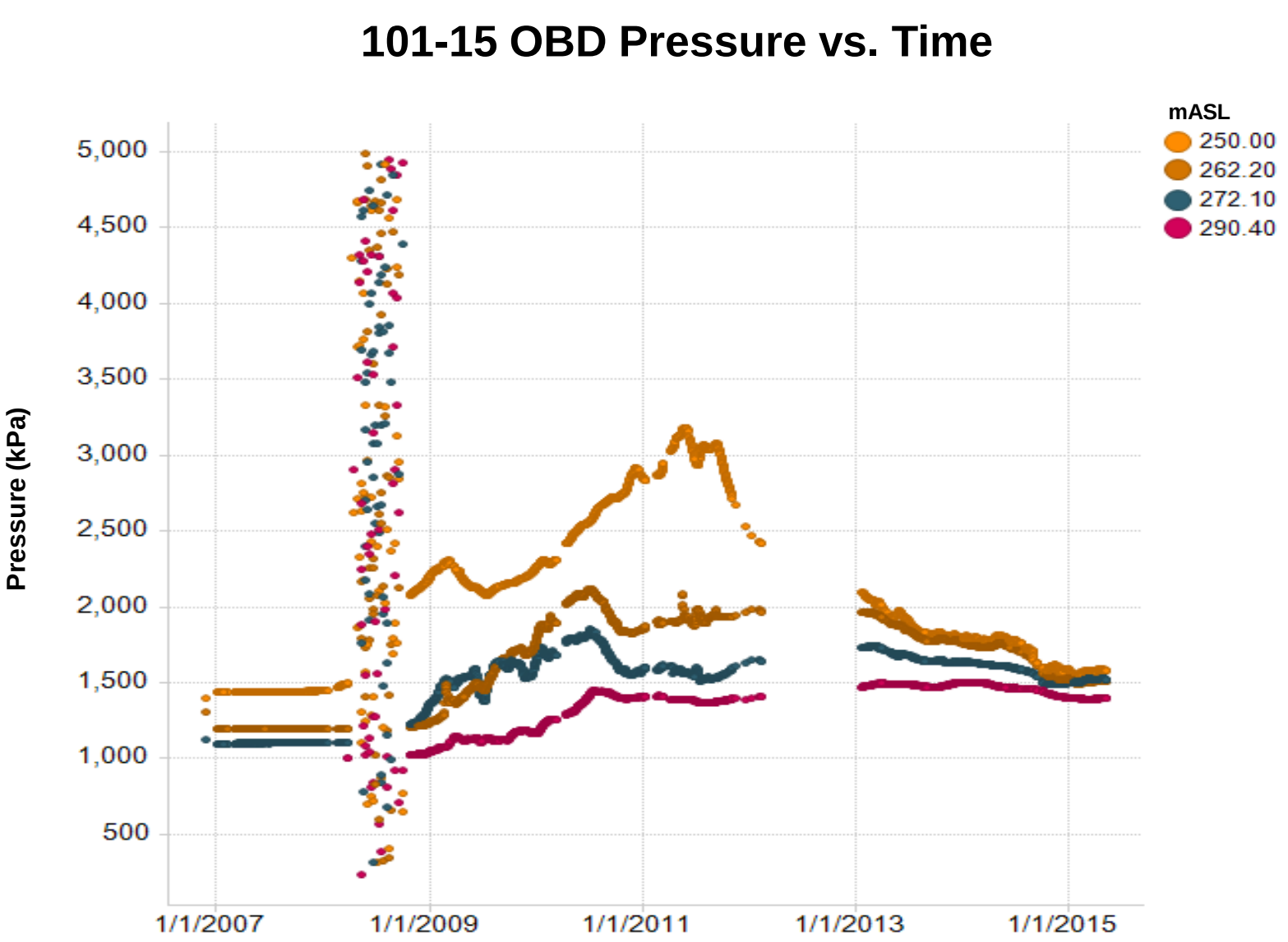

101-05 OBB Pressure vs. Time
mASL
250.00
262.00
272.10
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
1/1/1999
1/1/2004
1/1/2009
1/1/2014


GR
0
API
150
MD
300
350
275
375
250
400
225
425
Core Analysis
RXOZ
AHT90
2000
2000
BAV_VSH
0
v/v decimal
1
SURM-PhieSW
1
0
BAV_PHIE
1
v/v decimal
0
Piezo 1: 290.4 mASL
30 TCs
277.4 mASL
Piezo 2: 272 mASL
Piezo 3: 262 mASL
Piezo 1: 250.8 mASL
Inj depth 235 mASL
233.9 mASL
Prod depth229 mASL
22 m

101-15 OBD
Temperature vs. Depth

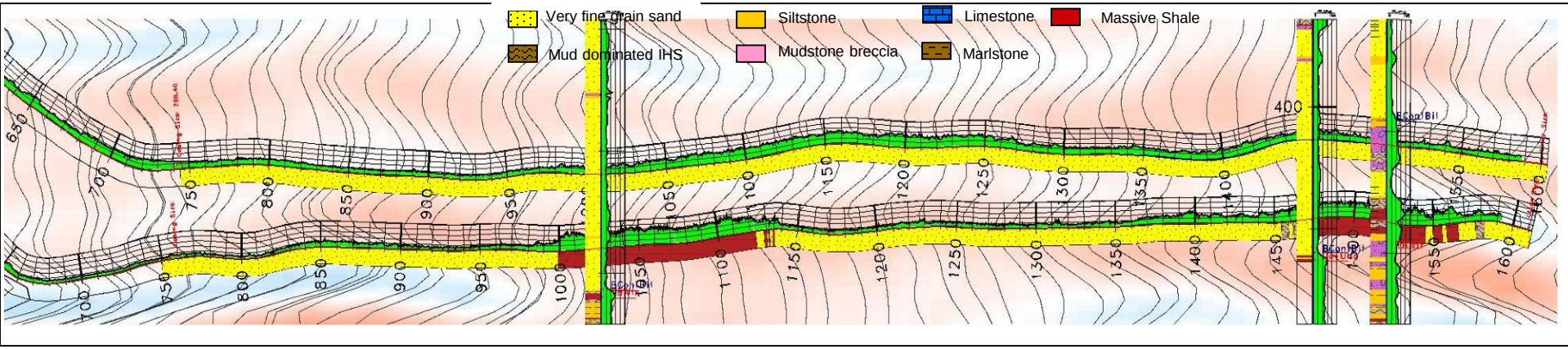


TC string replaced April 1, 2011.
No readings Feb – Dec 2012.


101-15 OBD Pressure vs. Time
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
1/1/2007
1/1/2009
1/1/2011
1/1/2013
1/1/2015
mASL
250.00
262.20
272.10
290.40

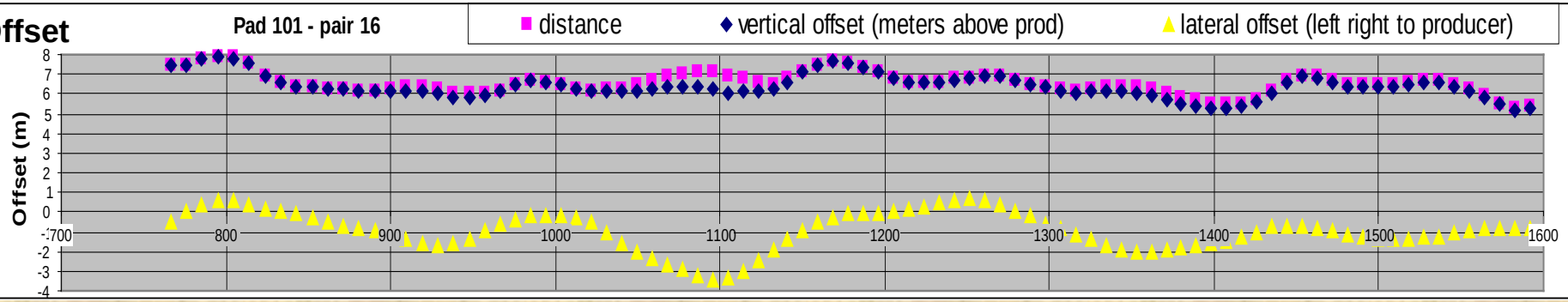
Reservoir quality

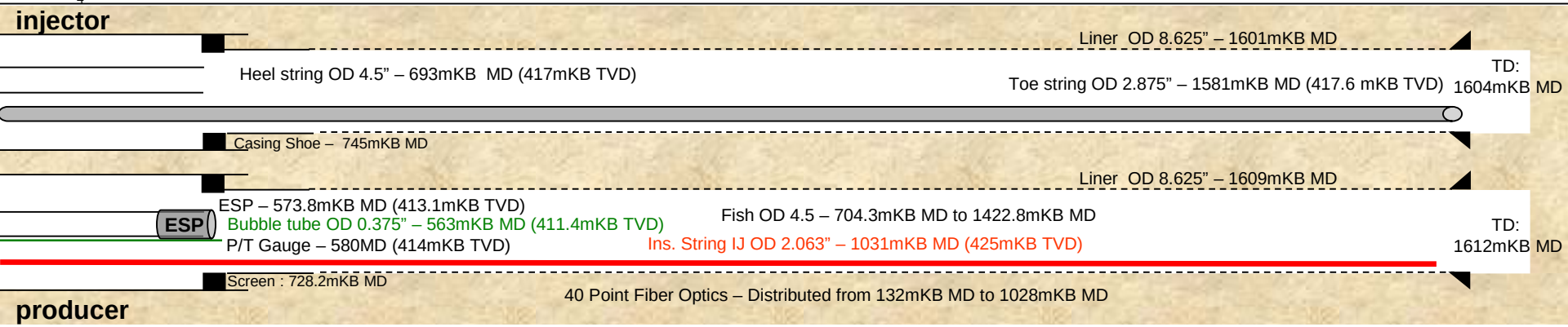
P16-OBB Piezo

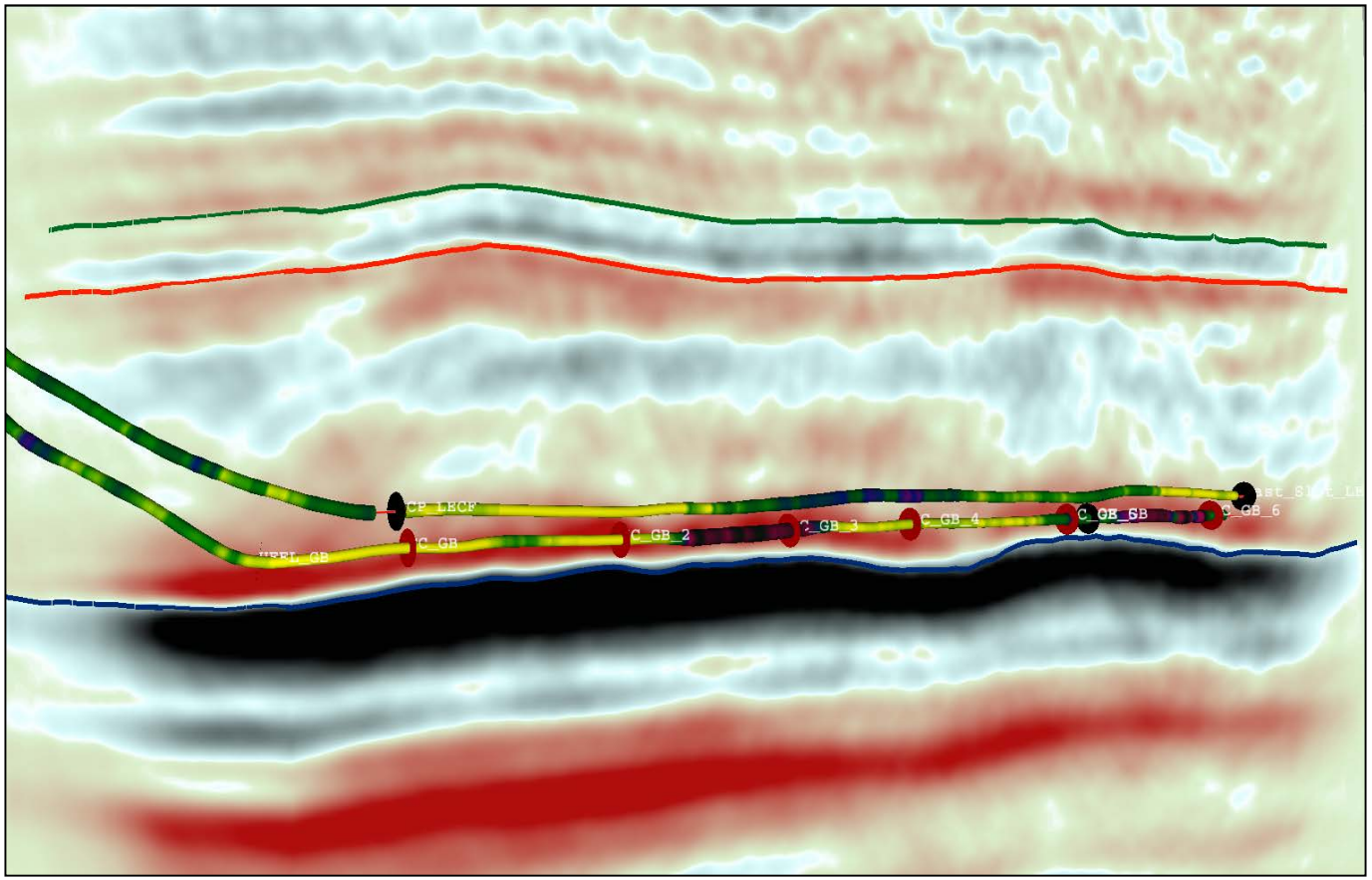


Offset

Pad 101 - pair 16







Horizons

= WAB

= TopResSeis

= BHL

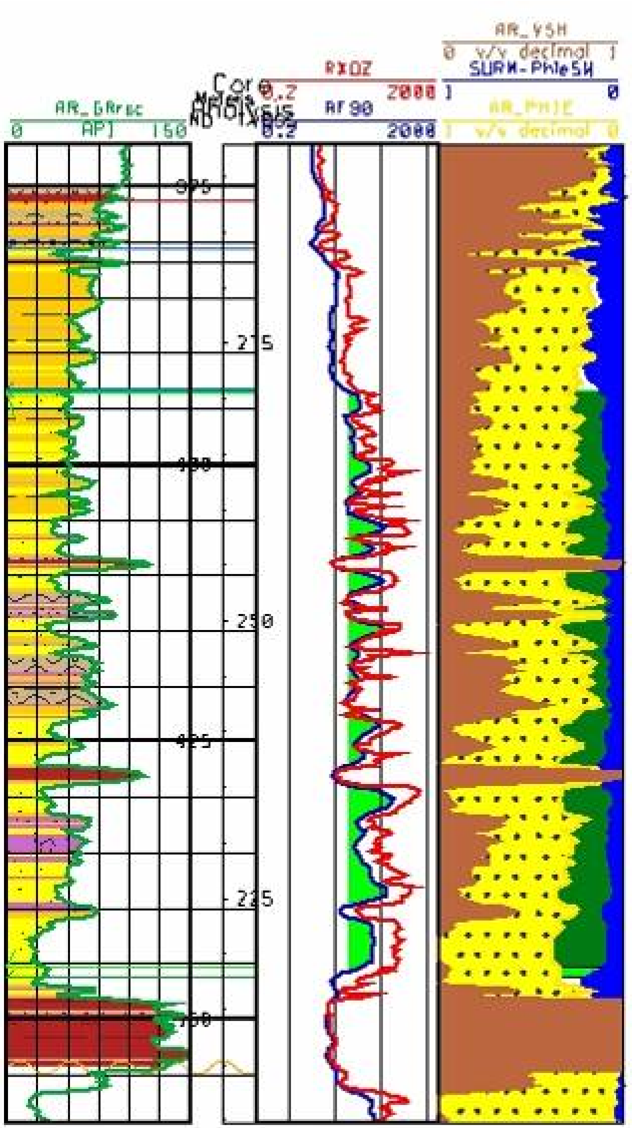
Picks

= Thermocouple

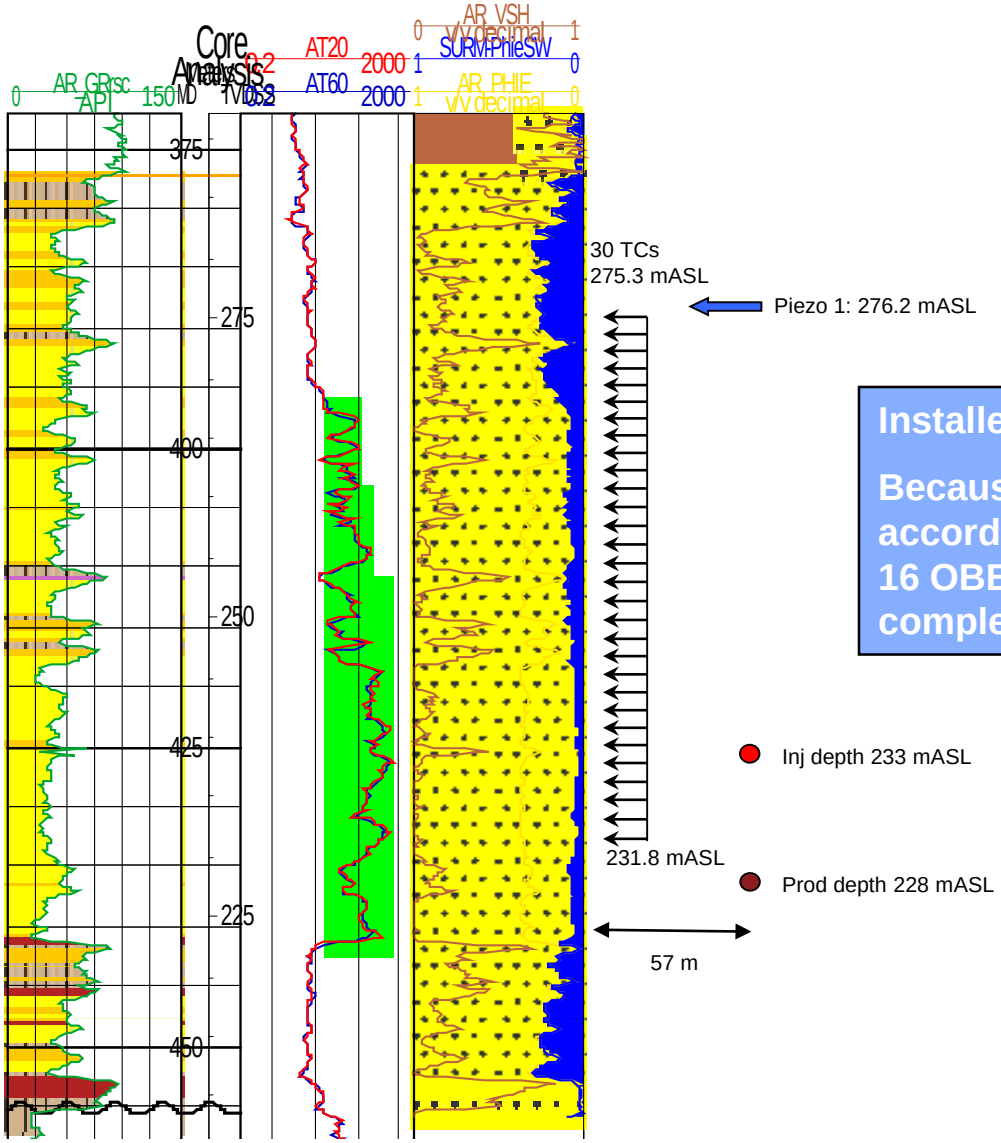
= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

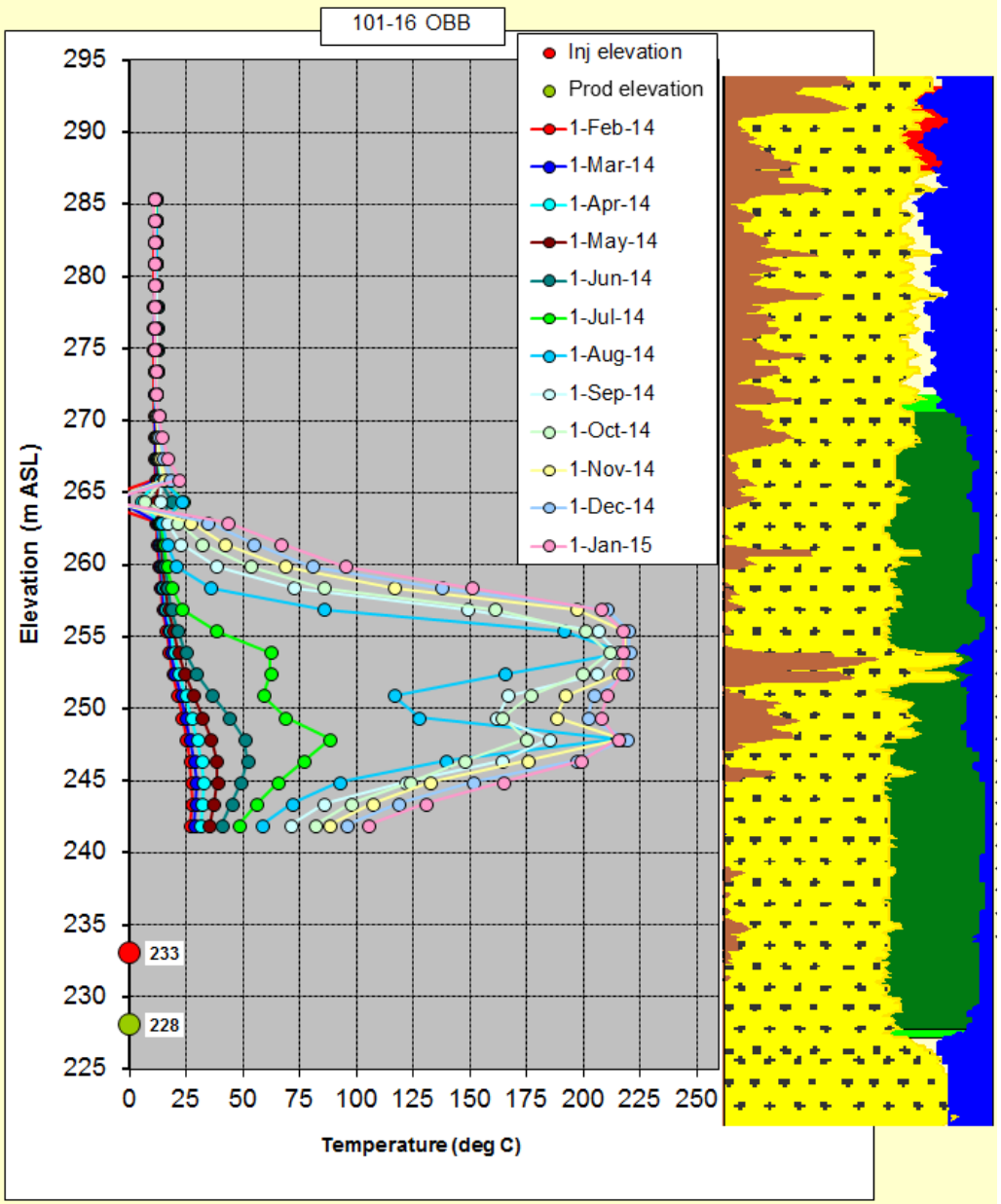


ConocoPhillips

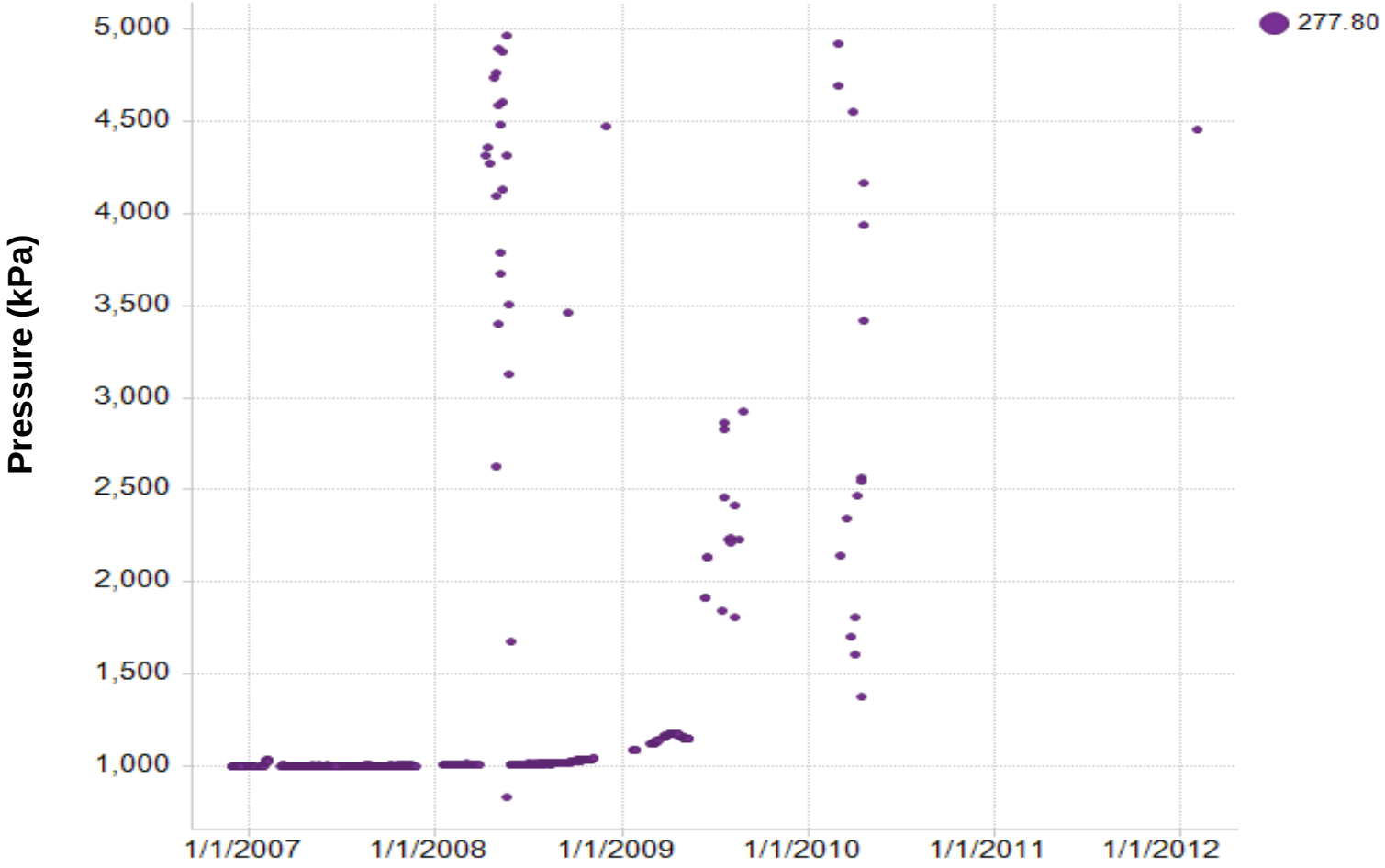


Installed TC string on July 27, 2011

Because of ground condition and according to reservoir ranking list, 101-16 OBB surface connection was completed during 2011/12 winter

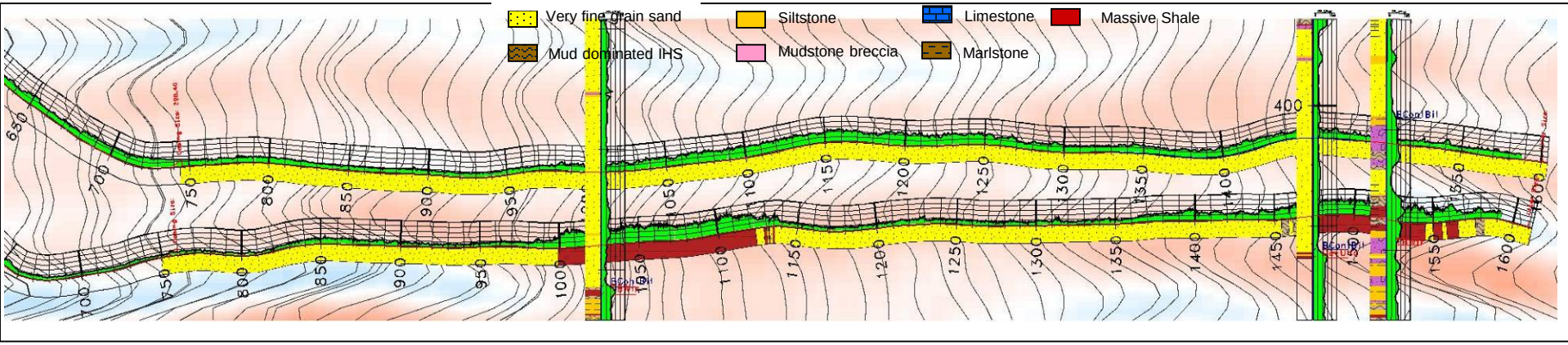

101-16 OBB
Inj elevation
Prod elevation
1-Feb-14
1-Mar-14
1-Apr-14
1-May-14
1-Jun-14
1-Jul-14
1-Aug-14
1-Sep-14
1-Oct-14
1-Nov-14
1-Dec-14
1-Jan-15
Elevation (m ASL)
295
290
285
280
275
270
265
260
255
250
245
240
235
230
225
233
228
0
25
50
75
100
125
150
175
200
225
250
Temperature (deg C)

101-16 OBB Pressure Vs. Time

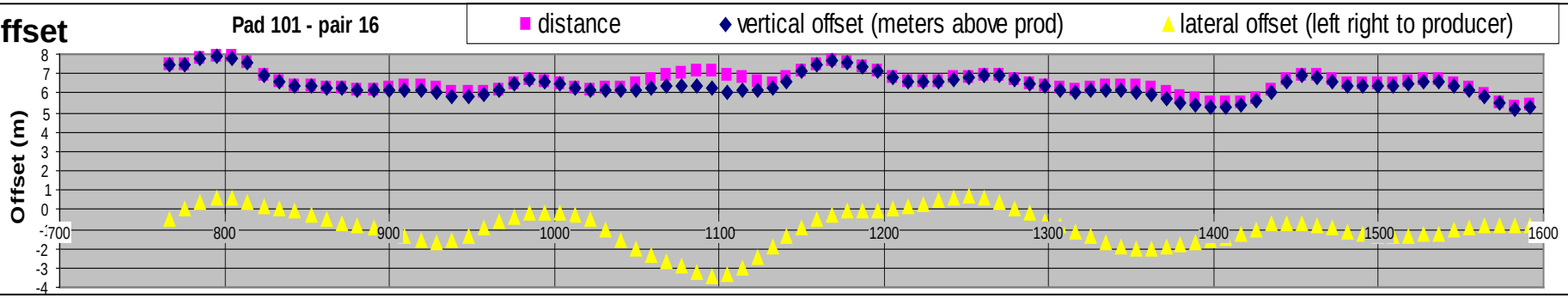


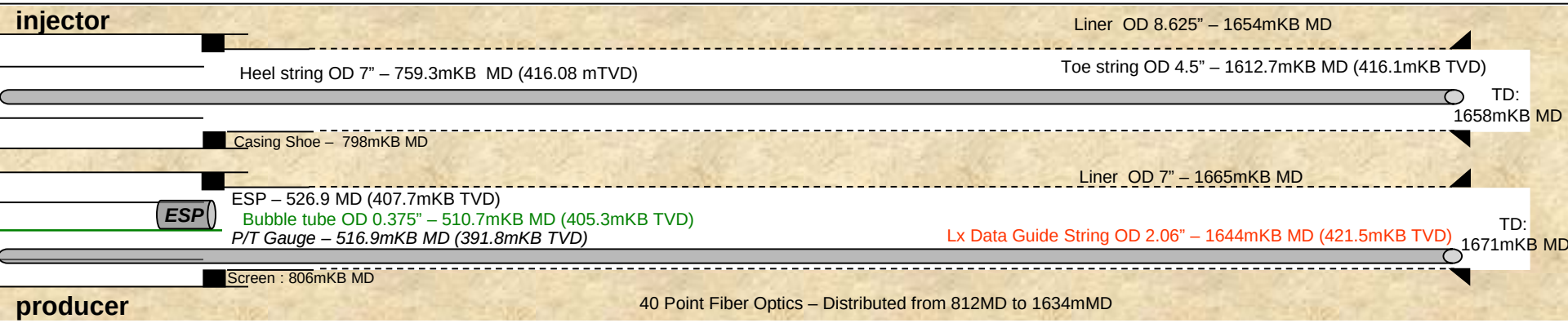
Reservoir quality

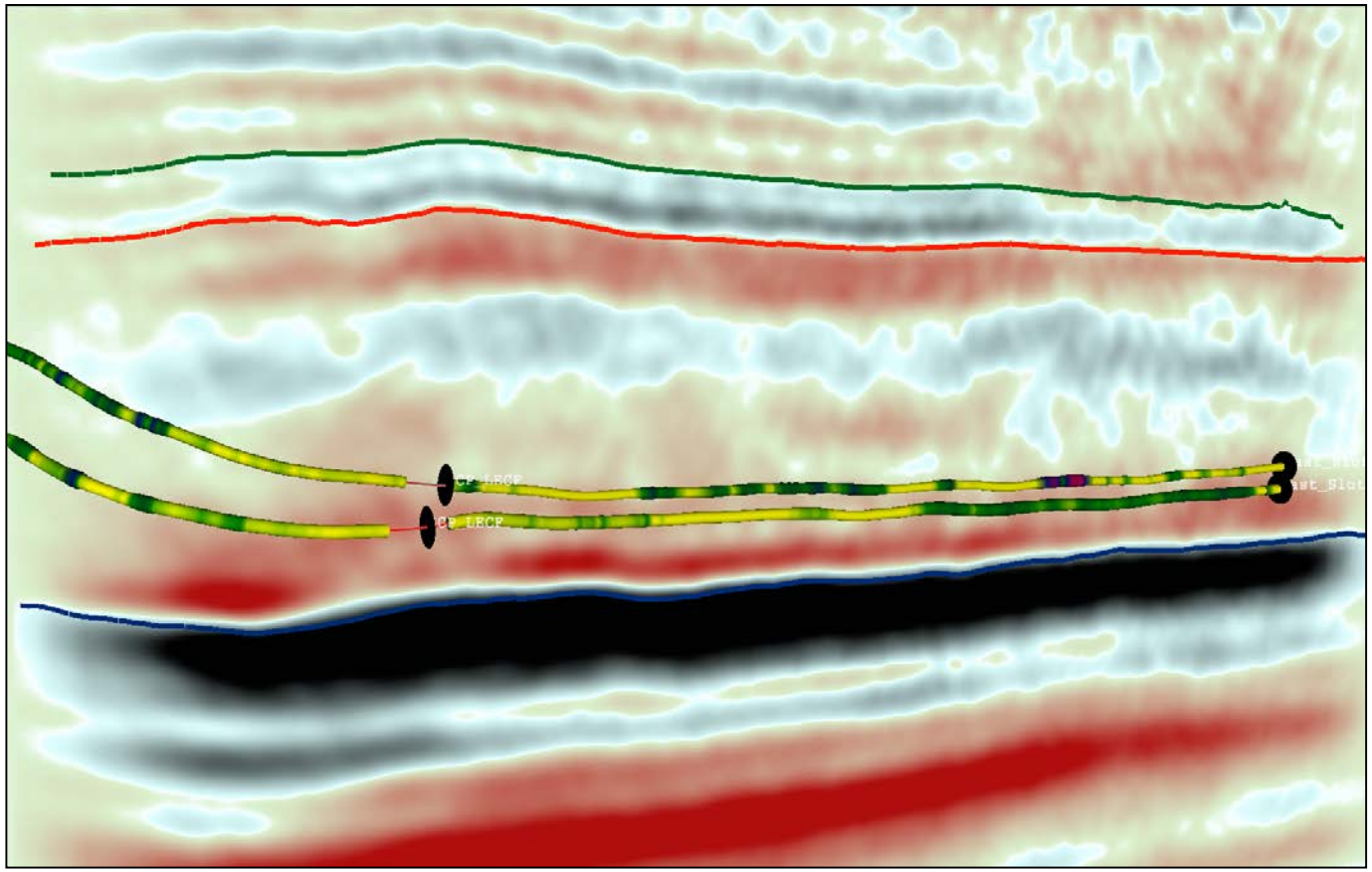
P16-OBB Piezo



Offset







Horizons

= WAB

= TopResSeis

= BHL

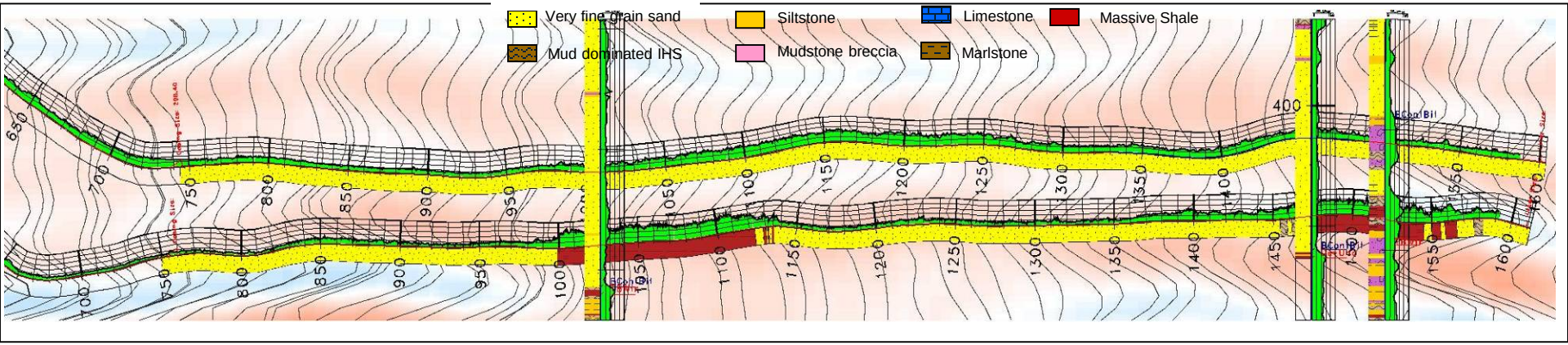
Picks

= Casing Point

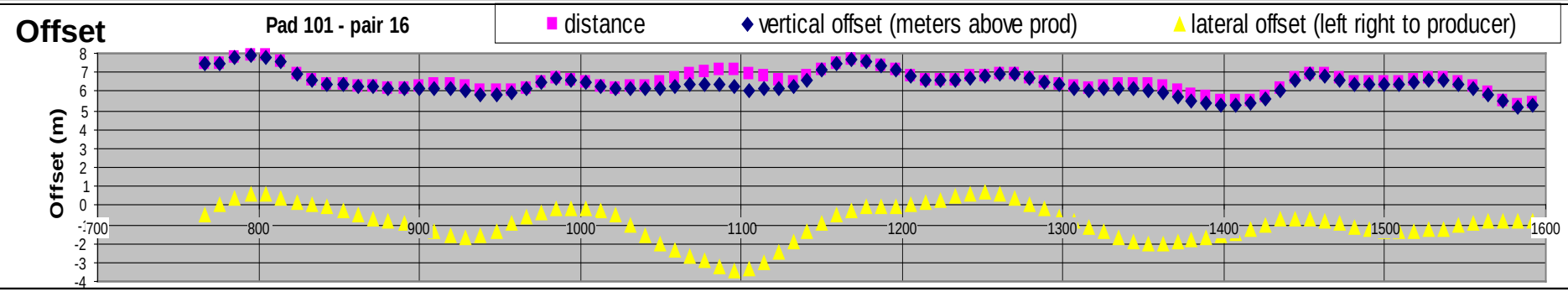
Gamma Ray Color Scale (API)

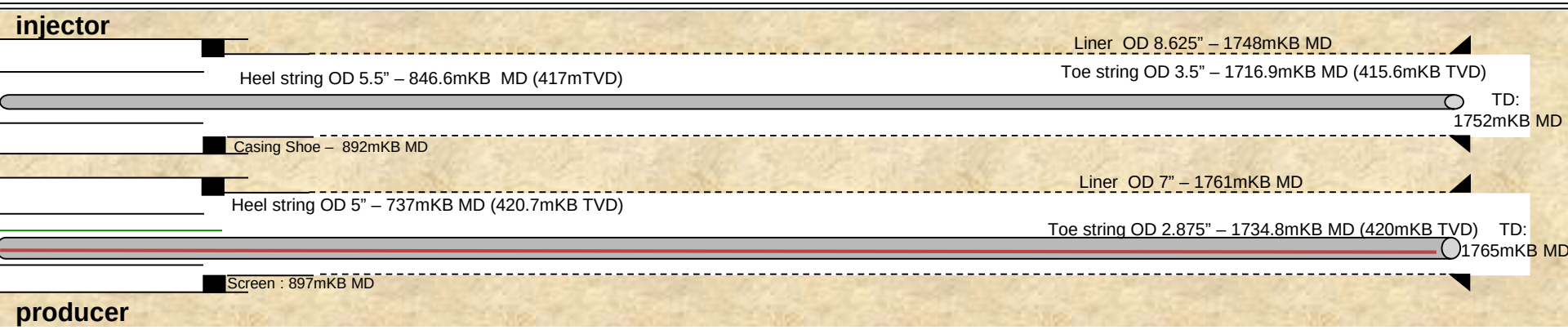
Integrated Seismic Trace

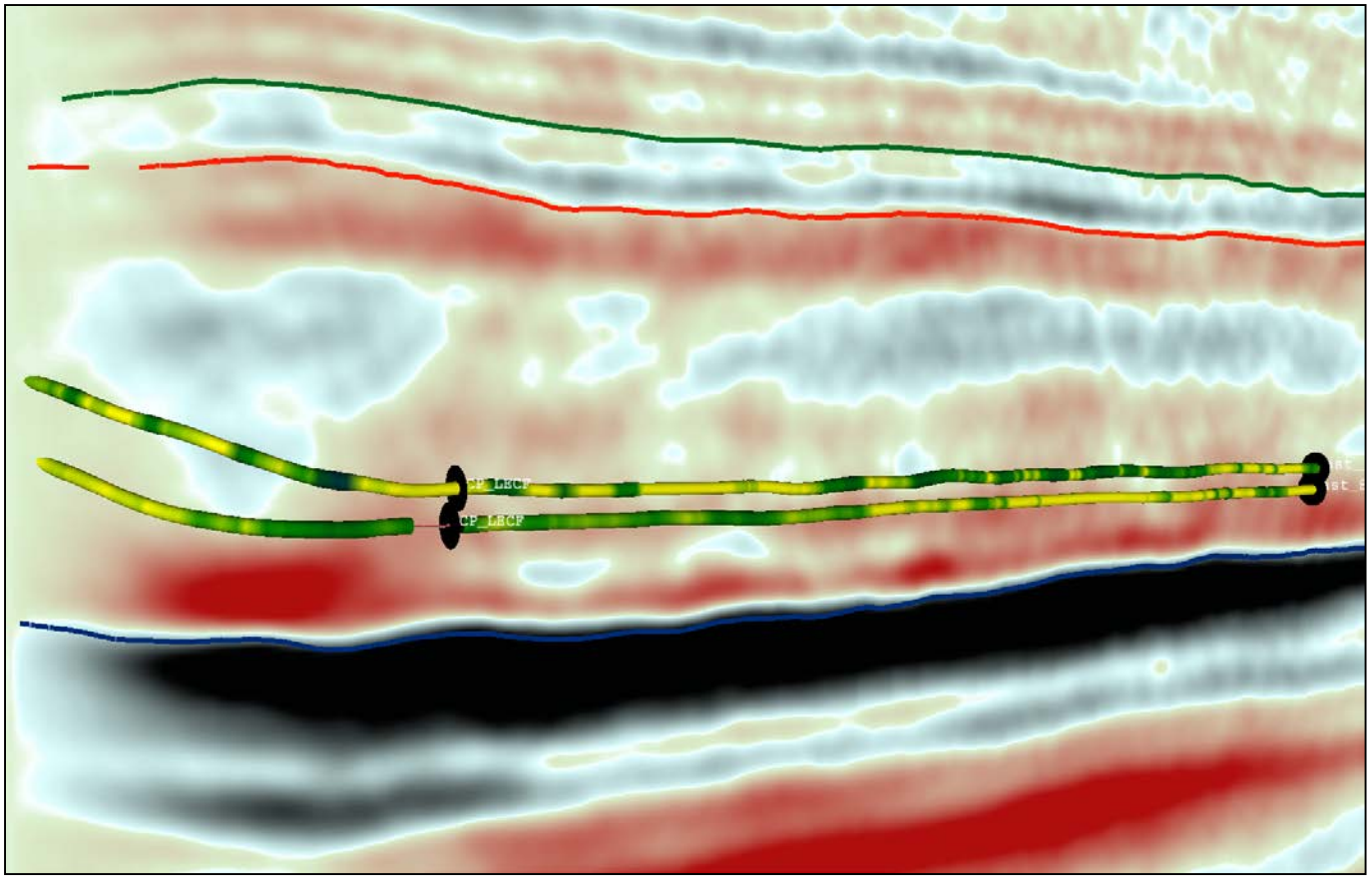
Reservoir quality



Offset







Horizons

= WAB

= TopResSeis

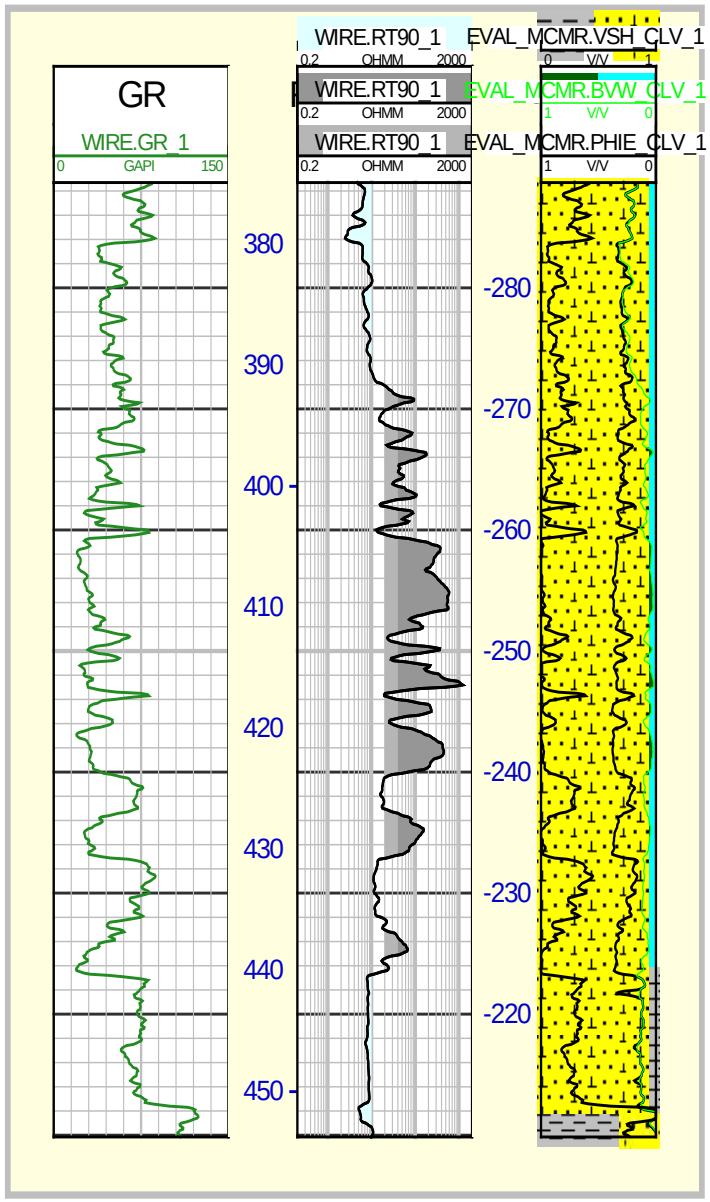
= BHL

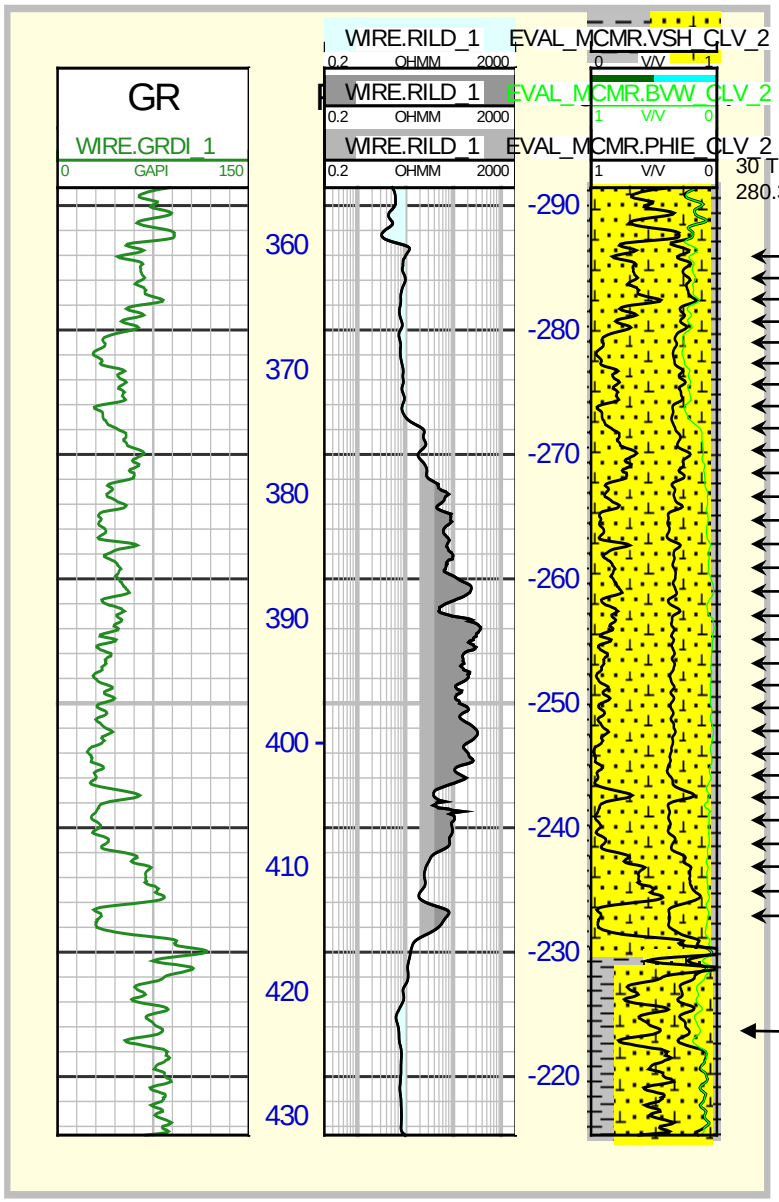
Picks

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

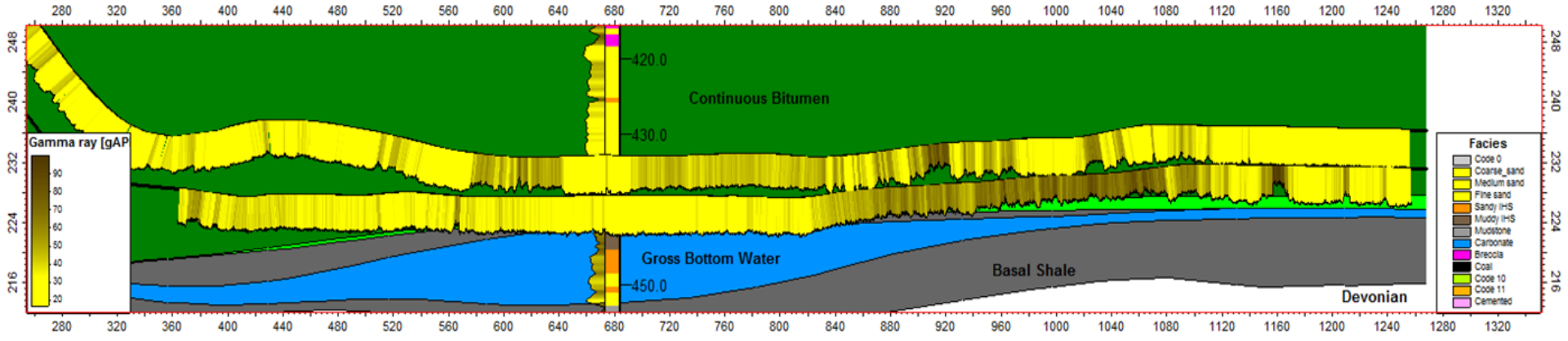

GR
WIRE.GR_1
0 GAPI 150
WIRE.RT90_1
0.2 OHMM 2000
WIRE.RT90_1
0.2 OHMM 2000
WIRE.RT90_1
0.2 OHMM 2000
EVAL_MCMR.VSH_CLV_1
0 V/V 1
EVAL_MCMR.BVW_CLV_1
1 V/V 0
EVAL_MCMR.PHIE_CLV_1
1 V/V 0
380
390
400
410
420
430
440
450
-280
-270
-260
-250
-240
-230
-220



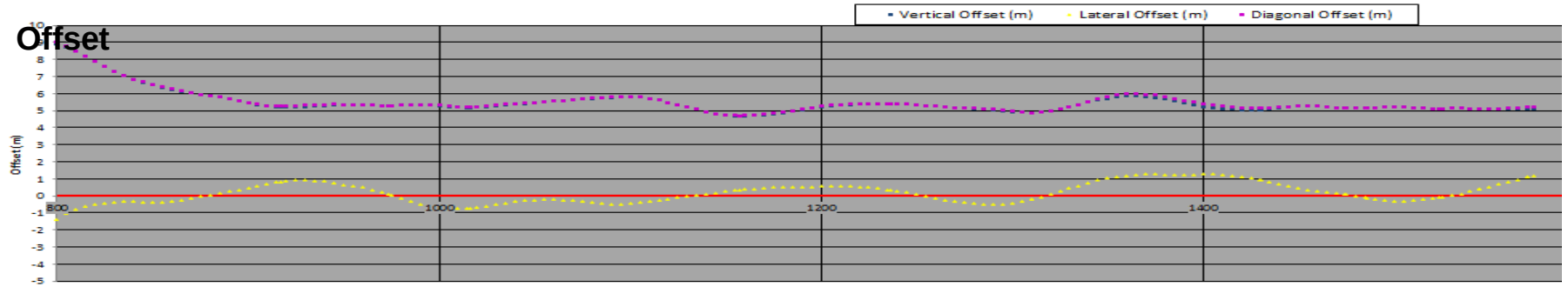
Installed TC string on July 1, 2011

No data available – under investigation

Reservoir quality



Offset



injector

Liner OD 8.625" – 1550mKB MD

Heel string OD 7" – 618.1mKB MD (415mKB TVD)

Toe string OD 4.5" – 1521.5mKB MD (416mKB TVD)

TD: 1555mKB MD

Casing Shoe: 679mKB MD

Liner OD 7" – 1568.0mKB MD

ESP – 517.83mKB MD (406.6mKB TVD)

ESP

Bubble tube OD 0.375" – 504.6mKB MD (410mKBTVD)

TD: 1573mKB MD

P/T Gauge – 525.1mKB MD (408mKB TVD)

Lx Data Guide String OD 2.06" – 897.09mKB MD (425.5mKB TVD)

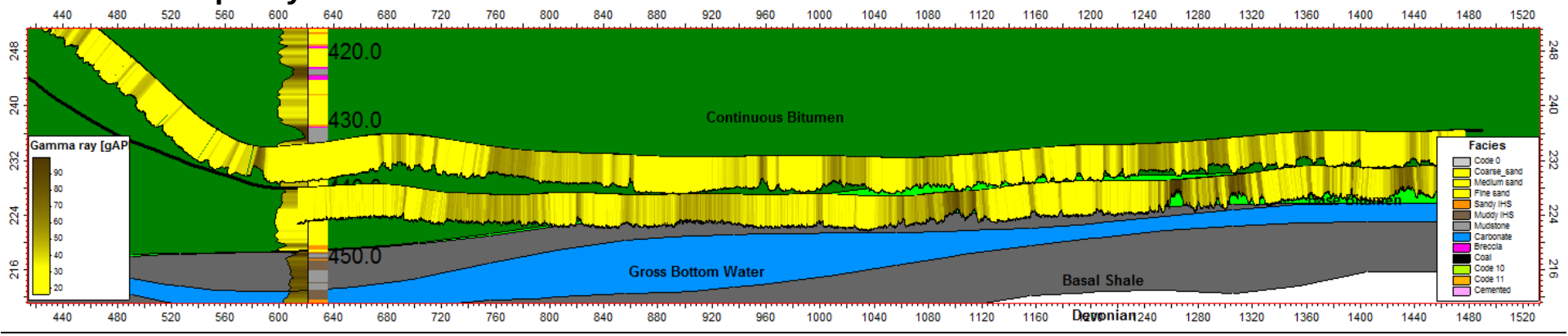
Casing Shoe: 679mKB MD

producer

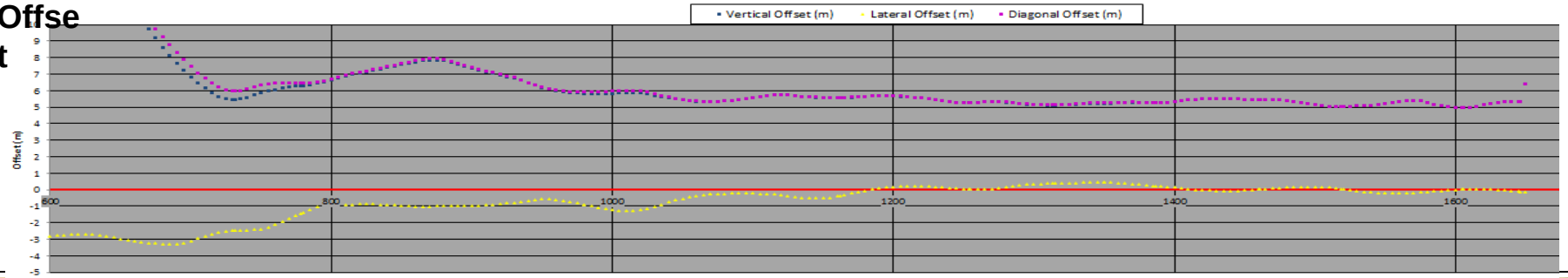
40 Point Fiber Optics – Distributed from 434mMD to 1535mMD

ESP Conversion- July 3, 2014

Reservoir quality



Offset



injector

Liner OD 8.625" – 1623mKB MD

Heel string OD 7" – 707.44mKB MD (418.7mKB TVD)

Toe string OD 4.5" – 1601.67mKB MD (417.2mKB TVD)

TD: 1628mKB MD

Casing Shoe: 769.5mKB MD

Liner OD 7" – 1648.0mKB MD

Heel string OD 7" – 731.9mKB MD (424.5mKB TVD)

ESP

Bubble tube OD 0.375" – 536.55mKB MD (410mKBTVD)

Toe string OD 4.5" – 1625.9mKB MD (422 mKB TVD)

TD: 1650mKB MD

P/T Gauge – 899.9mKB MD (425.5mKB TVD)

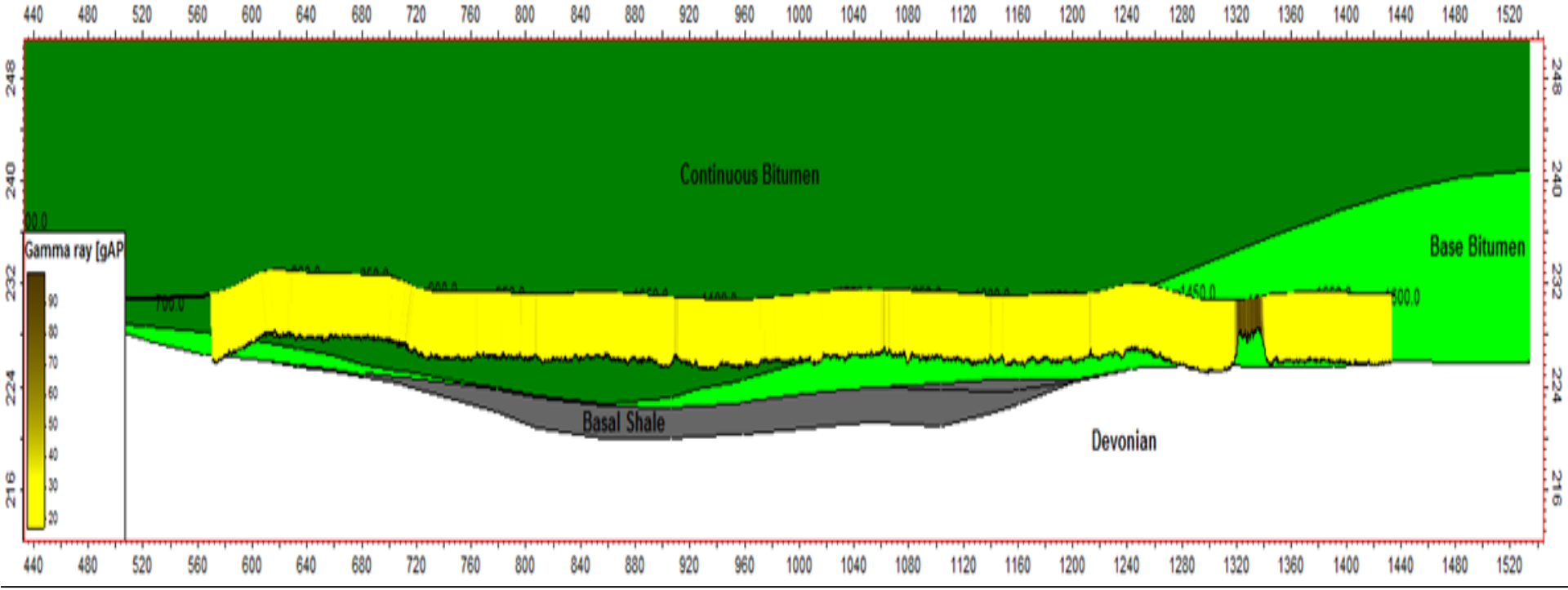
Outside Toe Ins. string OD 1.97" – 1612.9mKB MD (421.9mKB TVD)

Casing Shoe: 778mKB MD

producer

Reservoir quality

No Lateral Pair – Initial PCP Completion with Drain Leg



Liner OD 7" – 1626mKB MD

Prod. string OD 3.5" – 601.7mKB MD (416mKB TVD)

Bubble tube OD 0.25" – 582mKB MD (414.5mKB TVD)

Injection Guide String OD 3.5" – 1607.5mKB MD (422.5mKB TVD)

TD: 1632mKB MD

PCP Jointed Rods

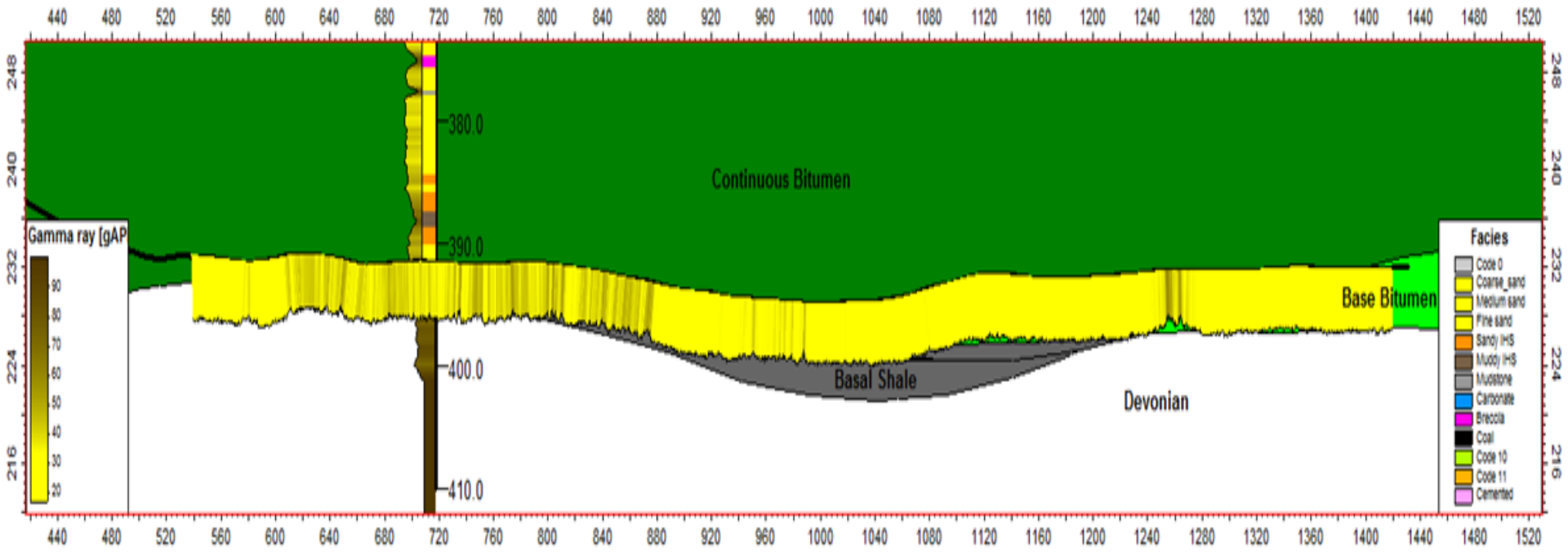
Inside Guide String OD 1.0"

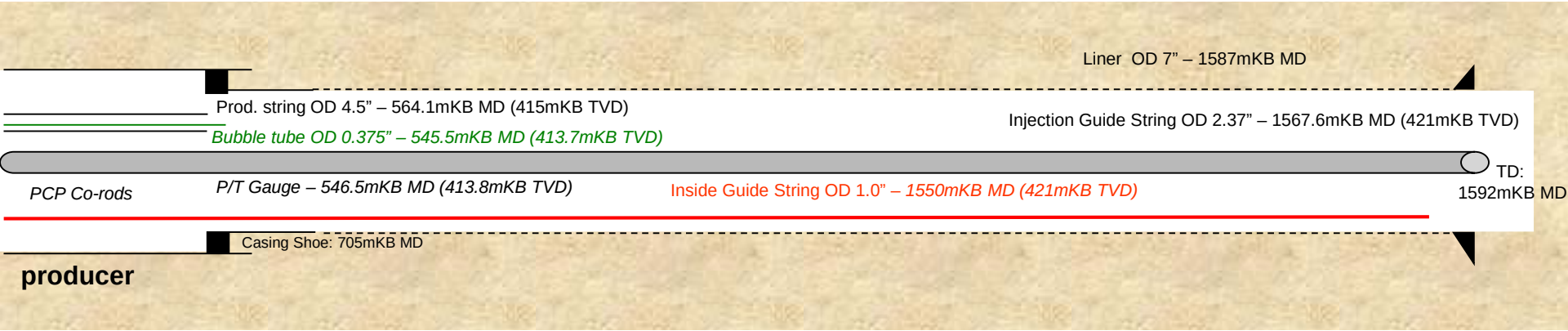
Casing Shoe: 744mKB MD

producer

Reservoir quality

No Lateral Pair – Initial PCP Completion



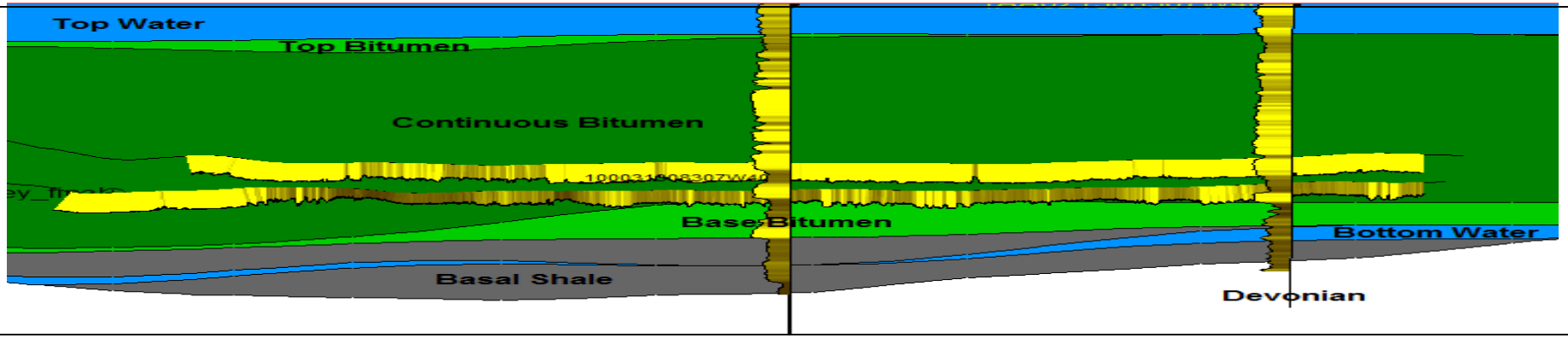


producer

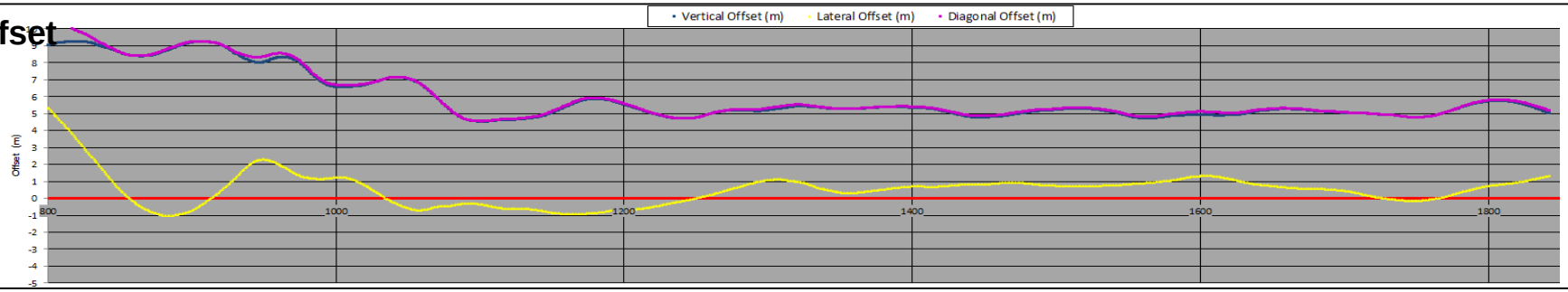
Reservoir quality

101-24
Earth Model (Dec 2012)

Wellpair drilled July 2013



Offset



injector

Liner OD 6.625" – 1860mKB MD

Heel string OD 4.5" – 881mKB MD (402.7mTVD)

Toe string OD 3.5" – 1843.56mKB MD (410.2mKB TVD)

TD: 1865mKB MD

Casing Shoe – 1016.6mKB MD

Liner OD 6.626" – 1837mKB MD

Heel String OD 7" – 847.19mKB MD (408mKB TVD)

Toe string OD 4.5" – 1808.8mKB MD (416.4mKB TVD)

Bubble tube OD 0.375" – 916.8mKB MD (416.3mKB TVD)

Outside Toe Ins. string – 1797.96mKB MD (416.4mKB TVD)

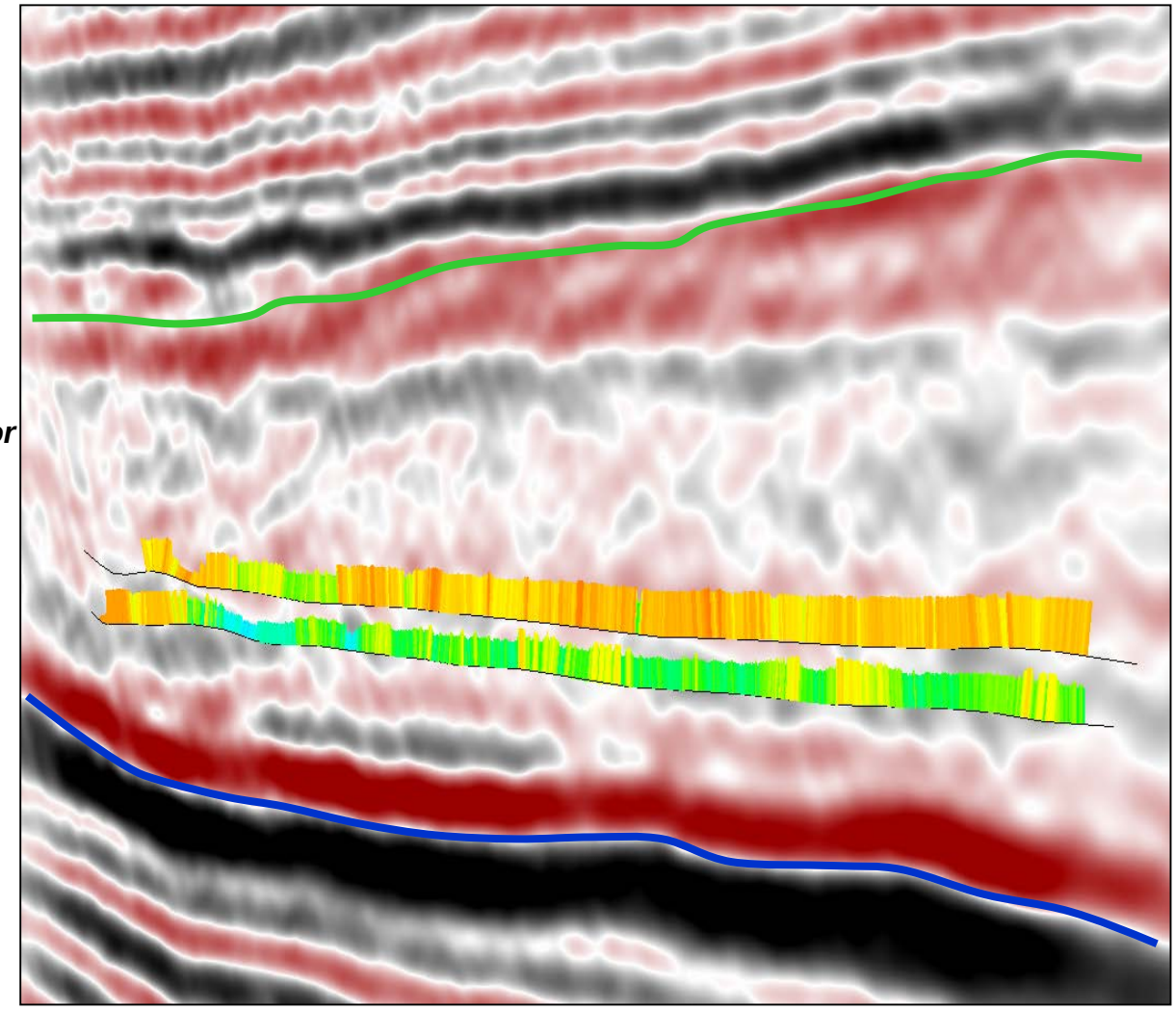
TD: 1842mKB MD

P/T Gauge – 957.17

Screen : 897mKB MD

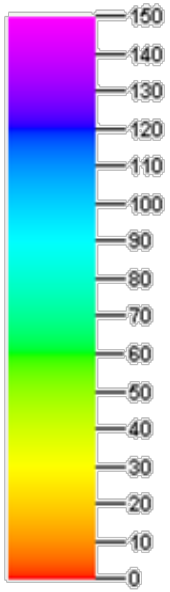
producer

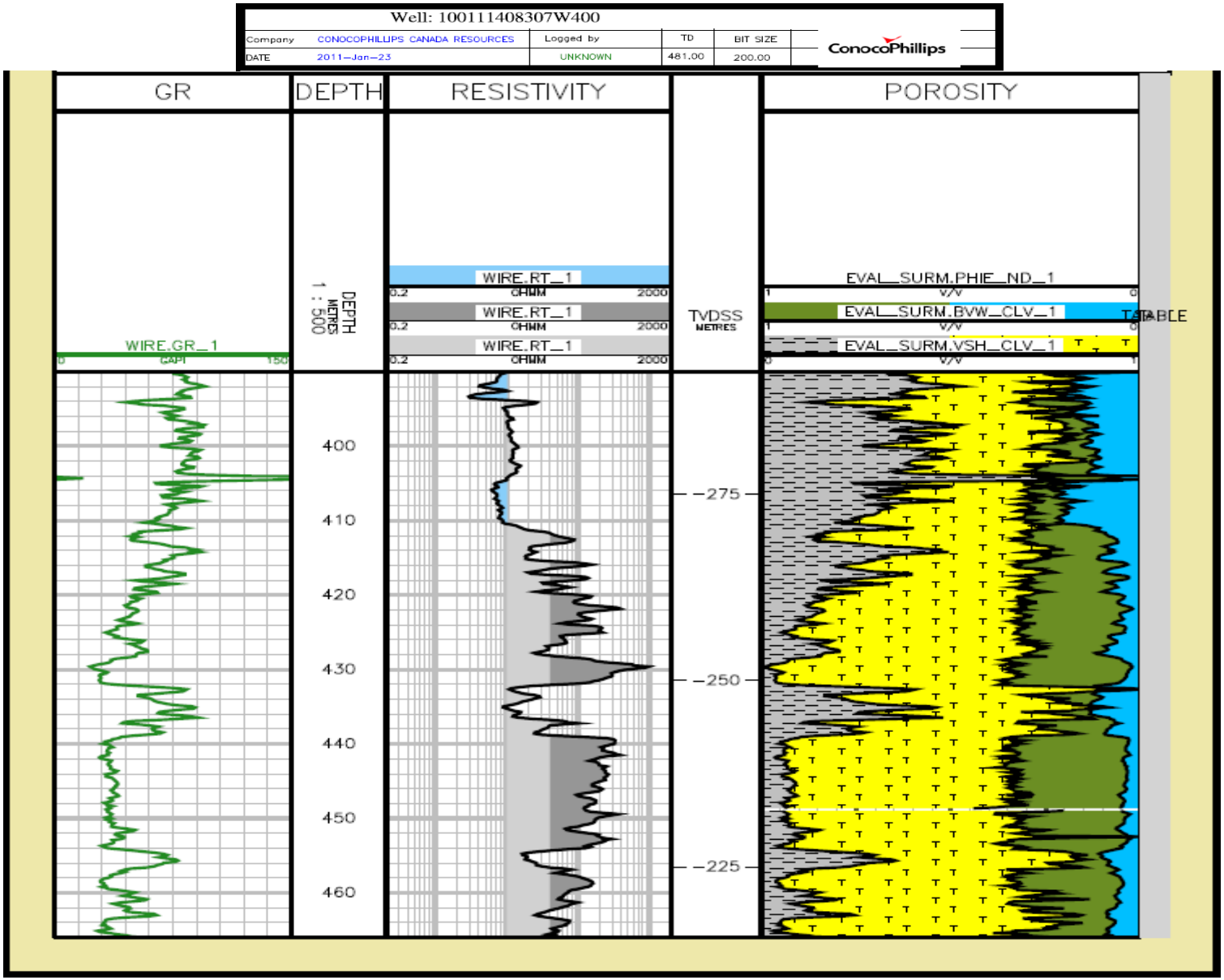
40pt LxData String – distributed from 925 to 1797.96mKB



Horizons
= WAB
= TopResSeis
= BHL

Gamma Ray Color Scale (API)




Well: 100111408307W400
Company CONOCOPHILLIPS CANADA RESOURCES
Logged by UNKNOWN
TD 481.00
BIT SIZE 200.00
DATE 2011-Jan-23
ConocoPhillips
GR
DEPTH
RESISTIVITY
POROSITY
WIRE.GR_1
0 GAPI 150
DEPTH METRES 1 : 500
WIRE.RT_1
0.2 OHMM 2000
WIRE.RT_1
0.2 OHMM 2000
WIRE.RT_1
0.2 OHMM 2000
TVDSS METRES
EVAL_SURM.PHIE_ND_1
1 V/V 0
EVAL_SURM.BVW_CLV_1
1 V/V 0
EVAL_SURM.VSH_CLV_1
0 V/V 1
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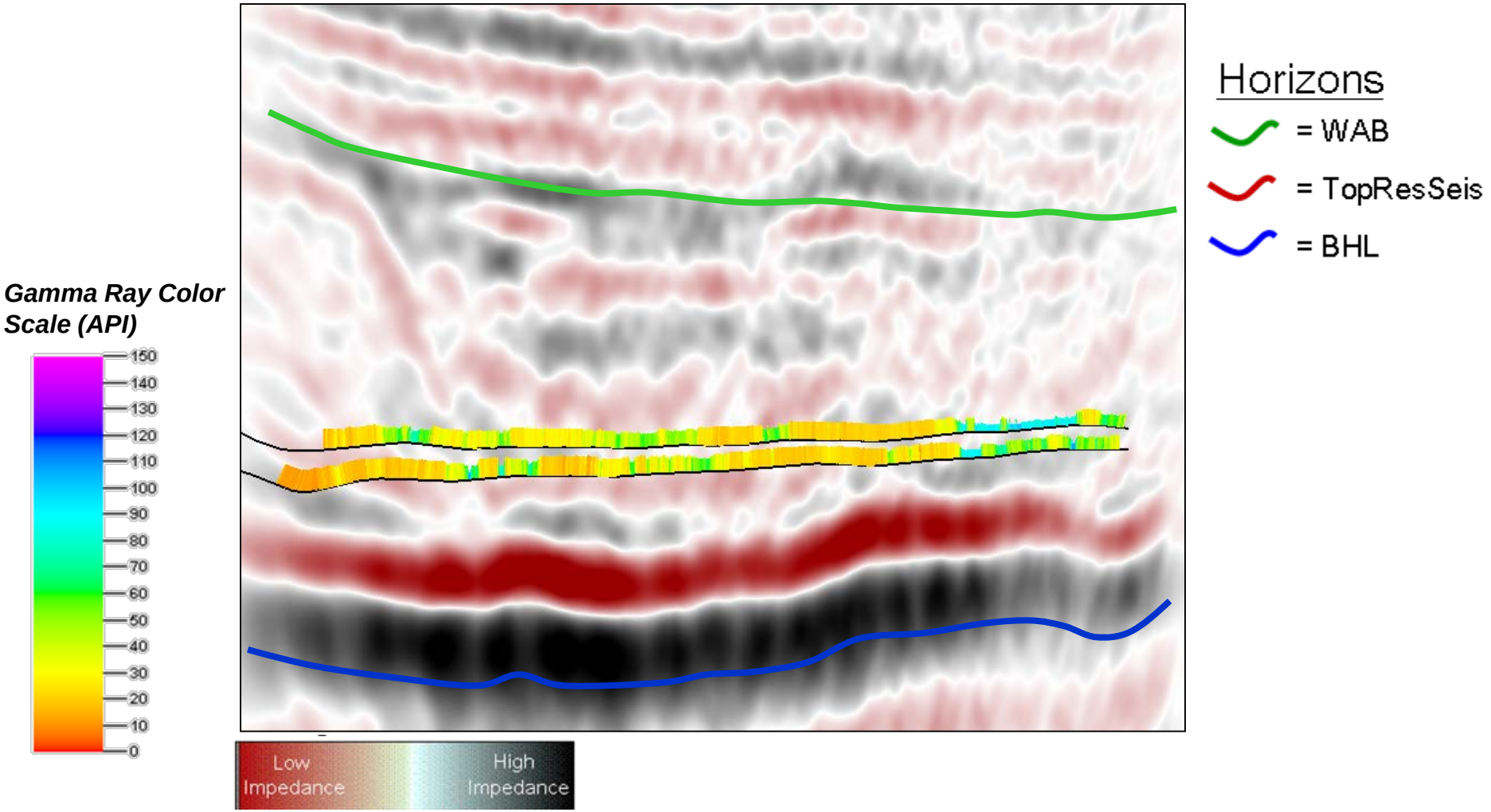
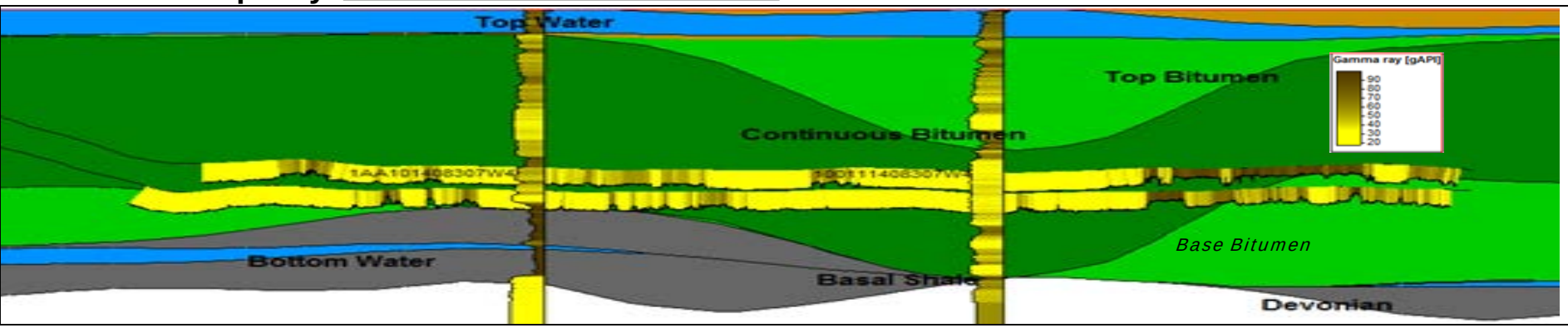
410
420
430
440
450
460
-275
-250
-225

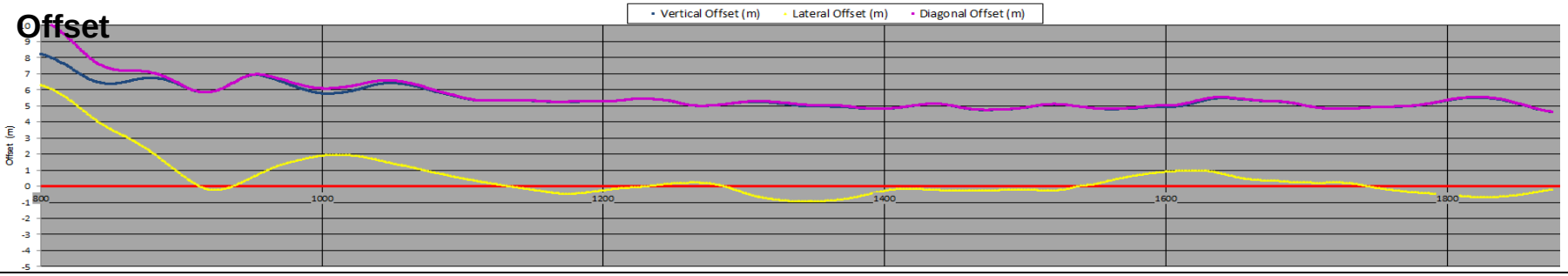

Gamma Ray Color Scale (API)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Low Impedance
High Impedance
Horizons
= WAB
= TopResSeis
= BHL

Reservoir quality

Wellpair drilled July 2013



Offset



injector

Liner OD 6.625" – 1864mKB MD

Heel string OD 7" – 830.1mKB MD (403mTVD)

Toe string OD 4.5" – 1841.14mKB MD (414.8mKB TVD)

TD: 1869mKB MD

Casing Shoe – 975mKB MD

Liner OD 6.626" – 1869mKB MD

Heel string OD 7" – 828.5mKB MD (406mKB TVD)

Toe string OD 4.5" – 1848.88mKB MD (415.6mKB TVD)

Bubble tube OD 0.37" – 890mKB MD (411.7mKB TVD)

Outside Toe Ins. string – 1838mKB MD (415.6mKB TVD)

P/T Gauge – 928.1mKB MD (415mKB TVD)

TD: 1874mKB MD

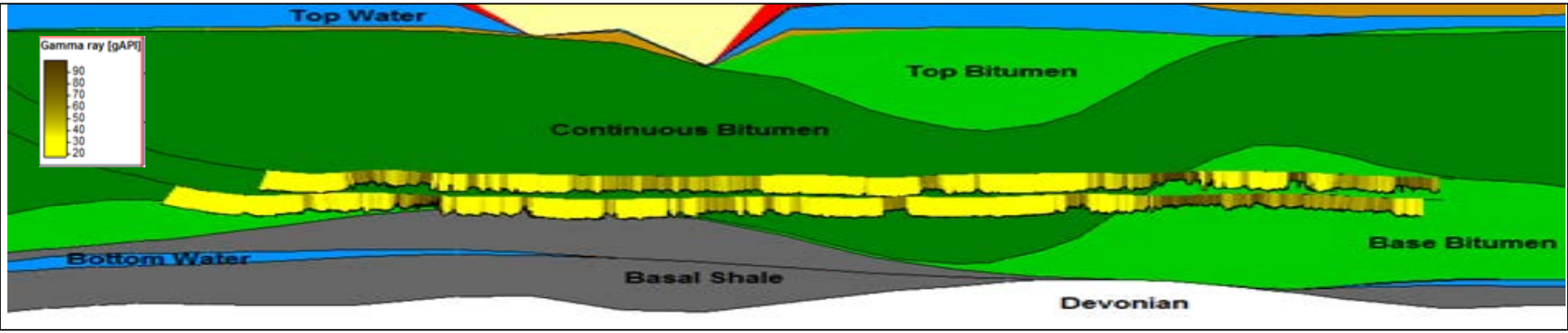
Screen : 961mKB MD

40pt LxData String – distributed from 938.9 to 1838.17mKB

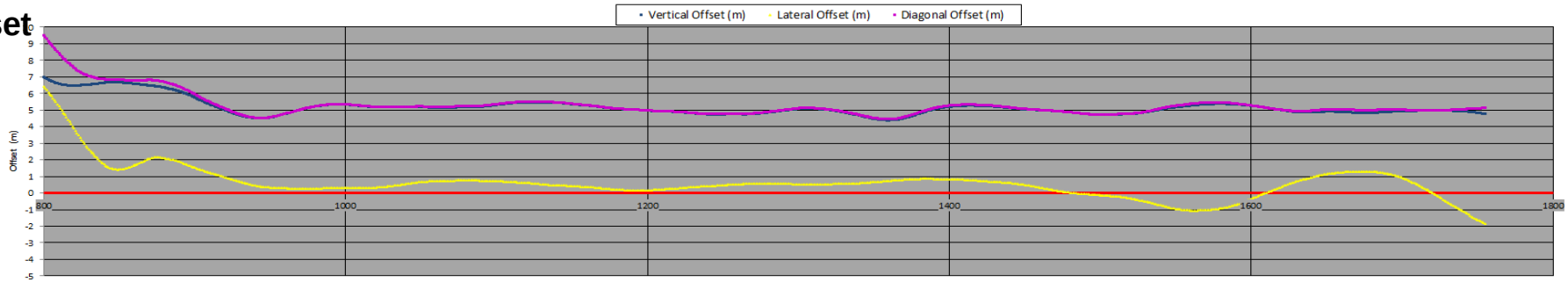
producer

Reservoir quality

Wellpair drilled July 2013



Offset



injector

Liner OD 7" – 1734mKB MD

Heel string OD 7" – 751.5mKB MD (417mTVD)

Toe string OD 4.5" – 1714.1mKB MD (417mKB TVD)

TD: 1739mKB MD

Casing Shoe – 892mKB MD

Liner OD 7" – 1761mKB MD

Heel string OD 7" – 752.1mKB MD (410mKB TVD)

Toe string OD 4.5" – 1731.5mKB MD (420.7mKB TVD)

Bubble tube OD 0.375" – 820mKB MD (416mKB TVD)

Outside Toe Ins. String – 1720.6mKB MD (420.6mKB TVD)

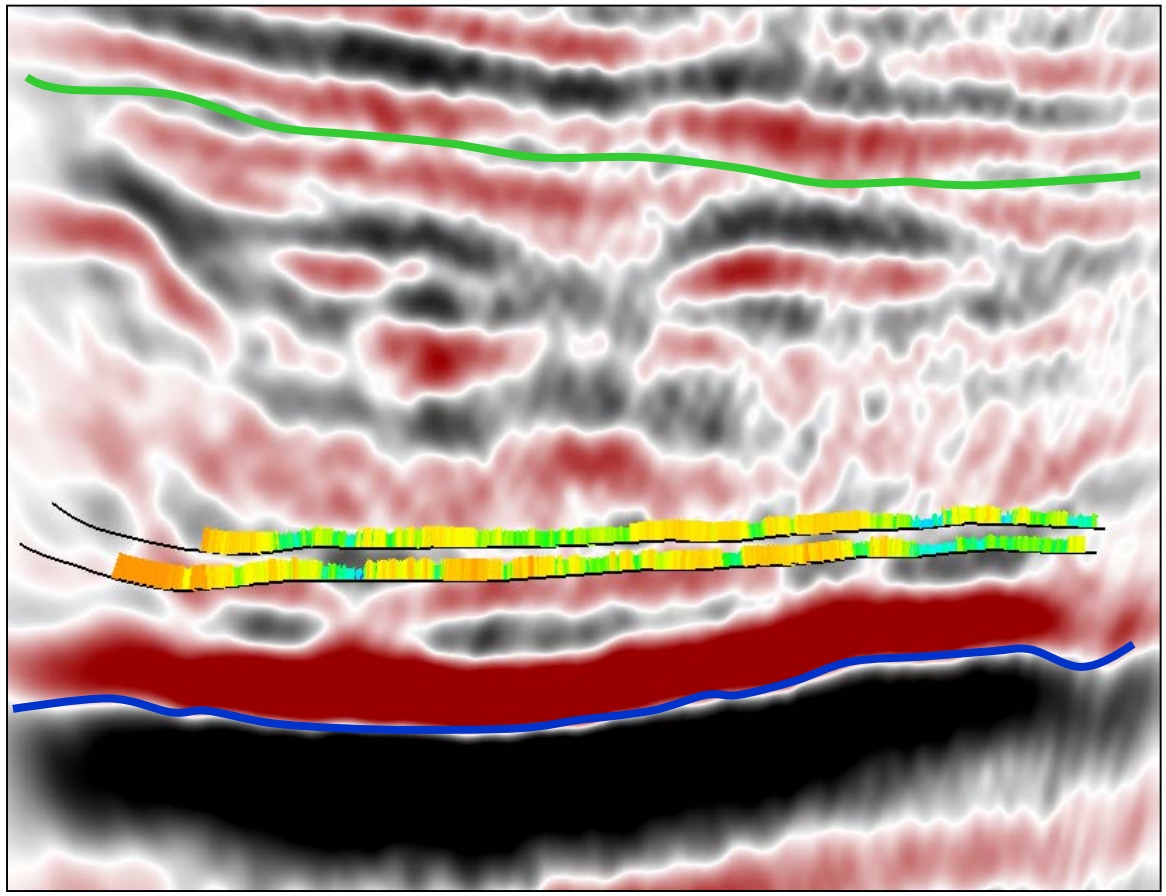
TD: 1755mKB MD

P/T Gauge – 860.9mKB MD (418.7mKB TVD)

Screen : 888.3mKB MD

producer

40pt LxData String – distributed from 866.3 to 1720.6mKB

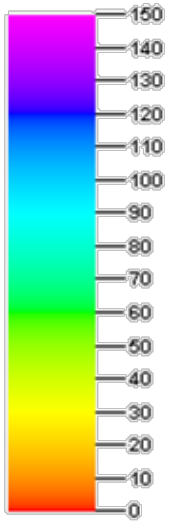


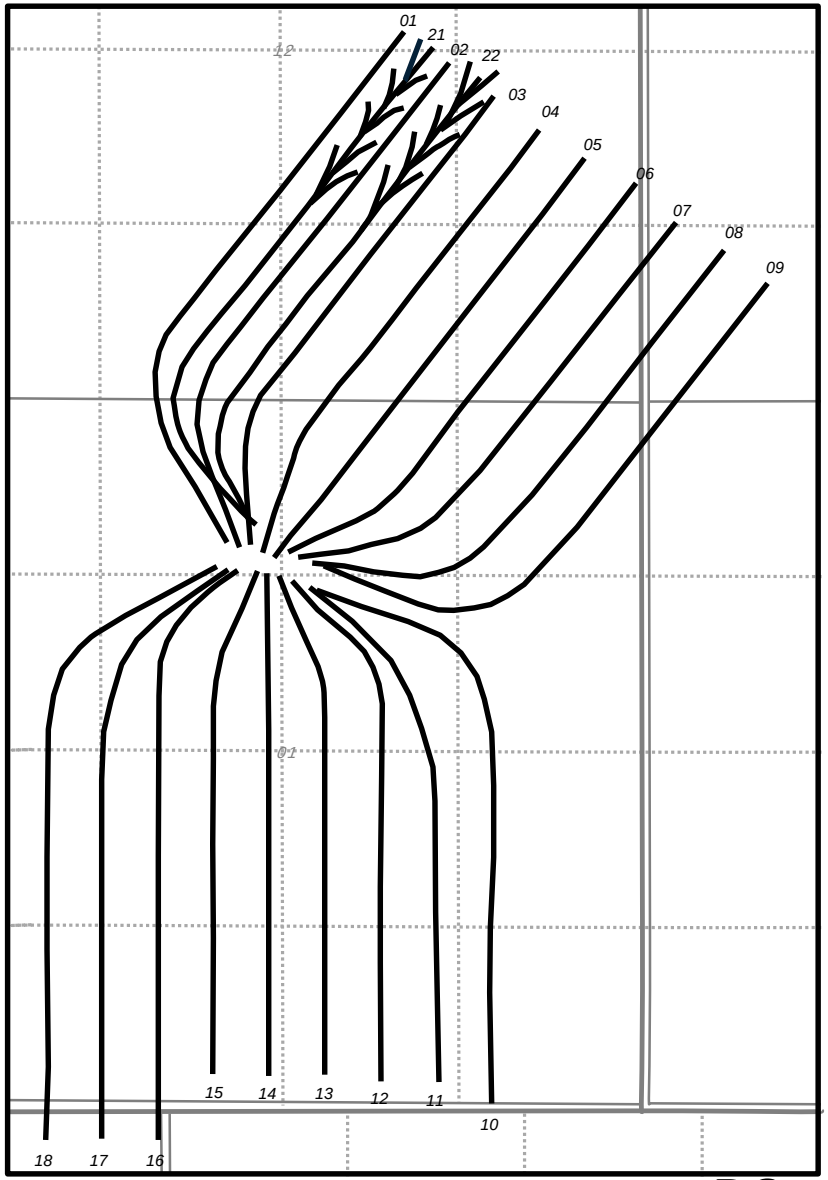
Horizons

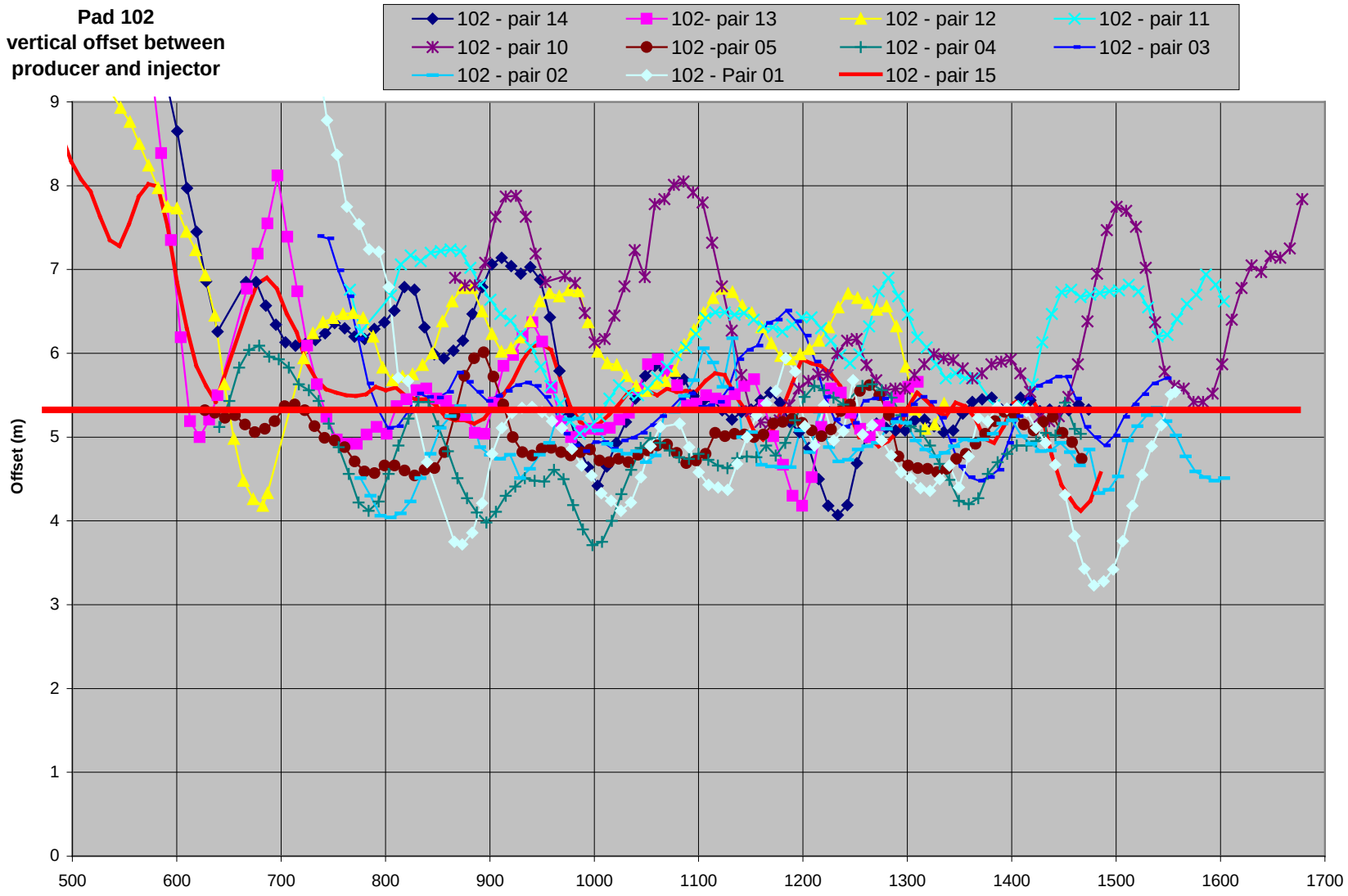
= WAB

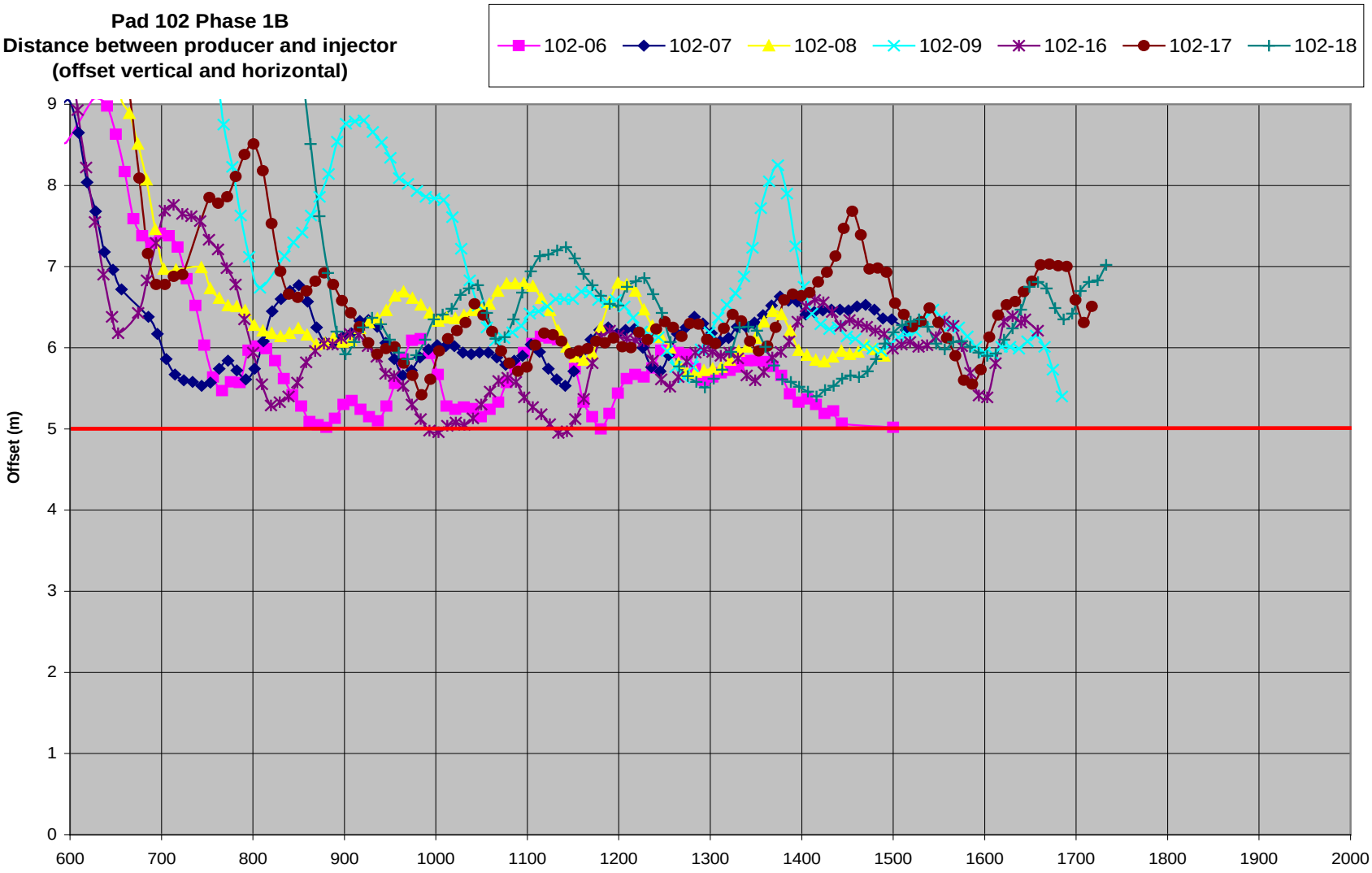
= BHL

Gamma Ray Color Scale (API)

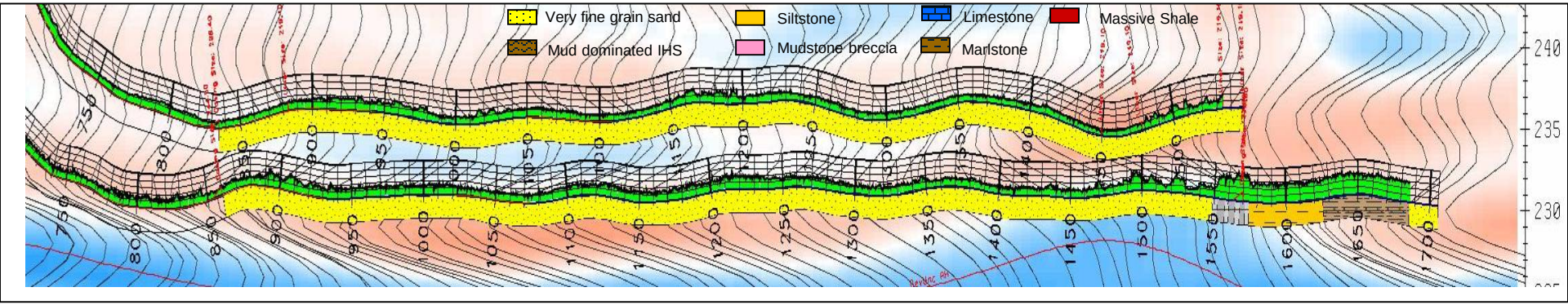


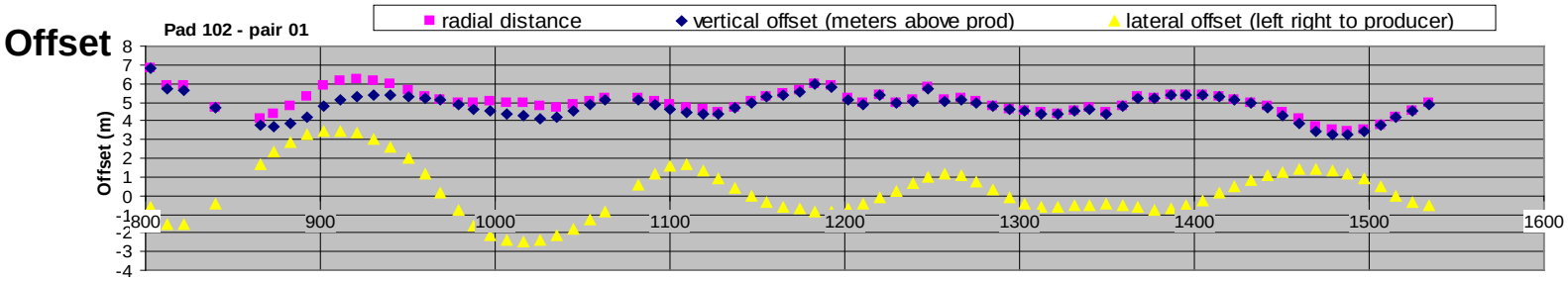

01
21
02
22
03
04
05
06
07
08
09
15
14
13
12
11
10
18
17
16
T83
R07W4
R6

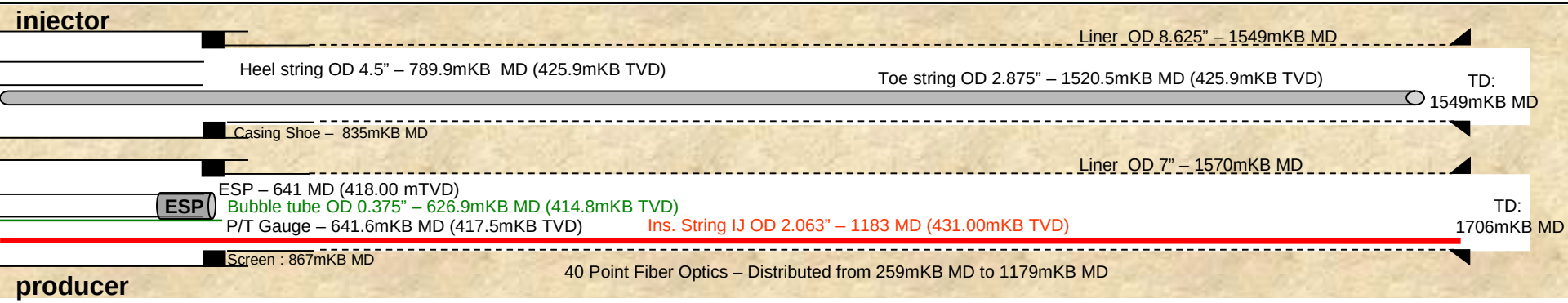

Pad 102
vertical offset between
producer and injector
102 - pair 14
102- pair 13
102 - pair 12
102 - pair 11
102 - pair 10
102 -pair 05
102 - pair 04
102 - pair 03
102 - pair 02
102 - Pair 01
102 - pair 15
Offset (m)
0
1
2
3
4
5
6
7
8
9
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700

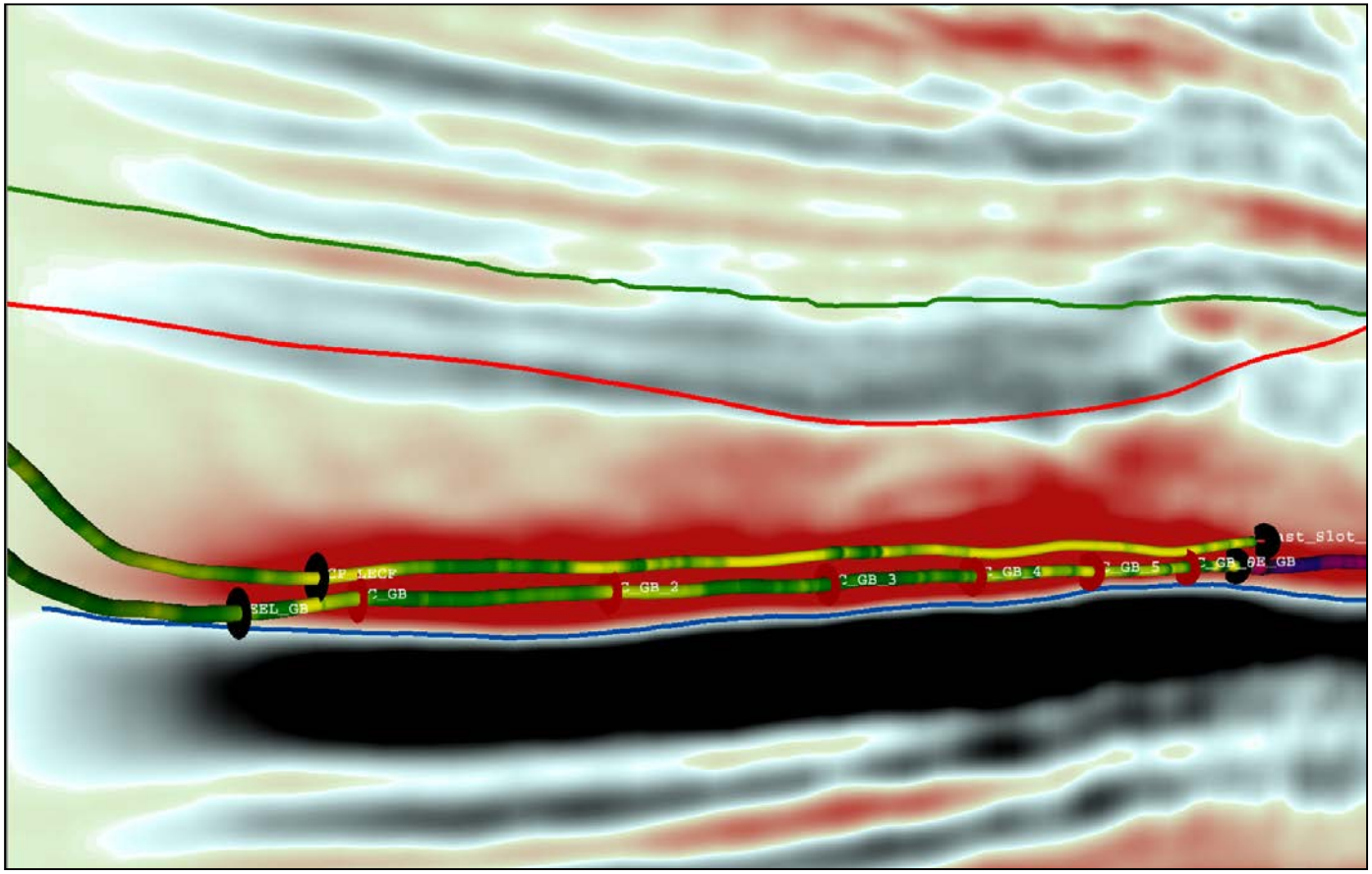

Pad 102 Phase 1B
Distance between producer and injector
(offset vertical and horizontal)
102-06
102-07
102-08
102-09
102-16
102-17
102-18
Offset (m)
0
1
2
3
4
5
6
7
8
9
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

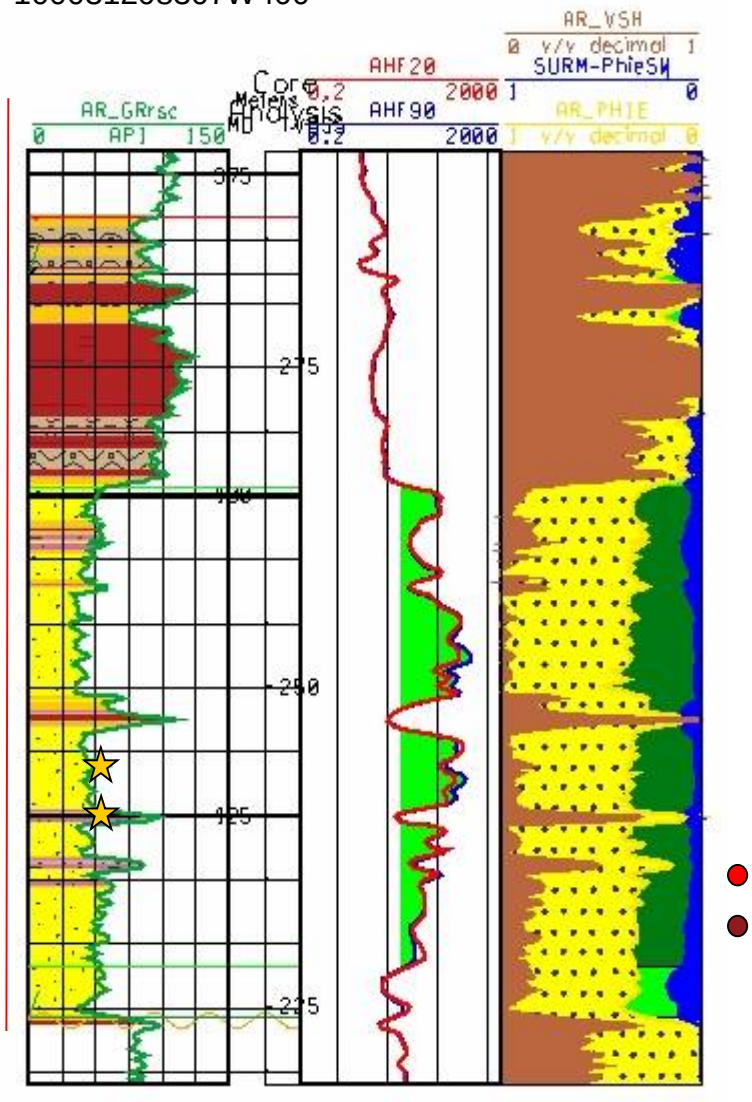
= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

102-P01-A

100031208307W400



0- Edge well, radial distance < 4 m at the heel and toe

1- low CPV

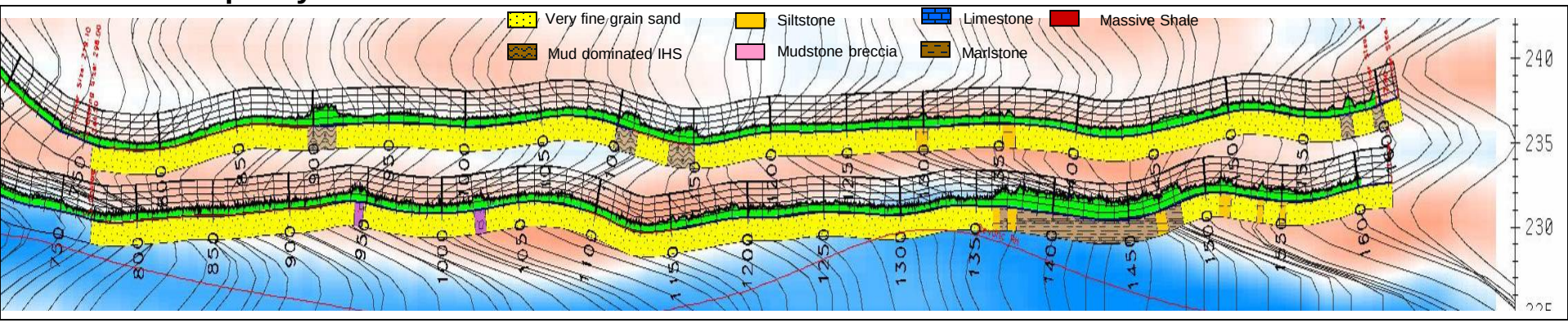
2- Poor quality at the toe

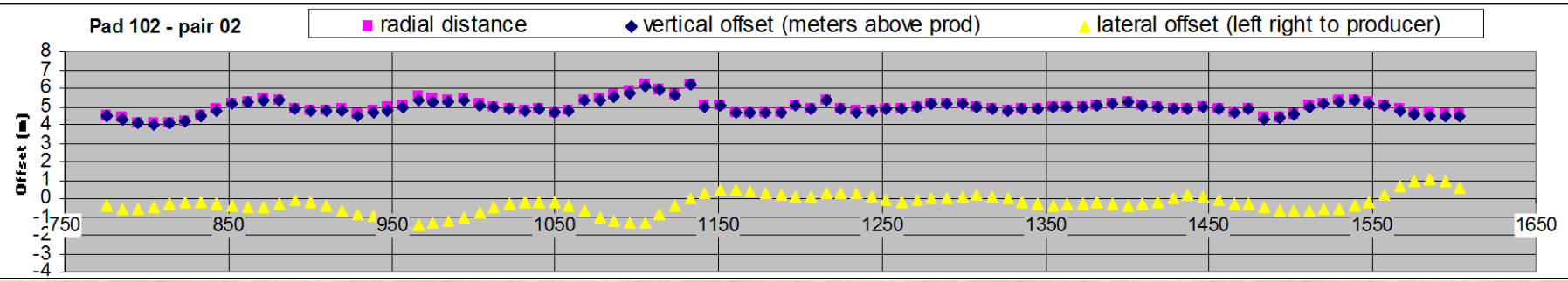
3- No monitoring

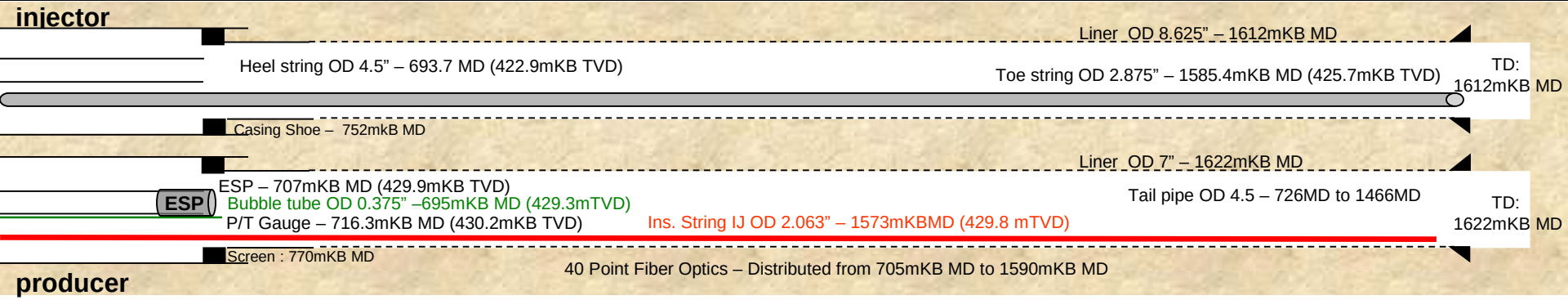
Inj depth 235 mASL

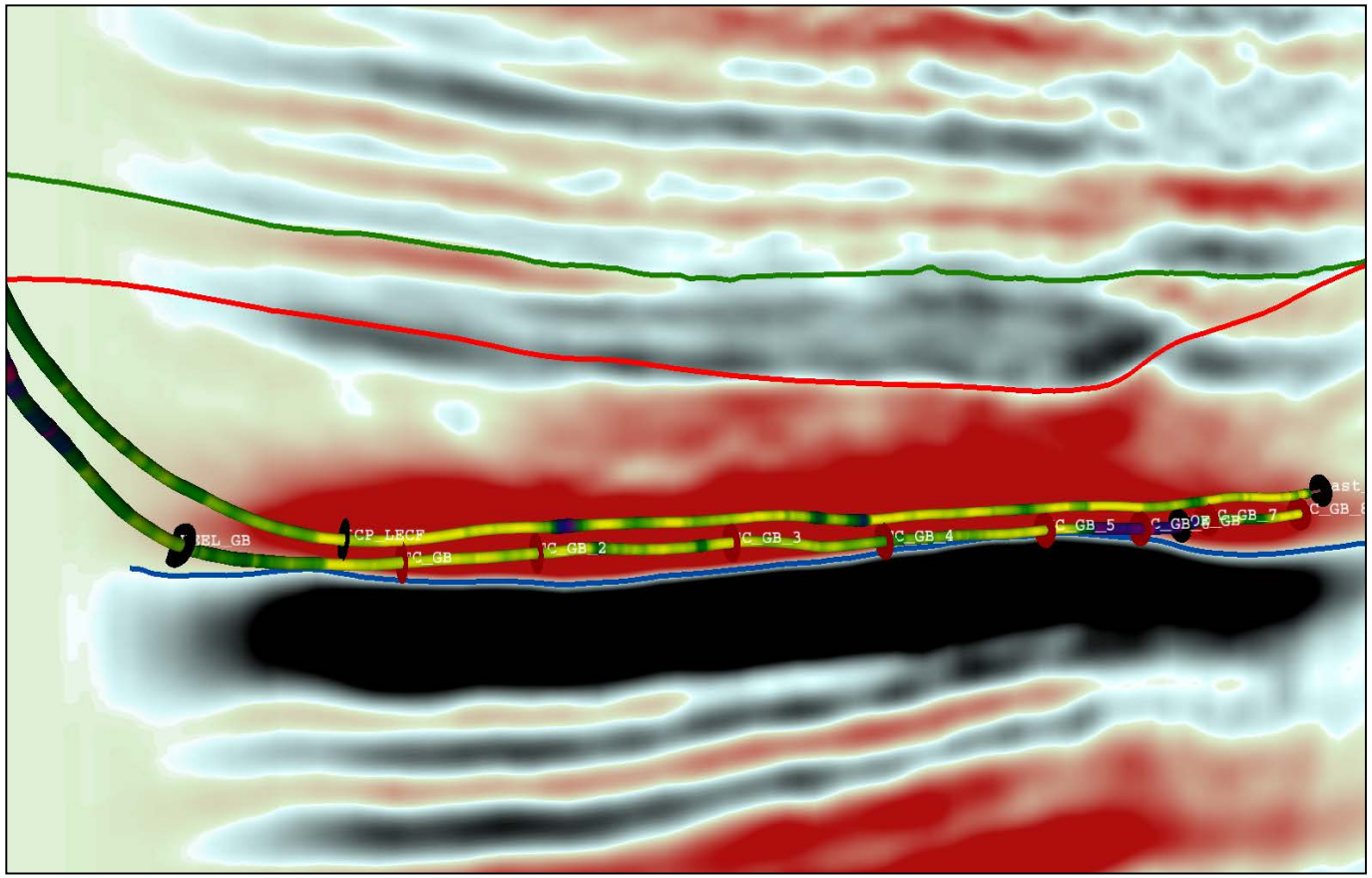
Prod depth230 mASL

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

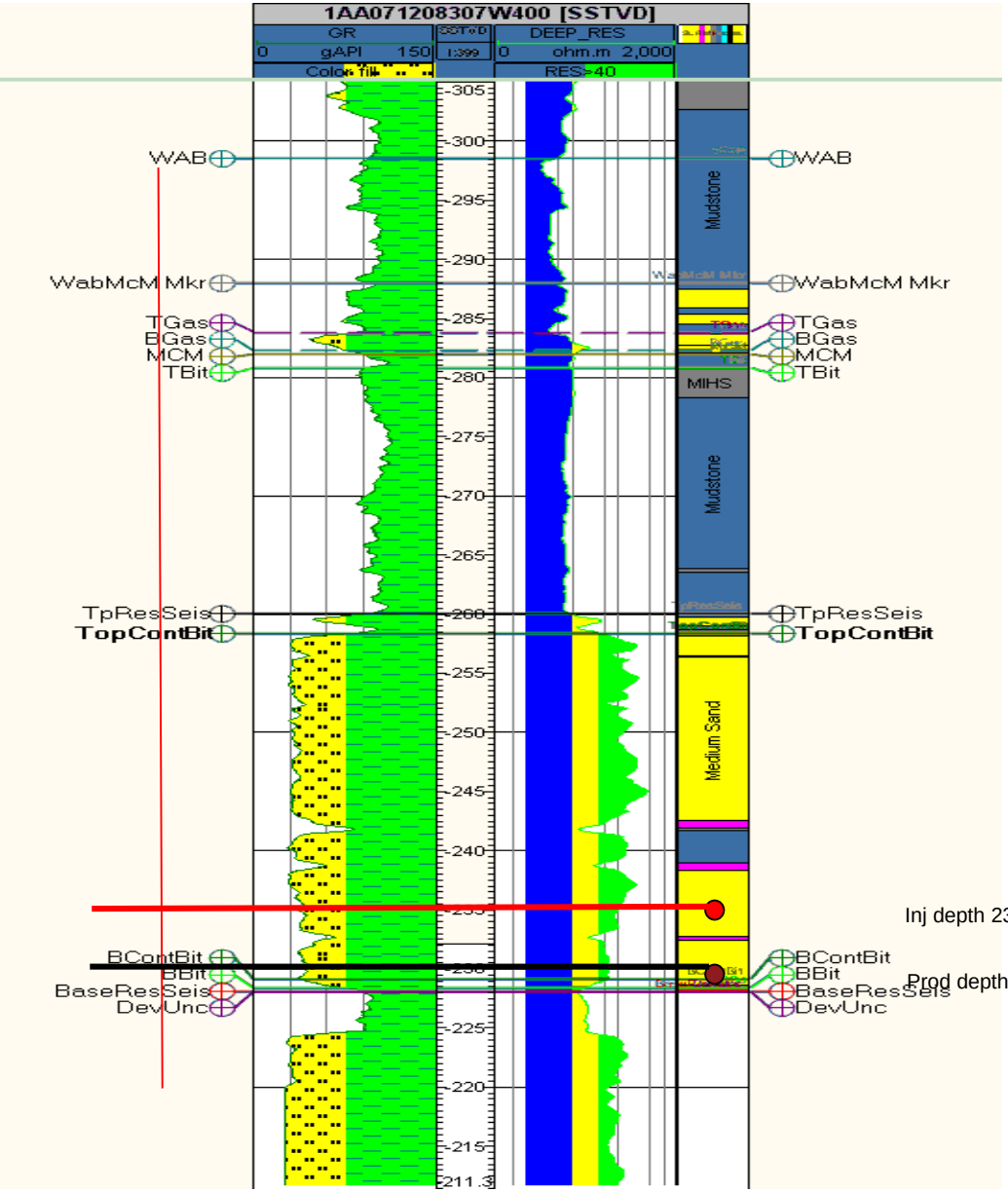
Picks

= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace



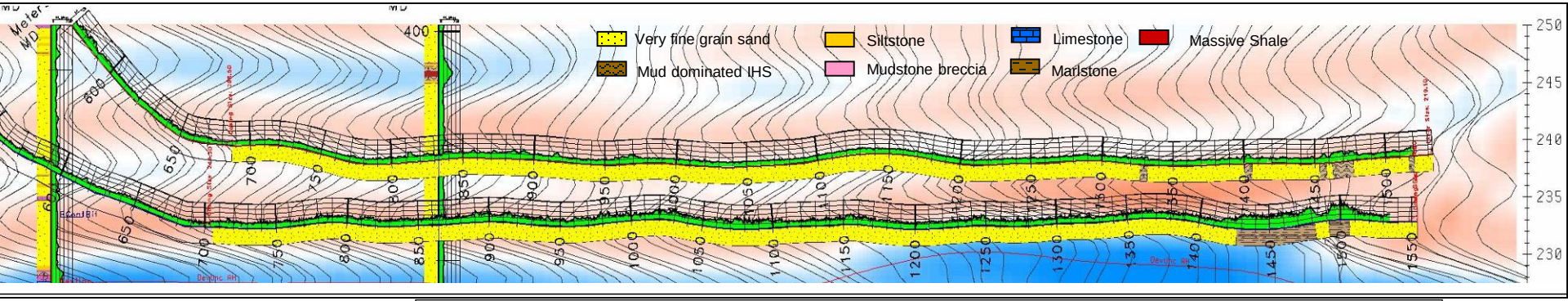
1- medium CPV

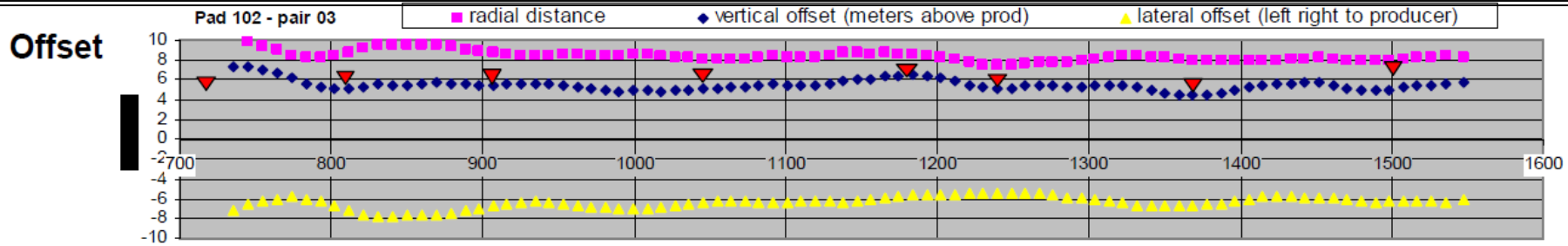
2- Poor quality at the toe

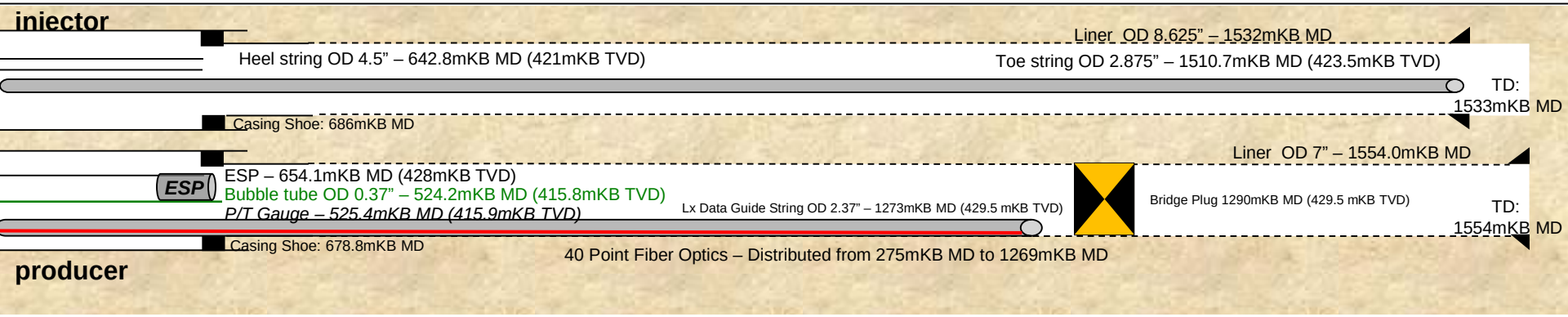
3- variation of NCB

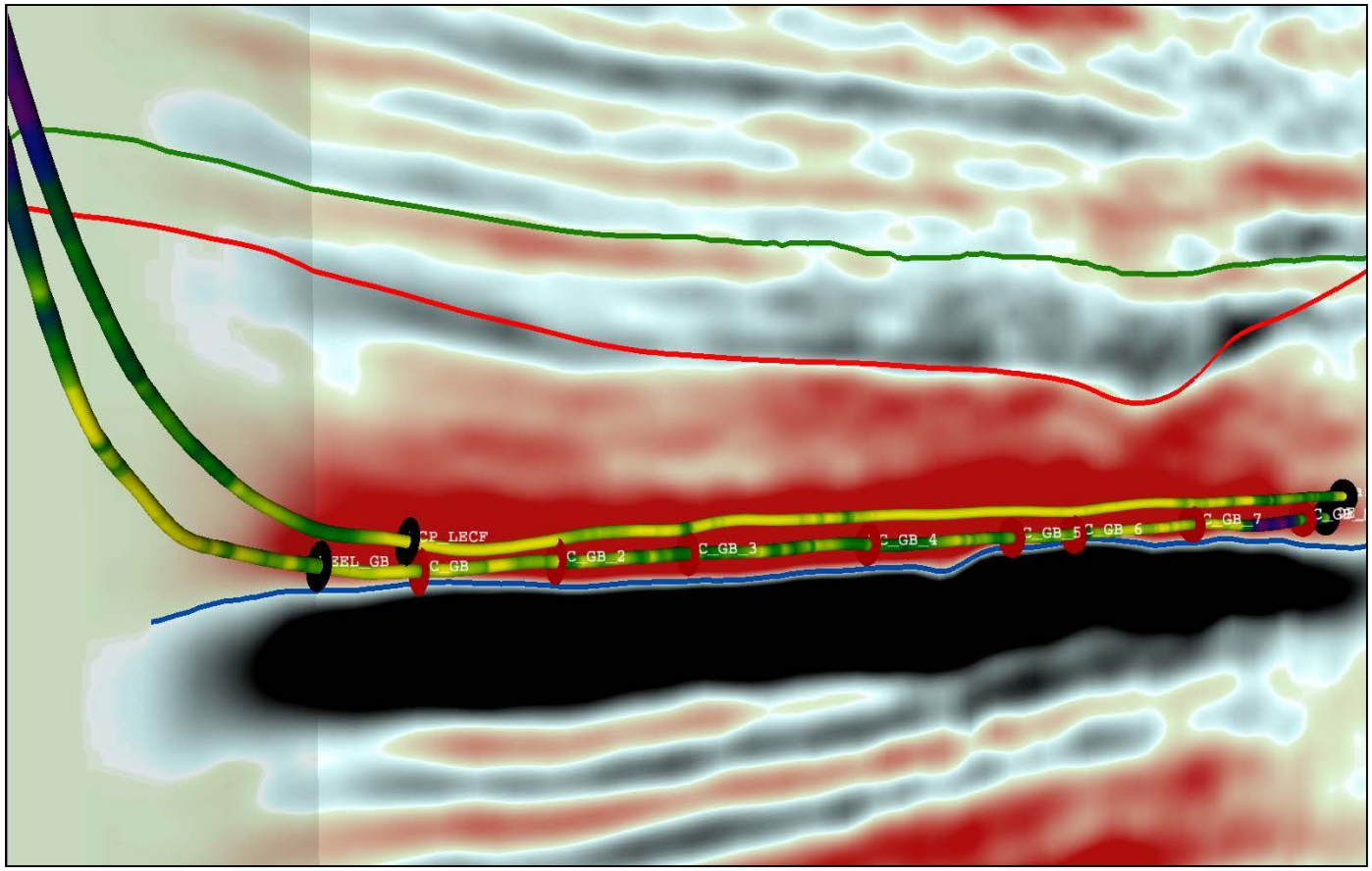
4- No monitoring

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

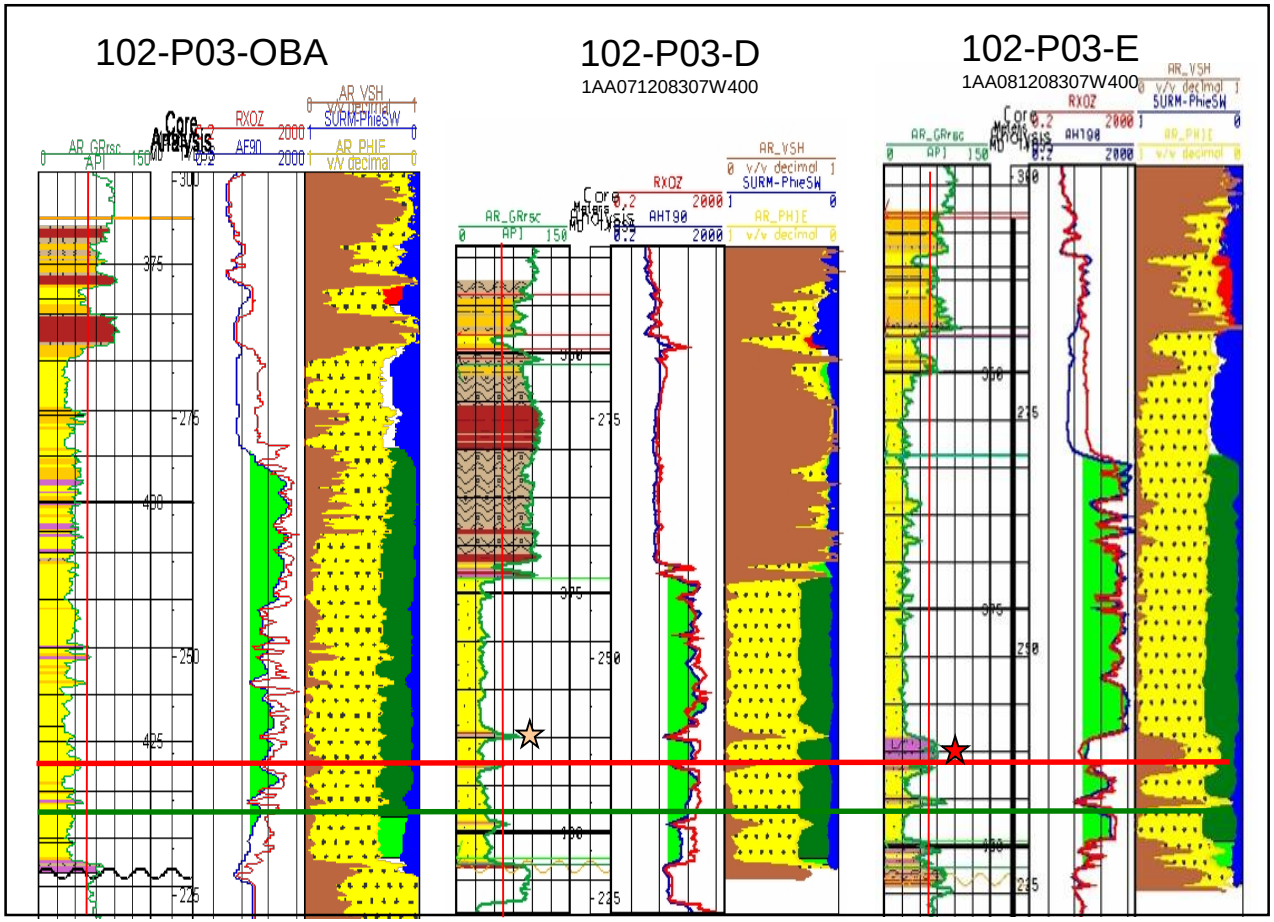
Picks

= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace



0- producer with straight cut liner, radial distance > 7 m

1- medium CPV

2- poor quality at the toe

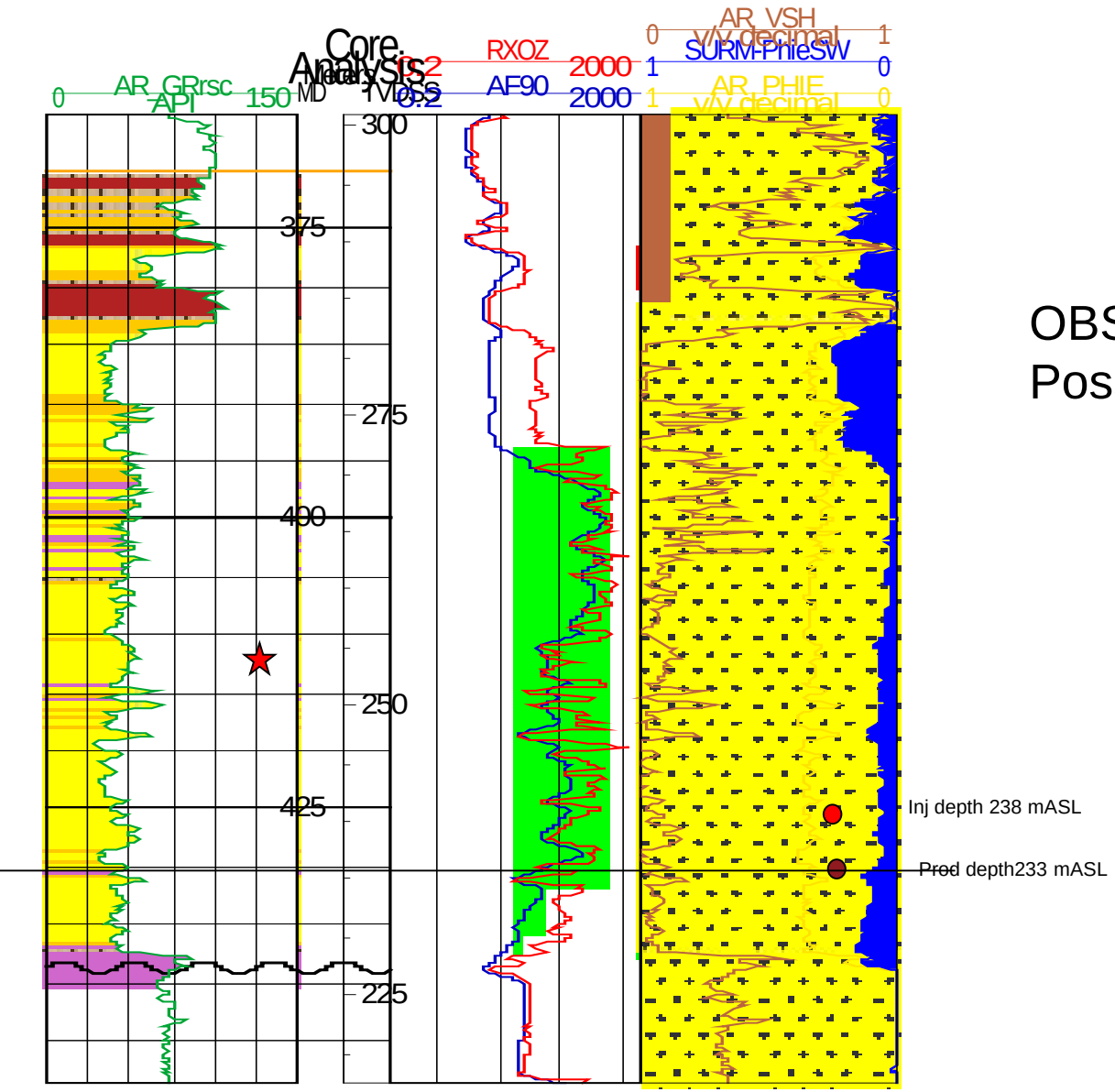
3- variation of NCB : 25 m (toe) to 33 m (heel)

4- no barrier/baffle issue

5- possibility to run thermo in 102-P03-OBA to monitor interference with TZ

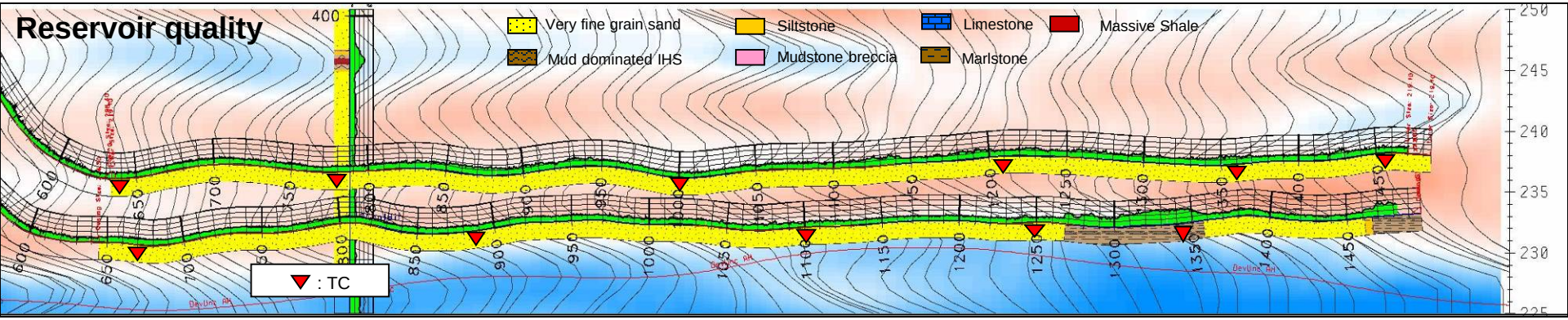
Inj depth 238 mASL

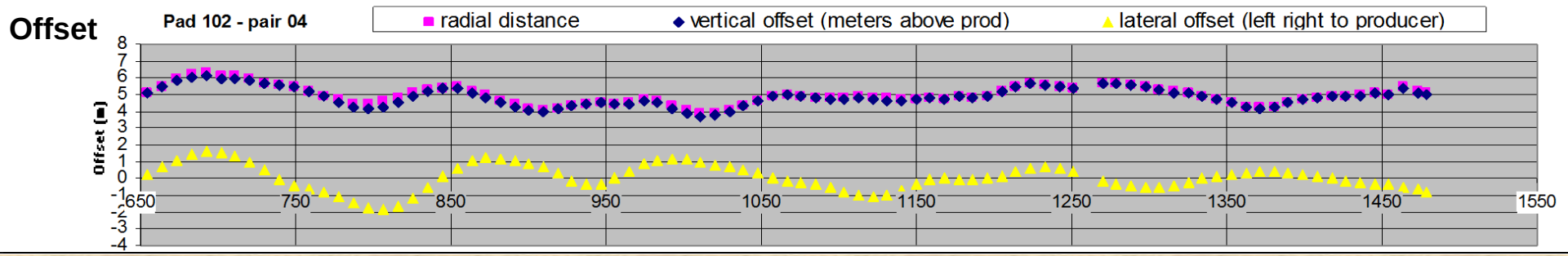
Prod depth233 mASL

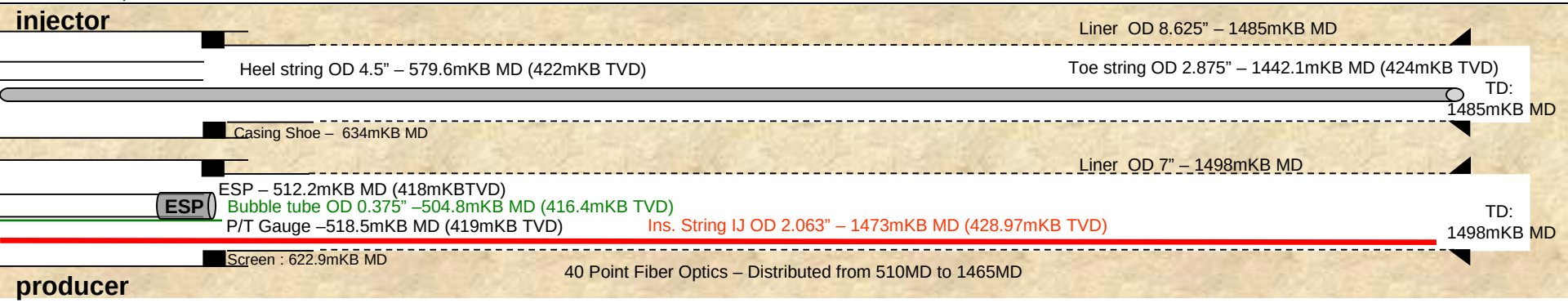


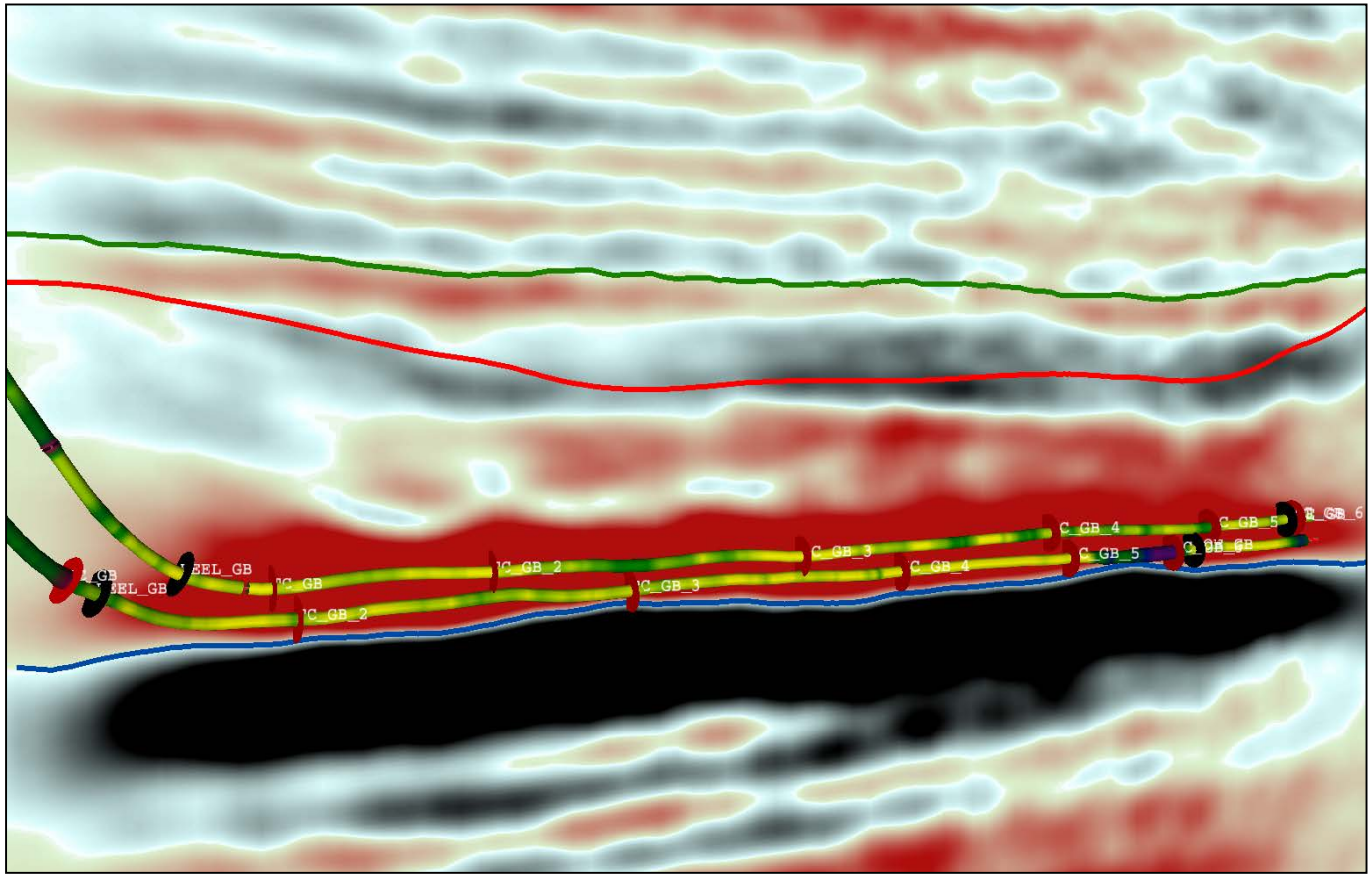
OBS well not equipped
Possibility to run thermocouples

P04-OBA TC


Reservoir quality
Very fine grain sand
Siltstone
Limestone
Massive Shale
Mud dominated IHS
Mudstone breccia
Marlstone
: TC


Offset
Pad 102 - pair 04
radial distance
vertical offset (meters above prod)
lateral offset (left right to producer)
Offset (m)


injector
Liner OD 8.625" – 1485mKB MD
Heel string OD 4.5" – 579.6mKB MD (422mKB TVD)
Toe string OD 2.875" – 1442.1mKB MD (424mKB TVD)
TD: 1485mKB MD
Casing Shoe – 634mKB MD
Liner OD 7" – 1498mKB MD
ESP – 512.2mKB MD (418mKBTVD)
ESP
Bubble tube OD 0.375" –504.8mKB MD (416.4mKB TVD)
P/T Gauge –518.5mKB MD (419mKB TVD)
Ins. String IJ OD 2.063" – 1473mKB MD (428.97mKB TVD)
TD: 1498mKB MD
Screen : 622.9mKB MD
40 Point Fiber Optics – Distributed from 510MD to 1465MD
producer



Horizons

= WAB

= TopResSeis

= BHL

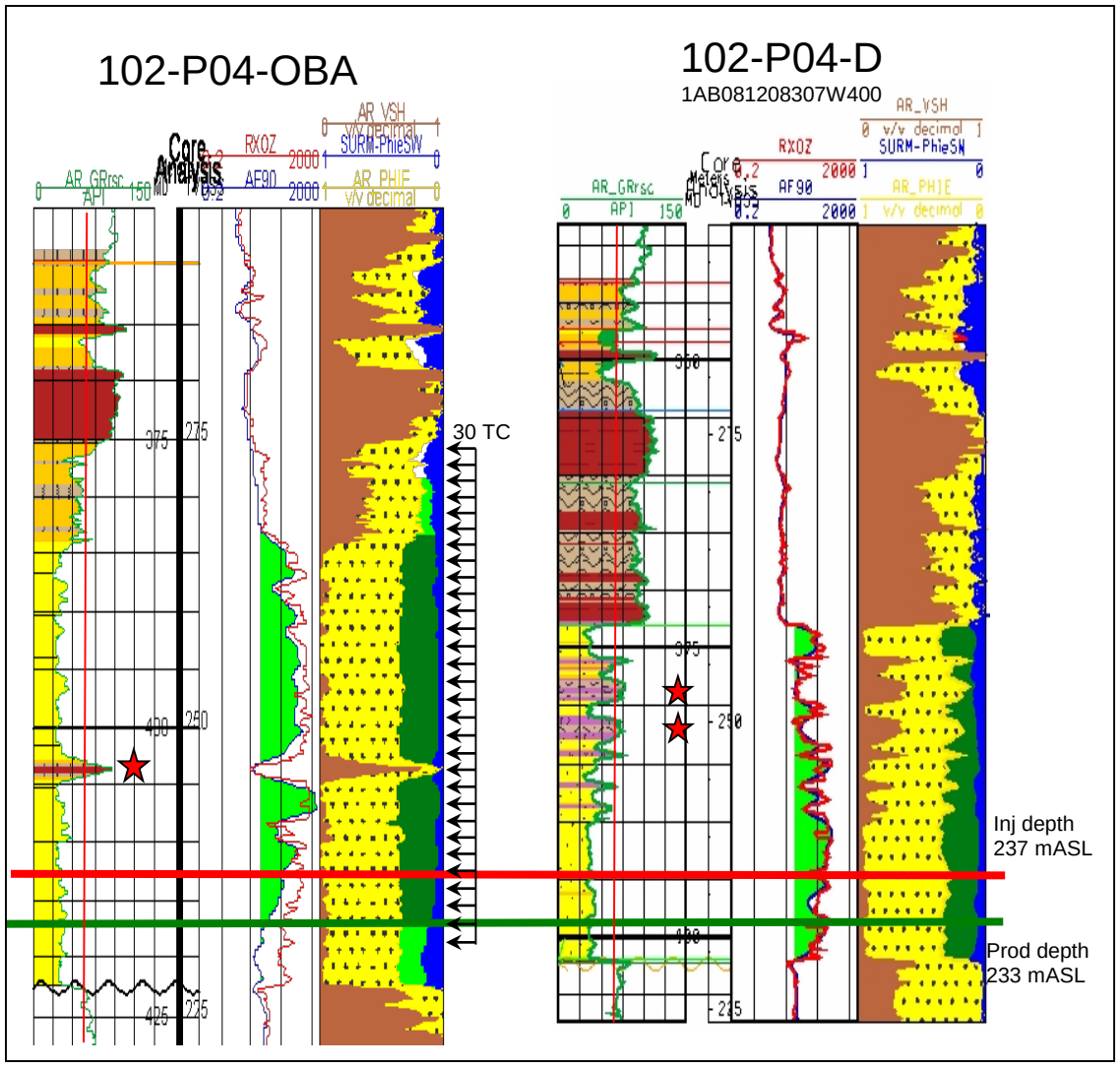
Picks

= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace



FMI + cores

FMI

0- Inj and prod with fiber optic and TC, low radial distance < 4 m (mid)

1- medium CPV

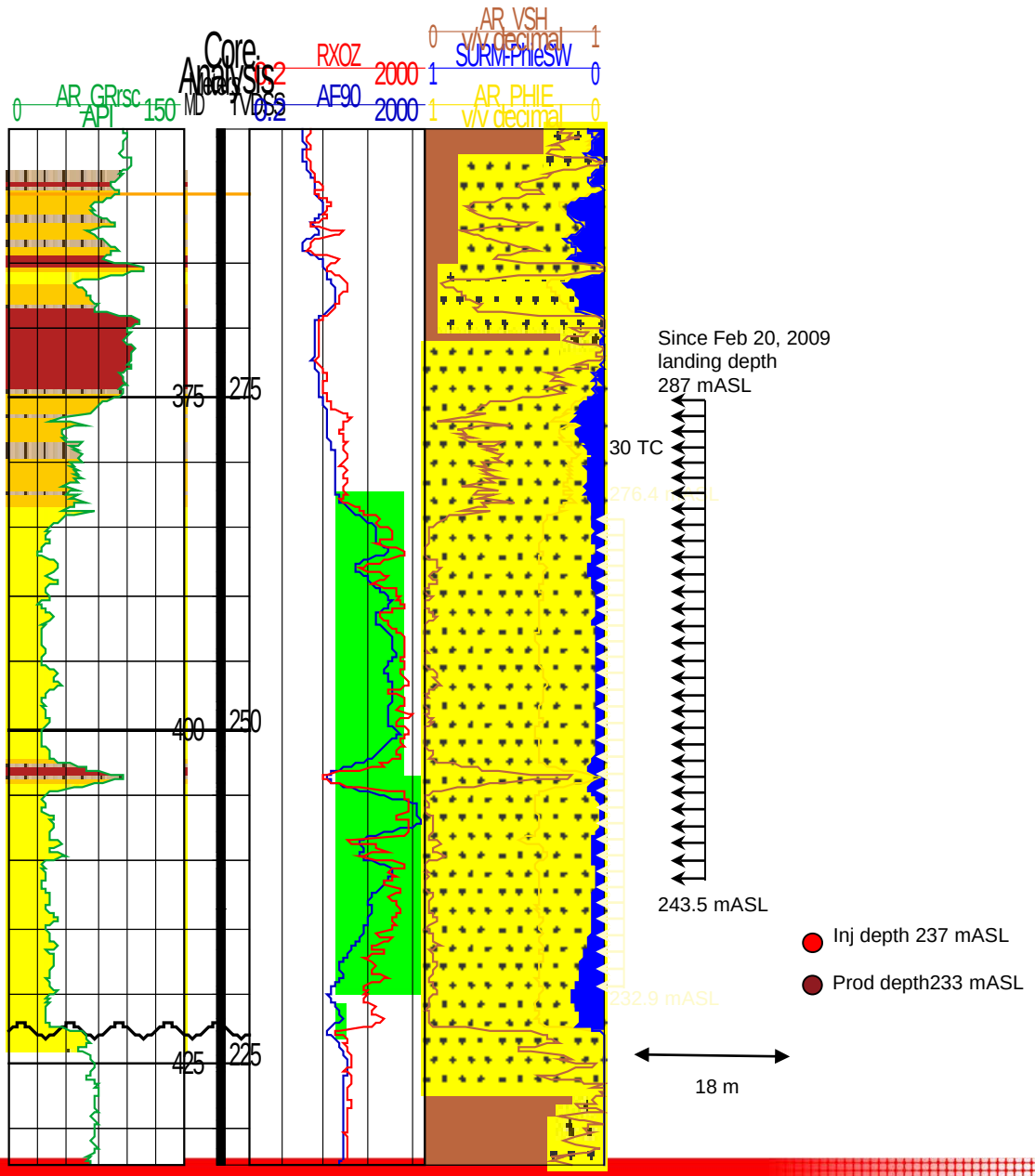
2- poor quality toward the toe

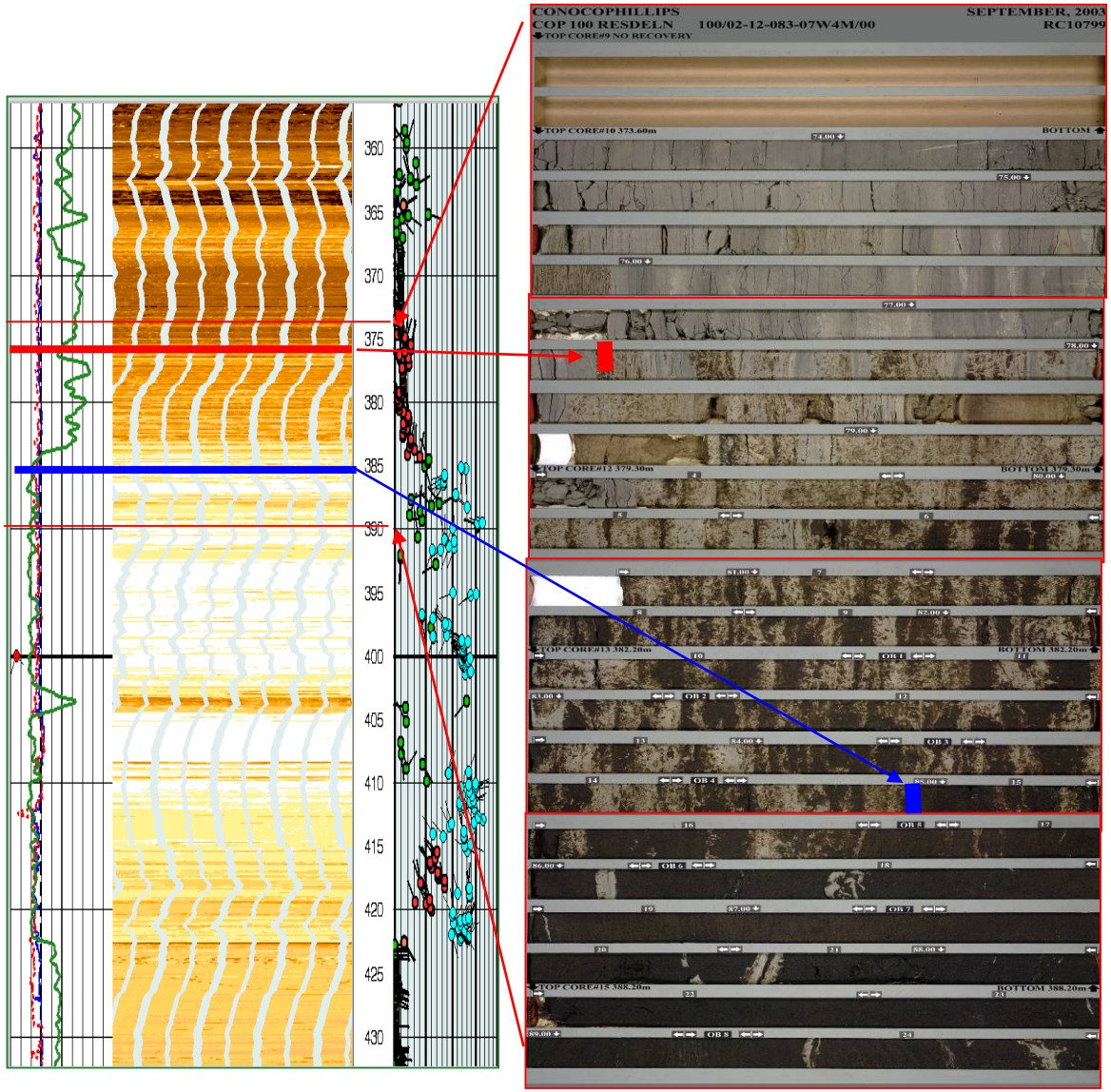
3- Variation of NCB : 25 m (toe) to 30 m (heel)

4- Baffles issue
- **10 m above inj at the 102-P04-A)**
- **15 m above inj toward toe**

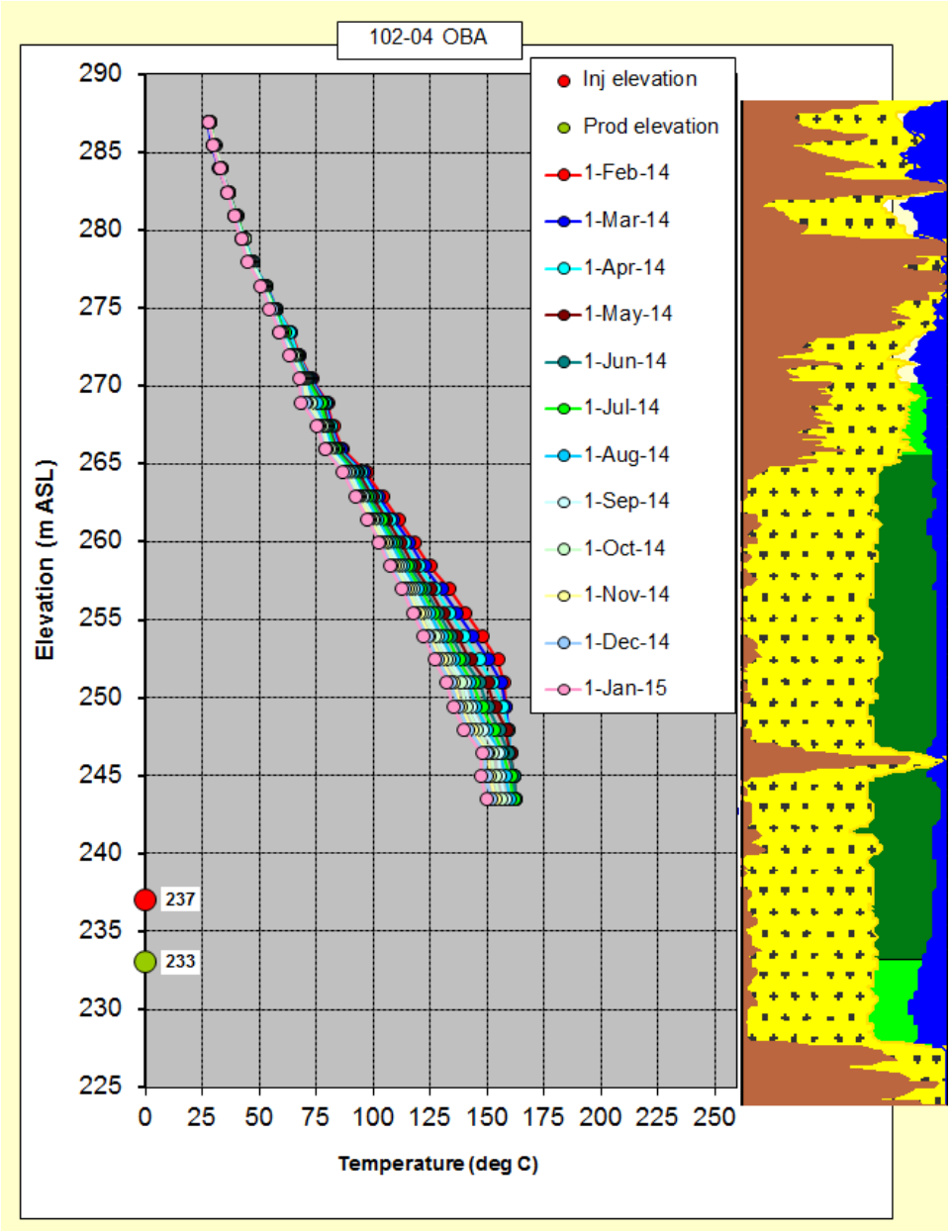
5- Monitor baffle at 102-P04 (OBS well at 18 m)

6- Monitor temp distribution along well with fiber optic


AR_VSH
0
v/v decimal
1
SURM-PhieSw
0
AR_PHIE
v/v decimal
0
RXOZ
2000
1
AF90
2000
1
AR_GRrsc
0
API
150
MD
Core Analysis
0.2
375
275
400
250
425
225
Since Feb 20, 2009
landing depth
287 mASL
30 TC
276.4
243.5 mASL
232.9 mASL
Inj depth 237 mASL
Prod depth233 mASL
18 m

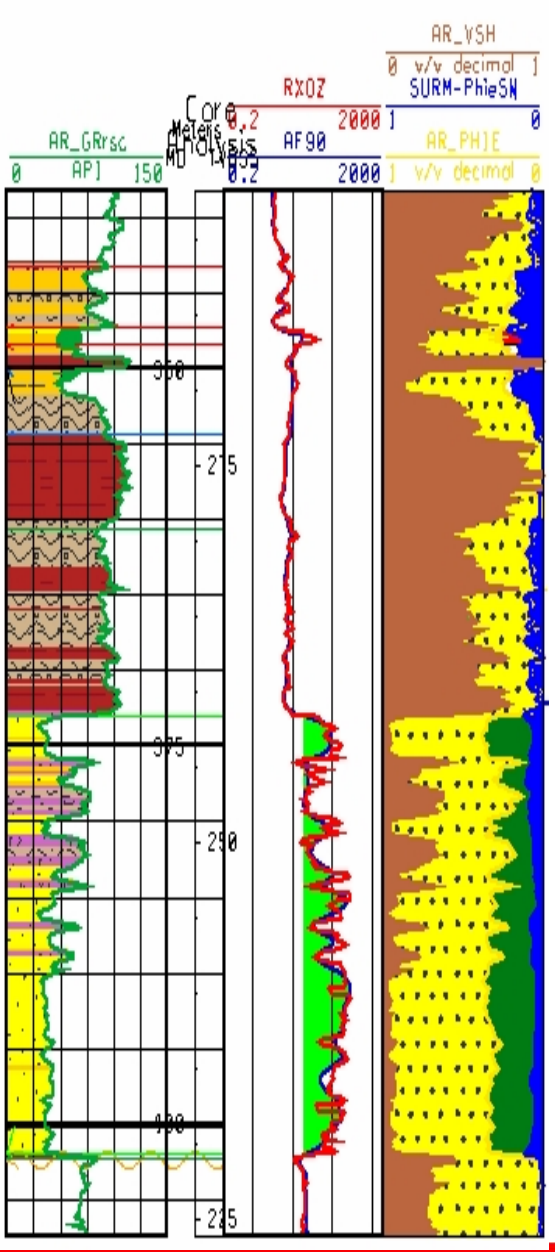

CONOCOPHILLIPS
COP 100 RESDELN 100/02-12-083-07W4M/00
SEPTEMBER, 2003
RC10799
TOP CORE#9 NO RECOVERY
TOP CORE#10 373.60m
BOTTOM
TOP CORE#12 379.30m
BOTTOM 379.30m
TOP CORE#13 382.20m
BOTTOM 382.20m
TOP CORE#15 388.20m
BOTTOM 388.20m
360
365
370
375
380
385
390
395
400
405
410
415
420
425
430

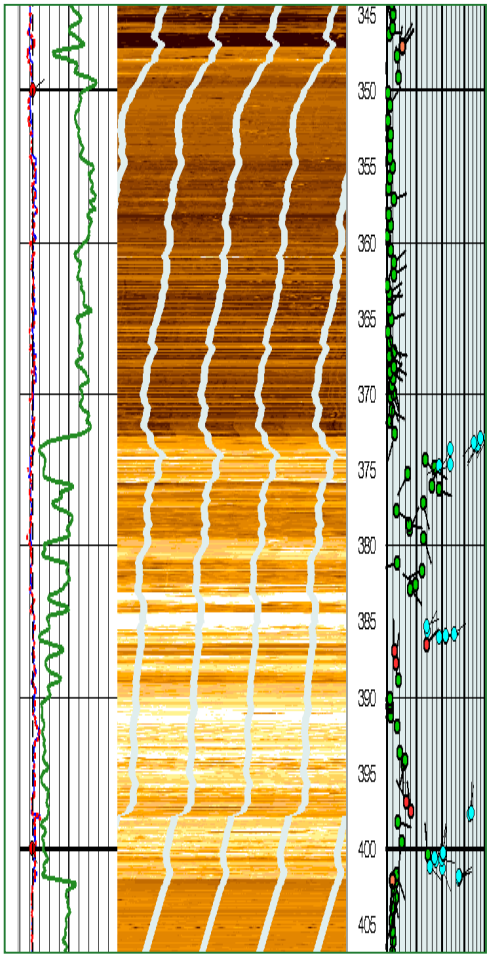
102-04 OBA
Temperature vs. Depth



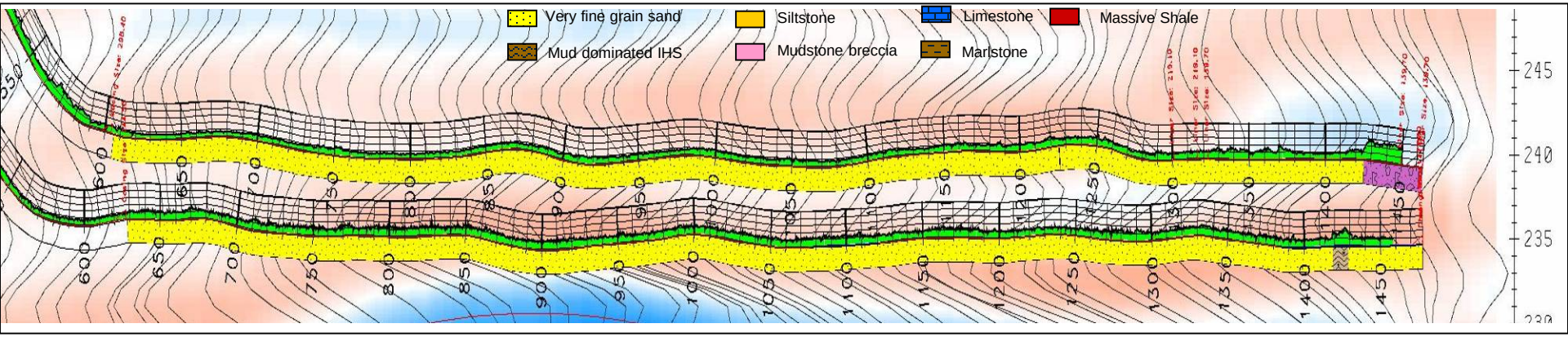
TC string replaced Mar 24, 2011.

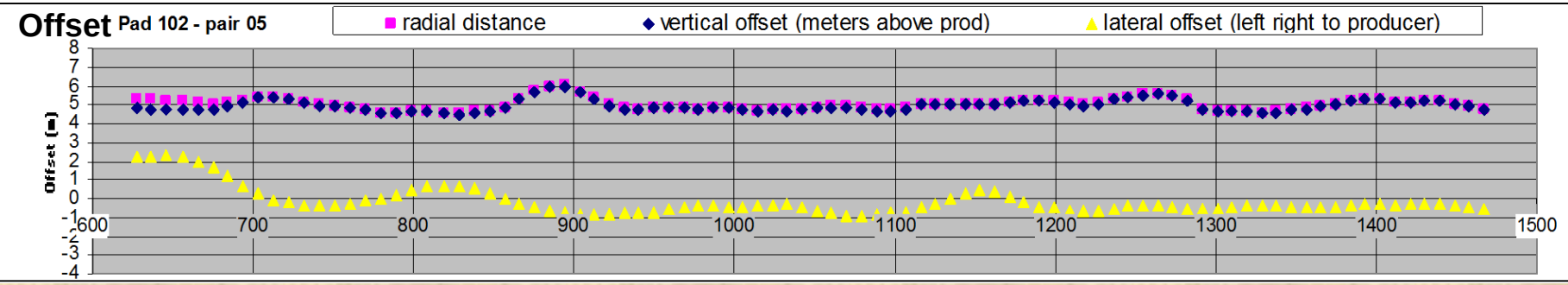
Temperature anomaly since April 2009 due to fluid inside wellbore. Not able to dry the hole because of the presence of a fish.

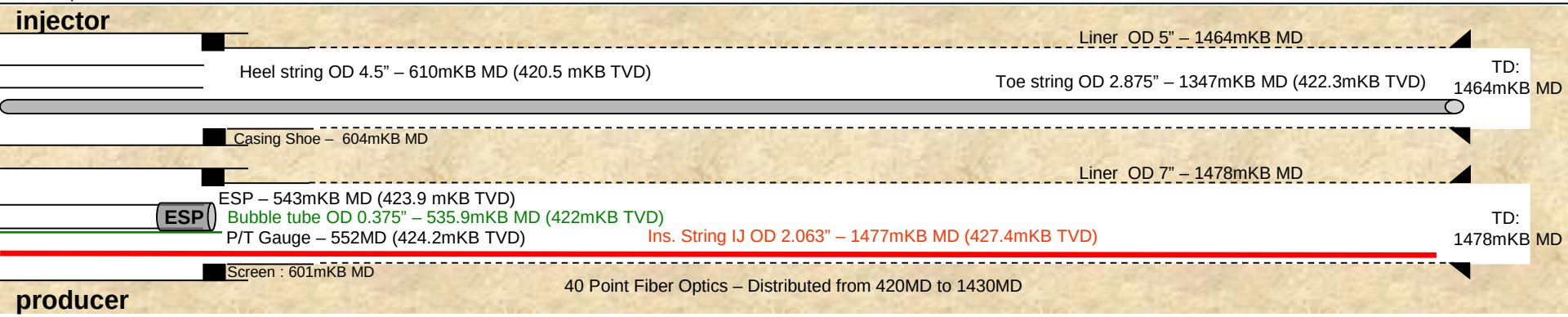

AR_VSH
0 v/v decimal 1
SURM-PhieSW
1 0
RXOZ
0.2 2000
AF90
0.2 2000
AR_PHIE
1 v/v decimal 0
AR_GRsc
0 API 150
Core
Meters
Analysis
MD
350
375
400
425

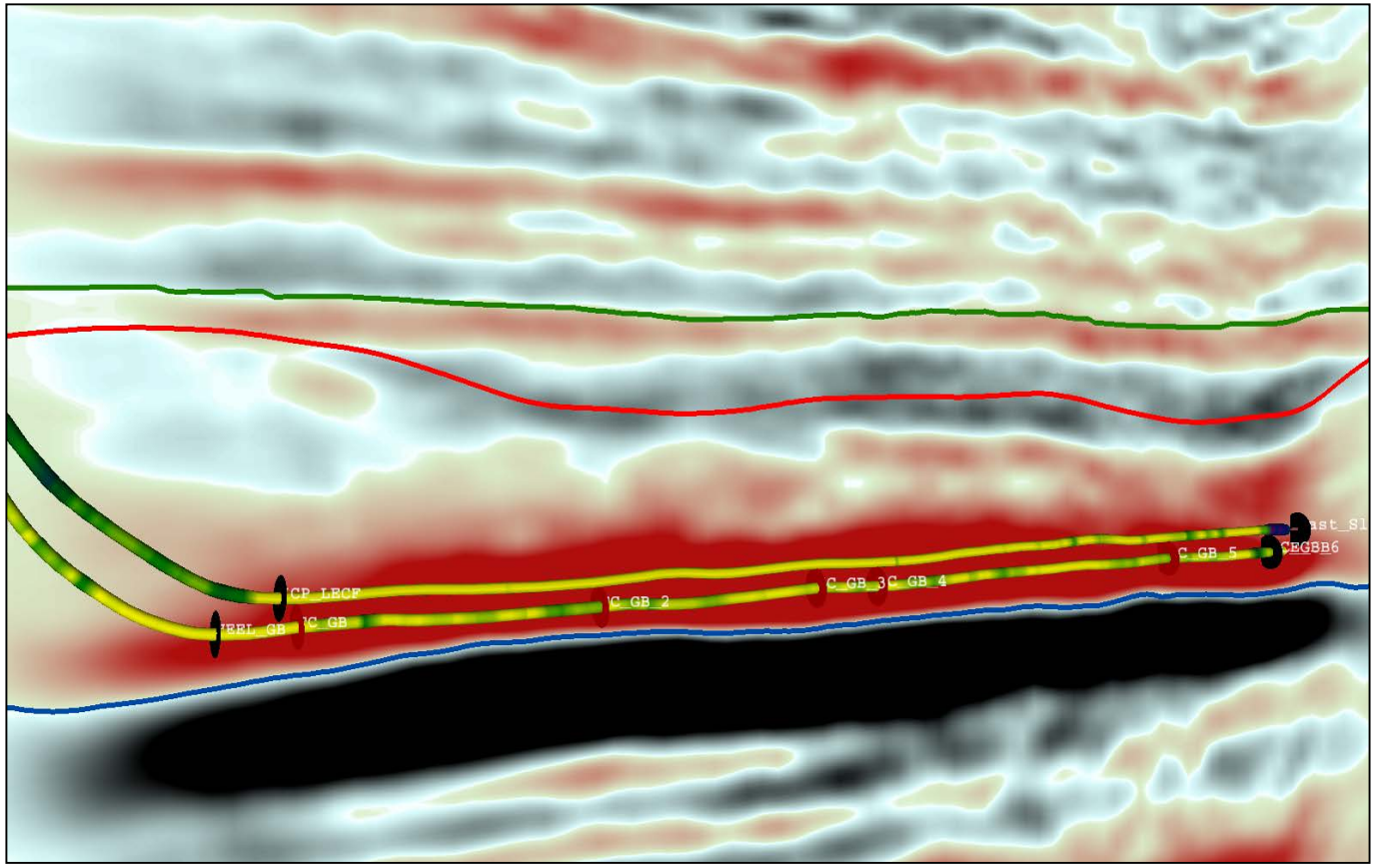

345
350
355
360
365
370
375
380
385
390
395
400
405

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

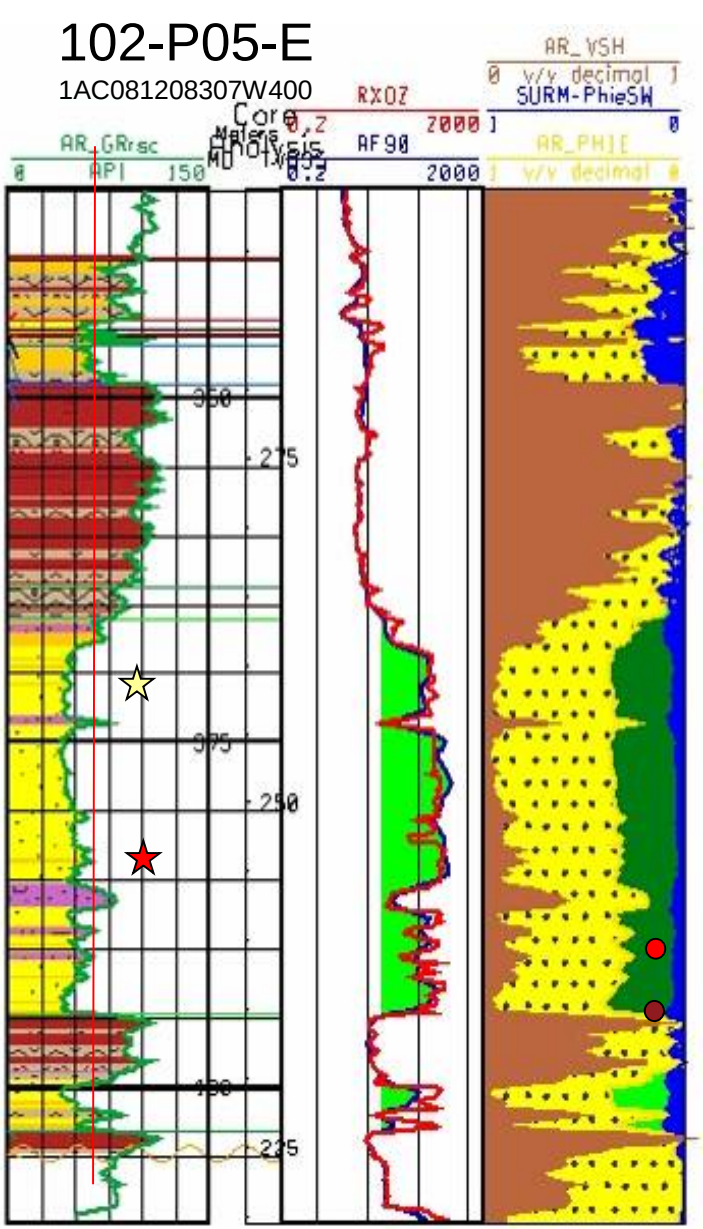
Picks

= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace



Inj depth 239 mASL

Prod depth234 mASL

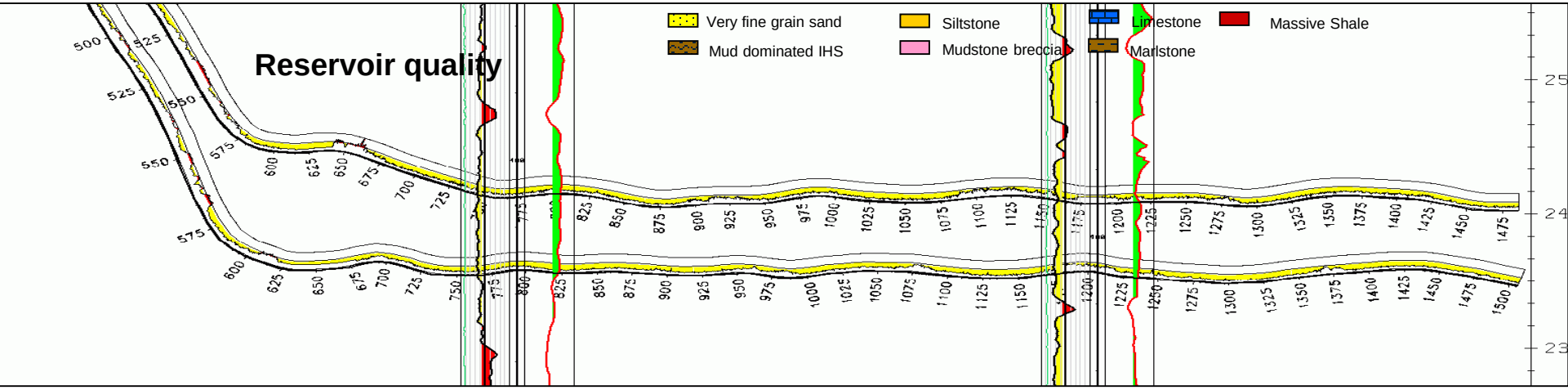
1- medium CPV

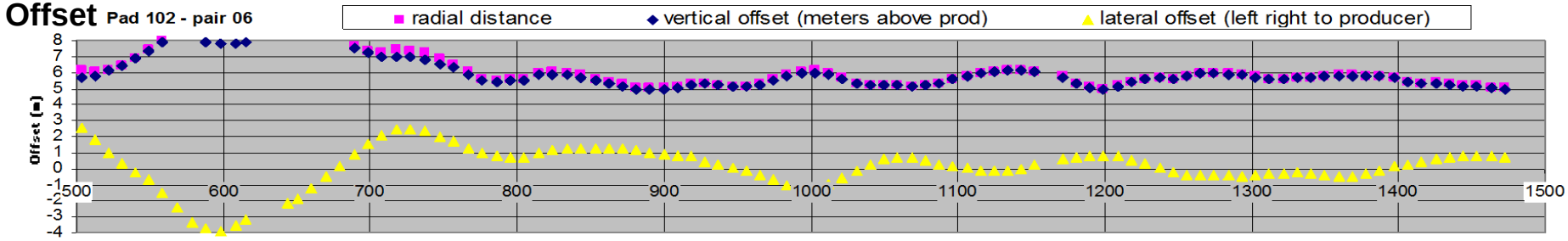
2- Excellent sand quality along well

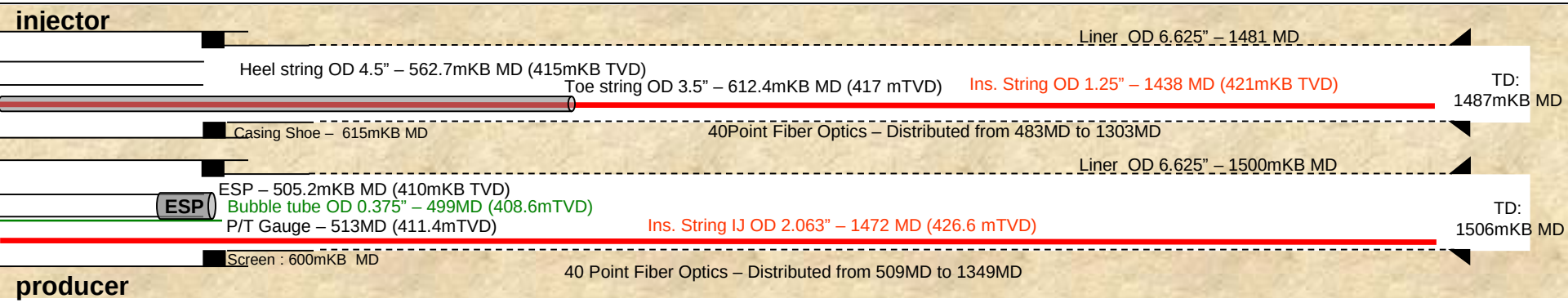
4- Baffles issue (5 meters above injector)

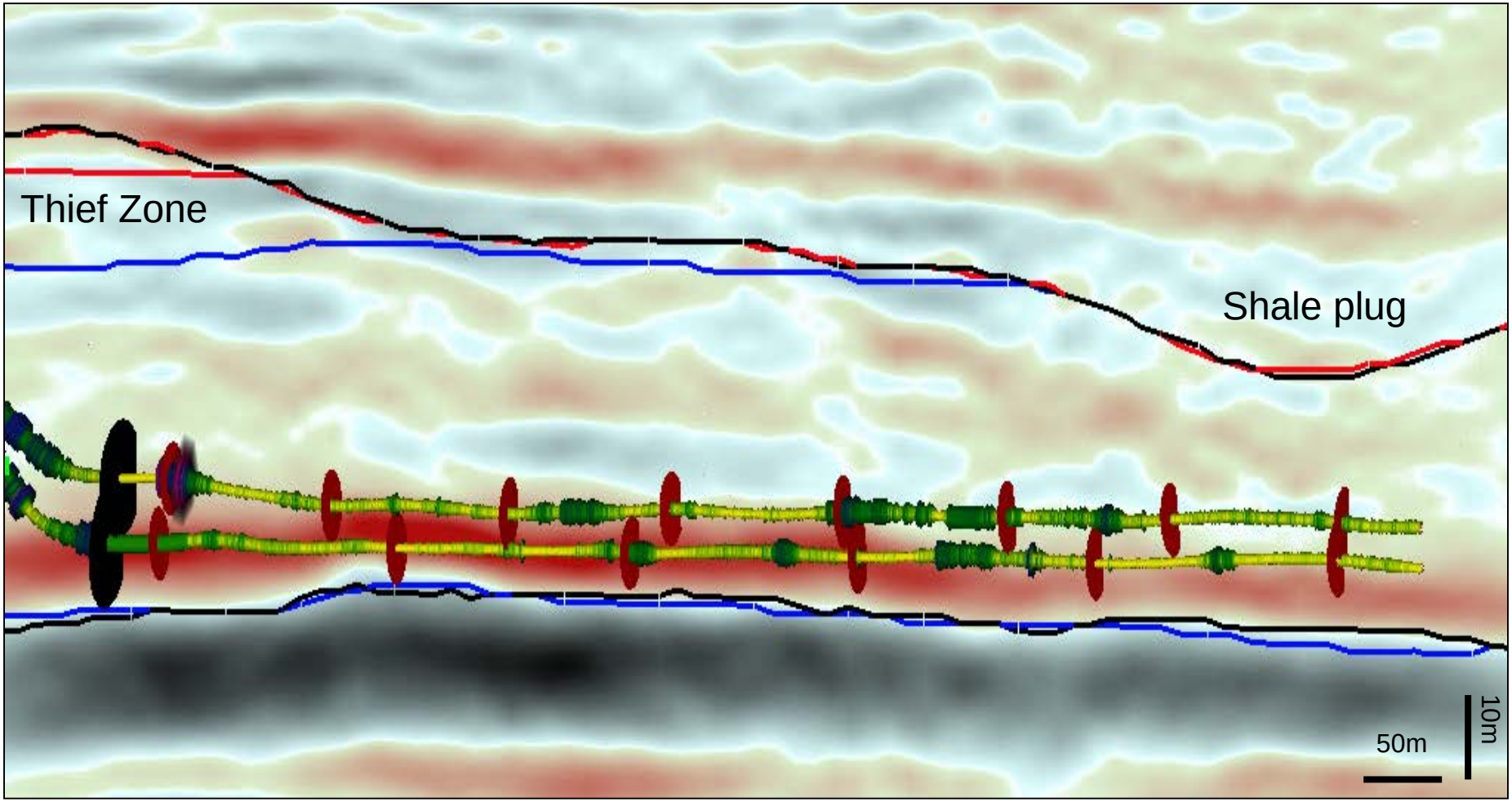
5- Edge well (until additional drilling)

6- No monitoring


Reservoir quality
Very fine grain sand
Siltstone
Limestone
Massive Shale
Mud dominated IHS
Mudstone breccia
Marlstone


Offset Pad 102 - pair 06
radial distance
vertical offset (meters above prod)
lateral offset (left right to producer)
Offset (■)

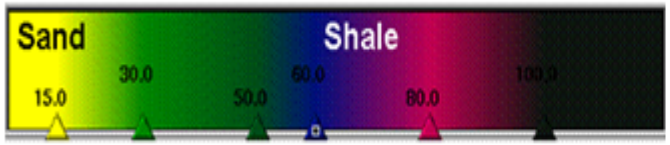

injector
Liner OD 6.625" – 1481 MD
Heel string OD 4.5" – 562.7mKB MD (415mKB TVD)
Toe string OD 3.5" – 612.4mKB MD (417 mTVD)
Ins. String OD 1.25" – 1438 MD (421mKB TVD)
TD: 1487mKB MD
Casing Shoe – 615mKB MD
40Point Fiber Optics – Distributed from 483MD to 1303MD
Liner OD 6.625" – 1500mKB MD
ESP – 505.2mKB MD (410mKB TVD)
ESP
Bubble tube OD 0.375" – 499MD (408.6mTVD)
P/T Gauge – 513MD (411.4mTVD)
Ins. String IJ OD 2.063" – 1472 MD (426.6 mTVD)
TD: 1506mKB MD
Screen : 600mKB MD
40 Point Fiber Optics – Distributed from 509MD to 1349MD
producer



= Casing shoe

= Thermocouple

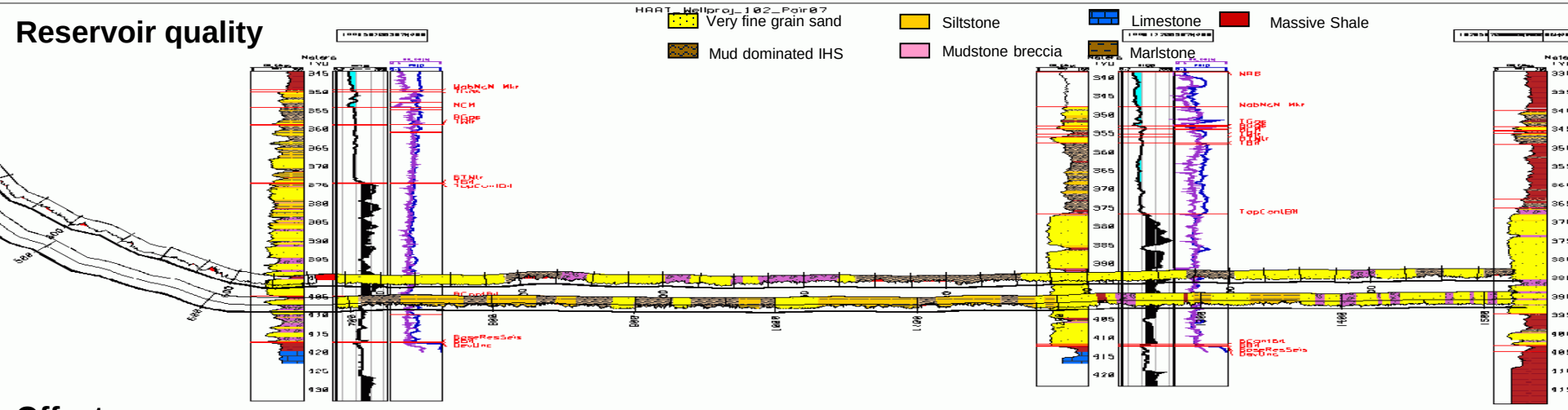
Gamma Ray Color Scale (API)



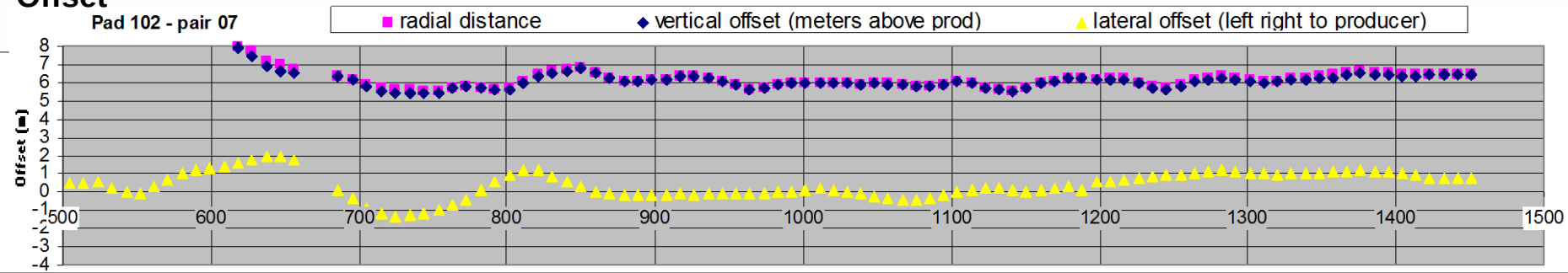
Integrated Seismic Trace

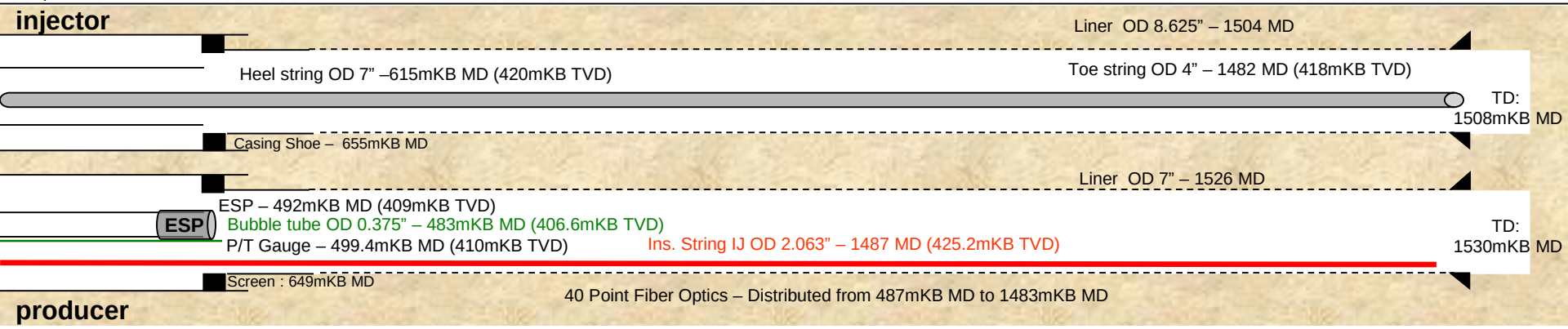
Polarity Convention

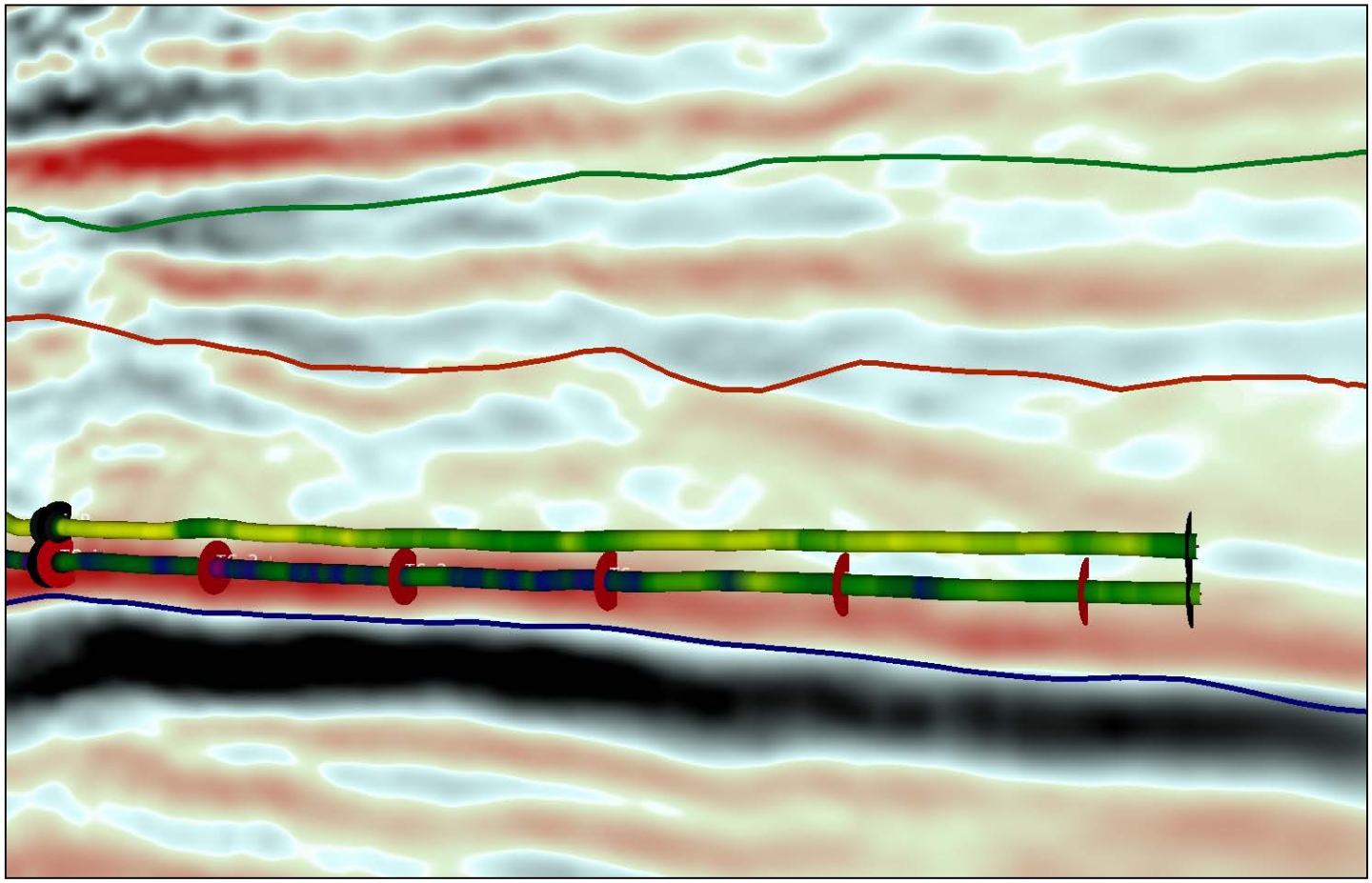
Reservoir quality



Offset







Horizons

= WAB

= TopResSeis

= BHL

Picks

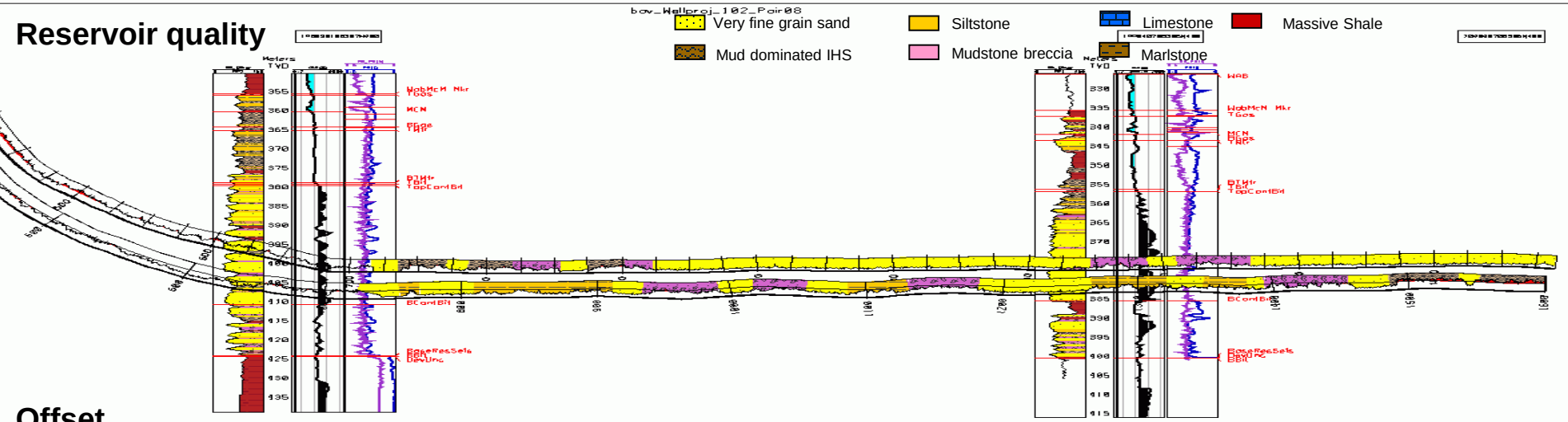
= Thermocouple

= Casing Point

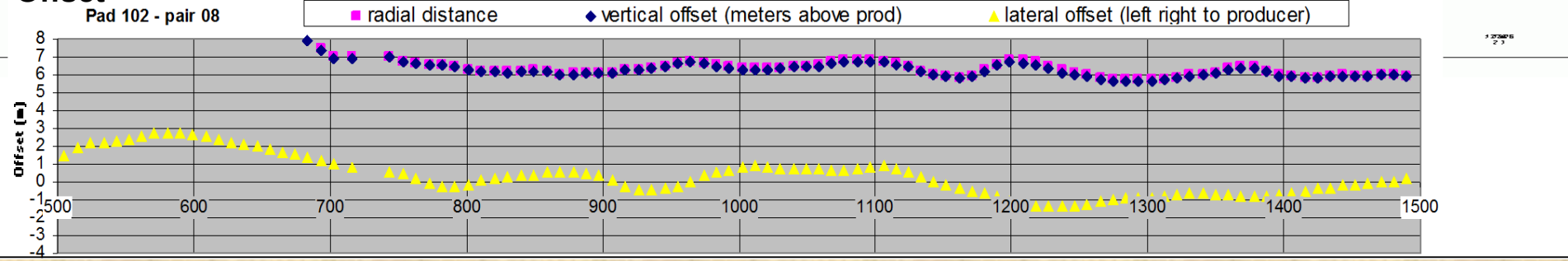
Gamma Ray Color Scale (API)

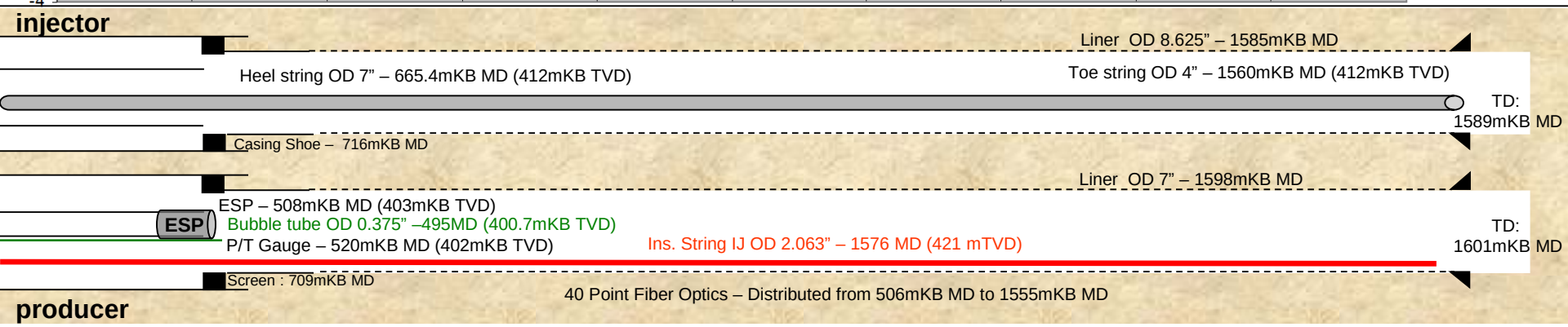
Integrated Seismic Trace

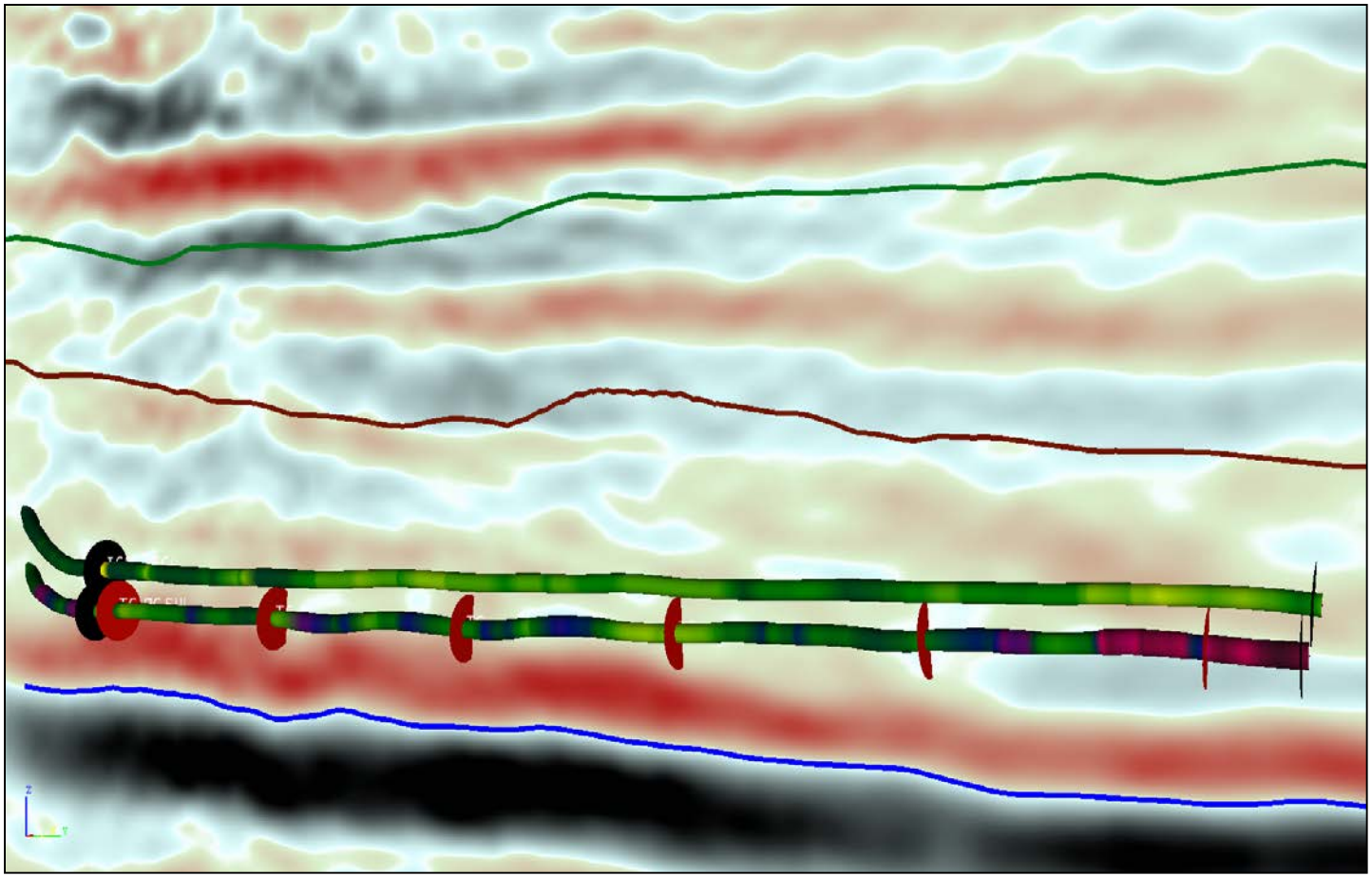
Reservoir quality



Offset







Horizons

= WAB

= TopResSeis

= BHL

Picks

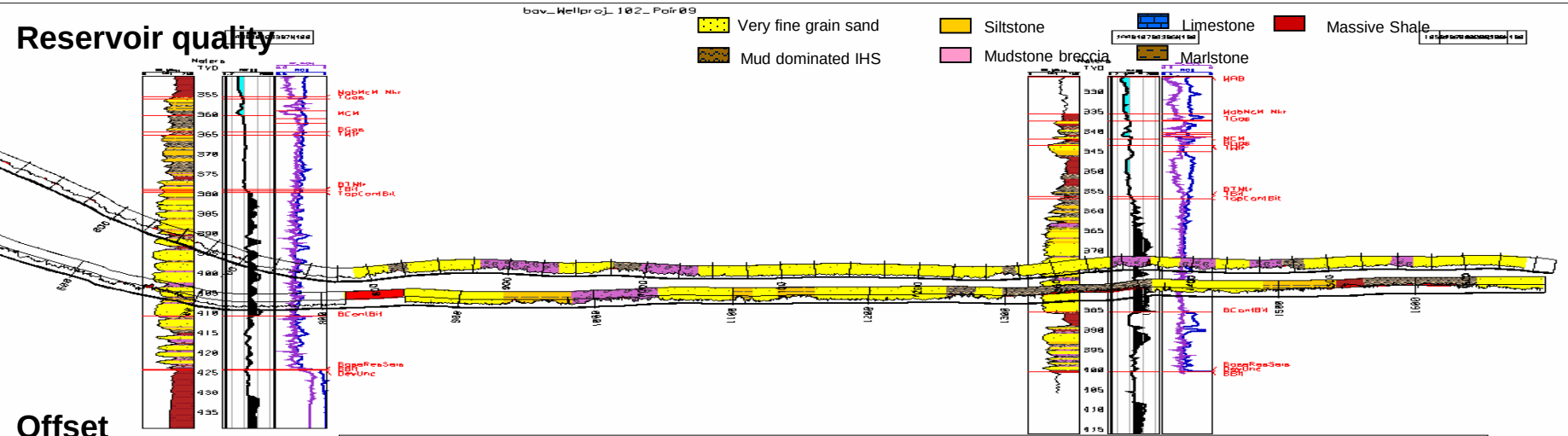
= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

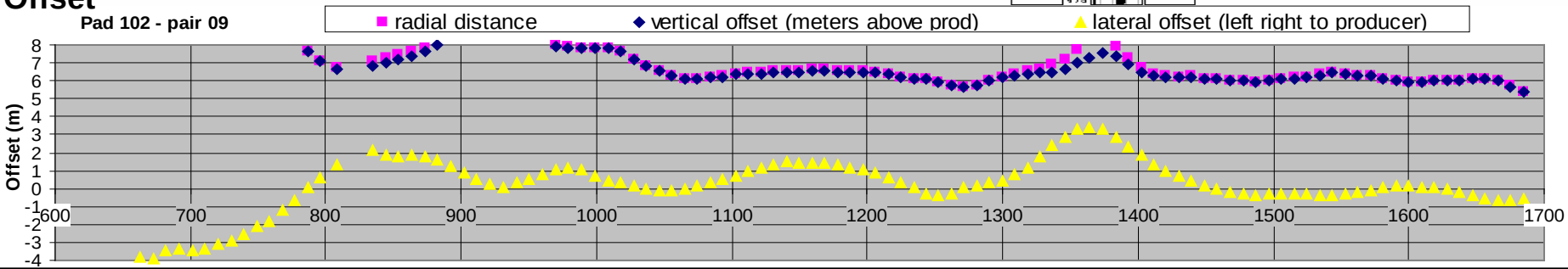
Integrated Seismic Trace

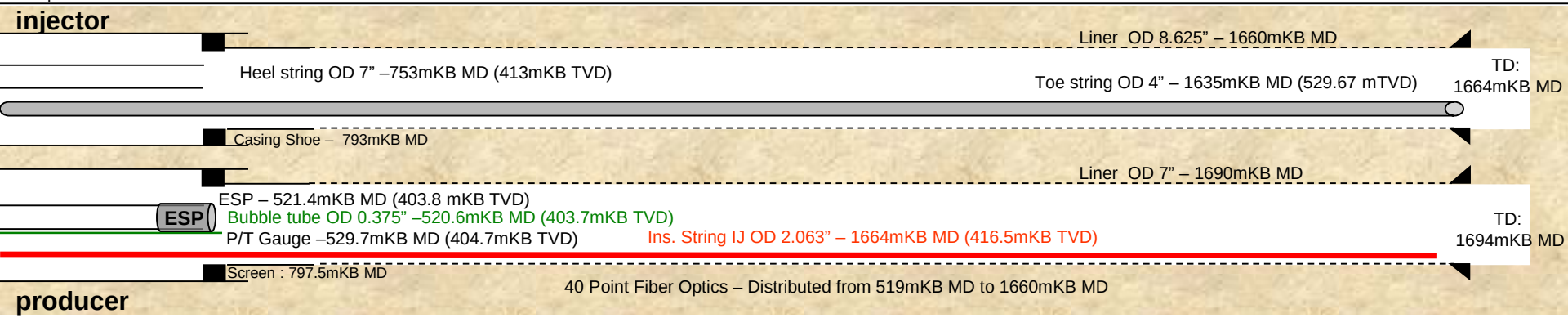
Reservoir quality

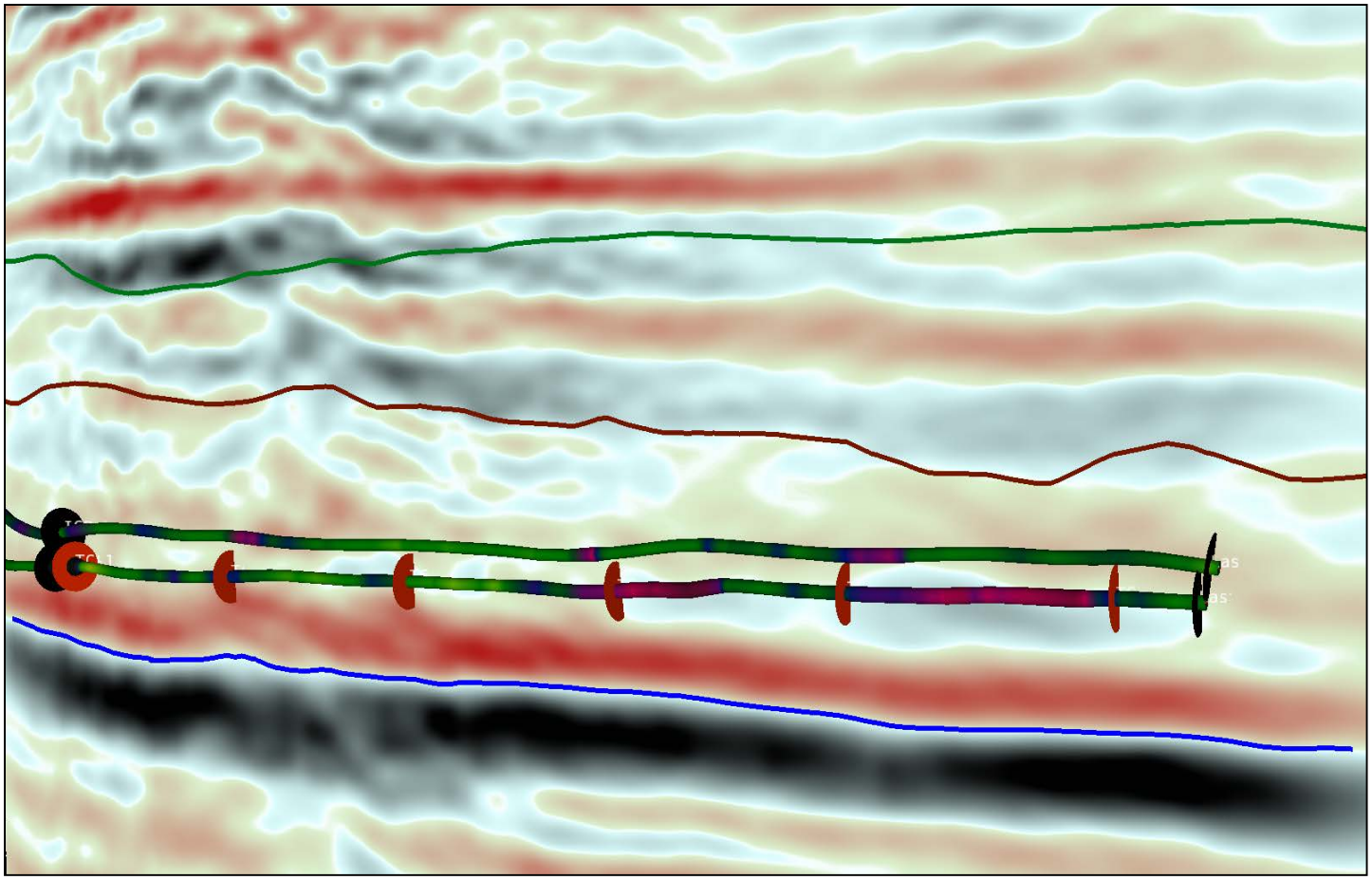


Offset

Pad 102 - pair 09







Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

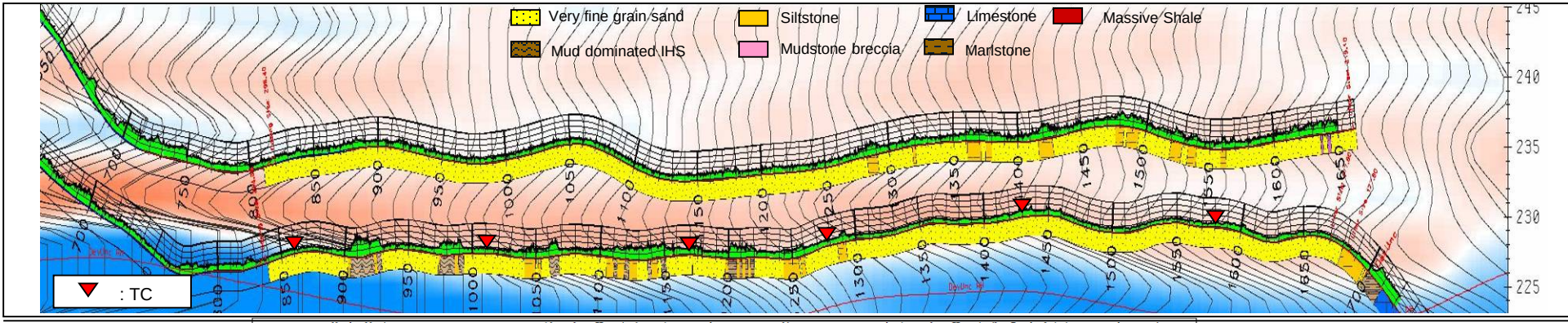
= Casing Point

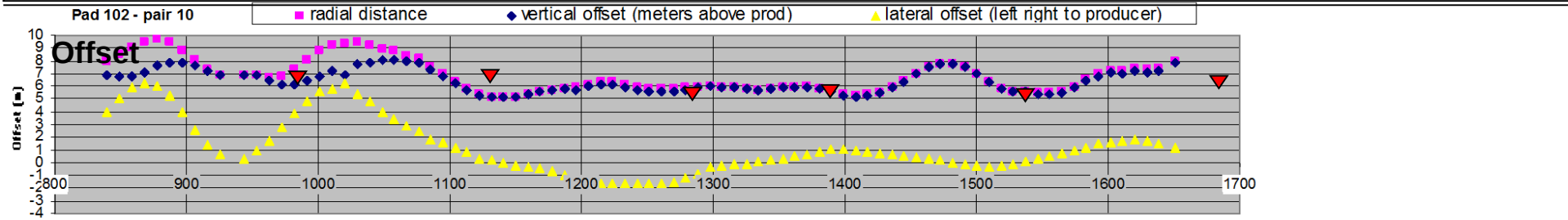
Gamma Ray Color Scale (API)

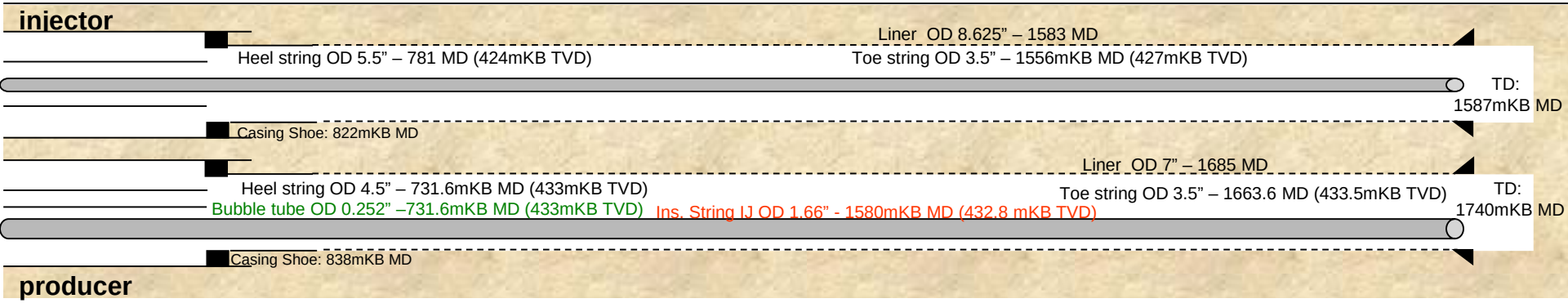
Integrated Seismic Trace

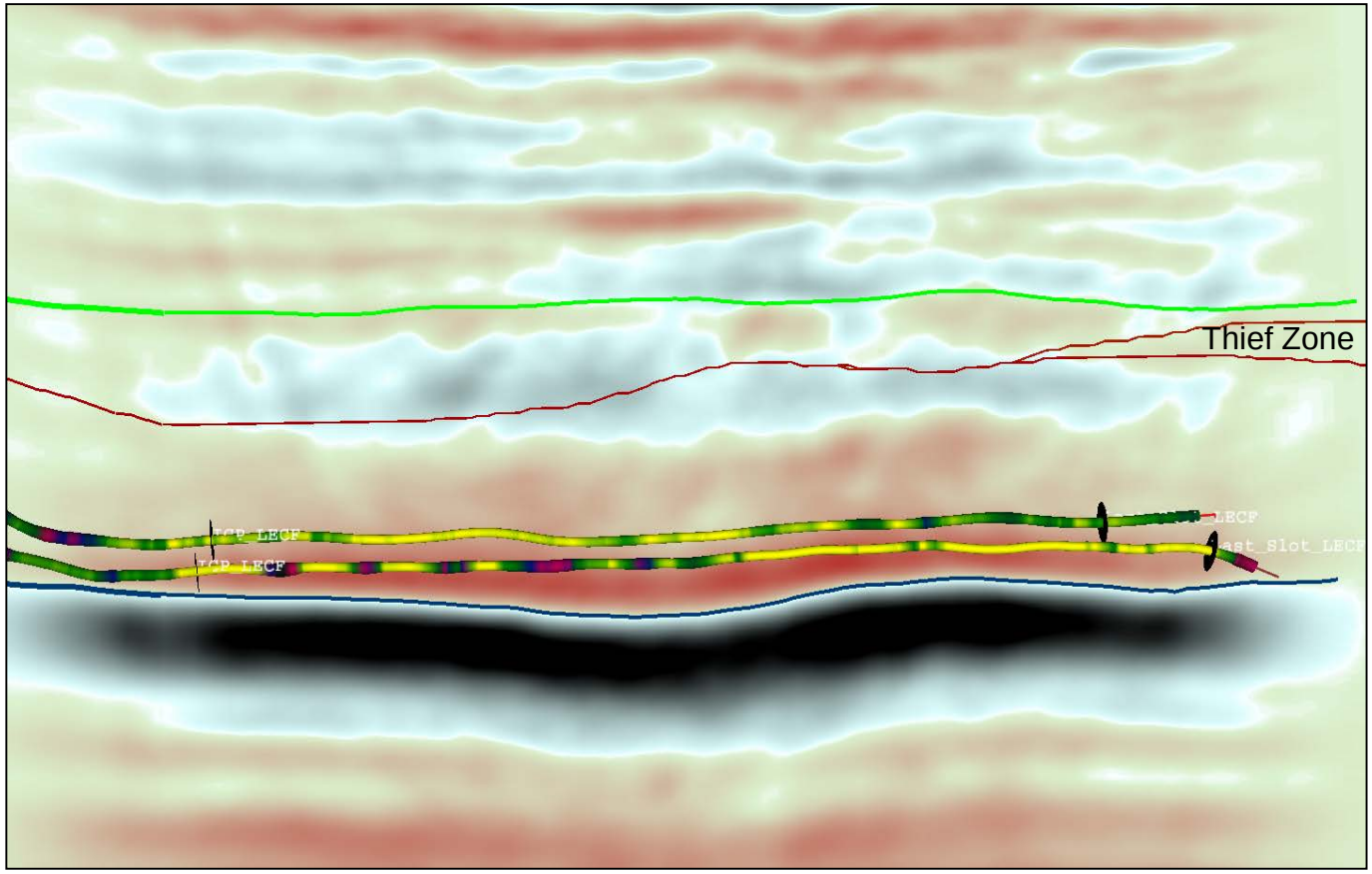
Reservoir quality

ESP Conversion- Nov 17, 2014









Horizons

= WAB

= TopResSeis

= BHL

Picks

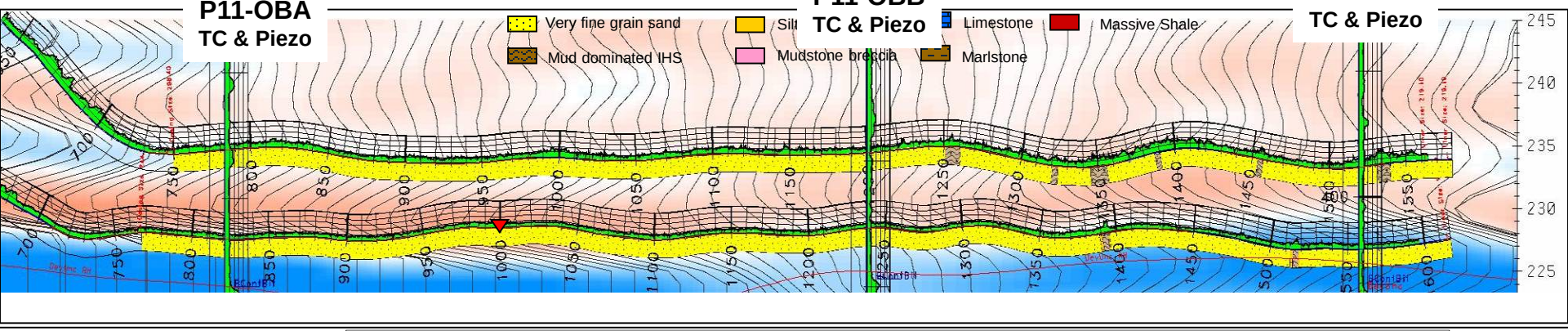
= Casing Point

Gamma Ray Color Scale (API)

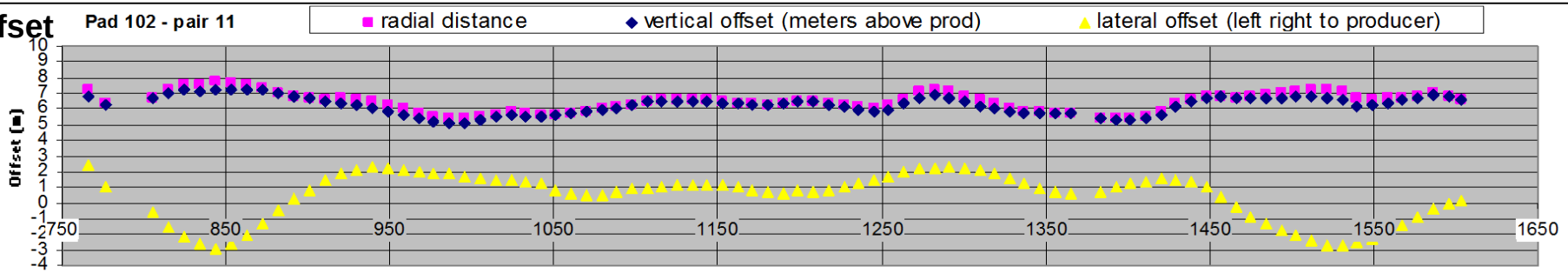
Integrated Seismic Trace

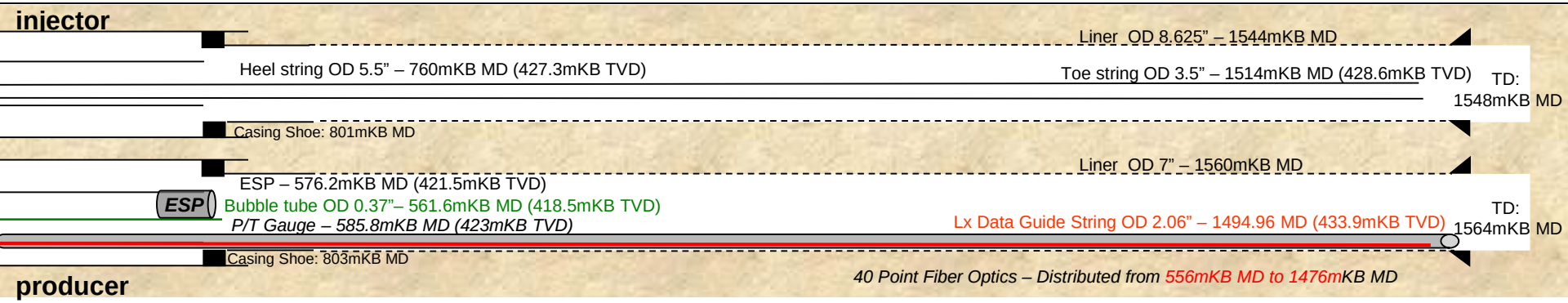
Producer Re-drilled in April 2009
108/02-01-083-07W4/00

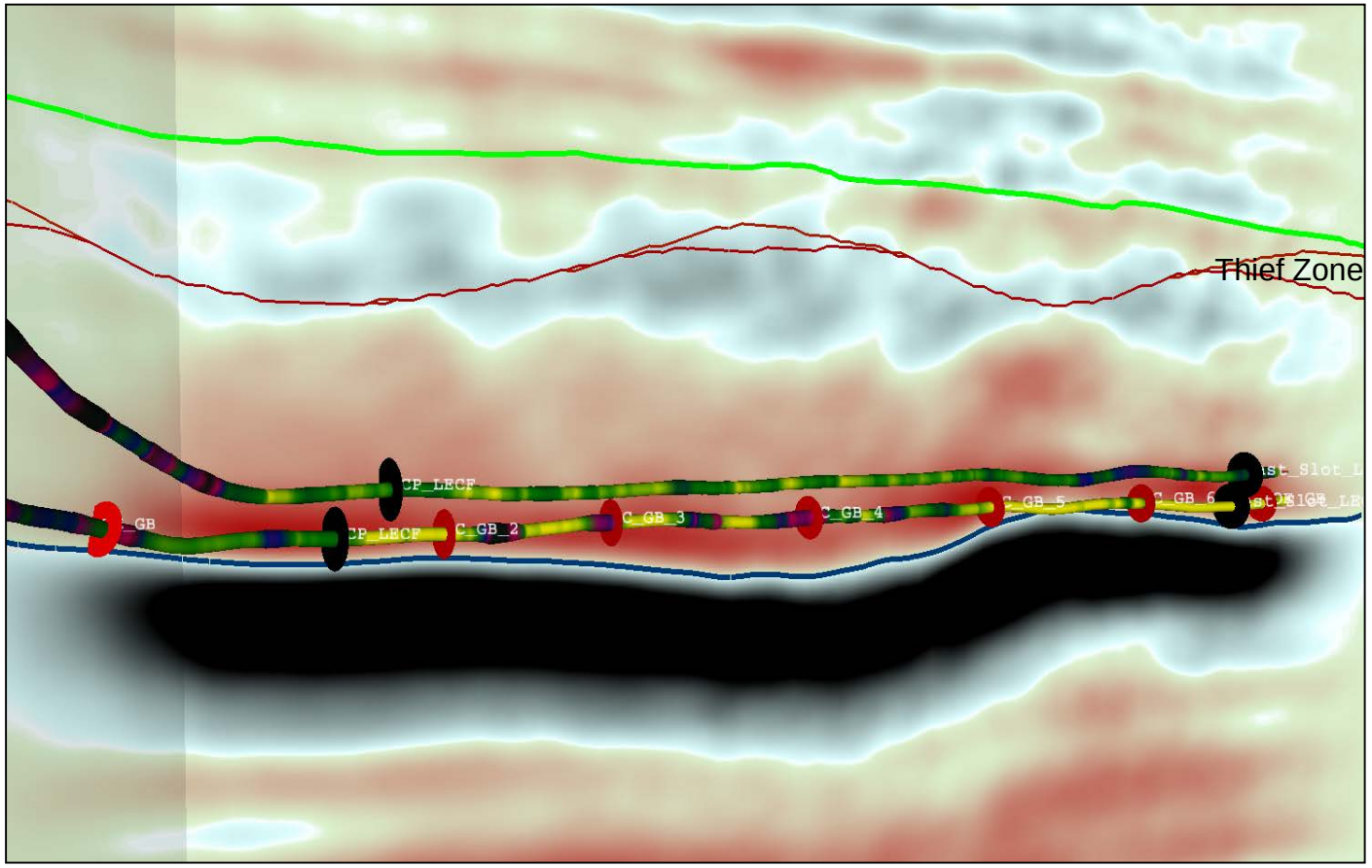
Reservoir quality



Offset







Horizons

= WAB

= TopResSeis

= BHL

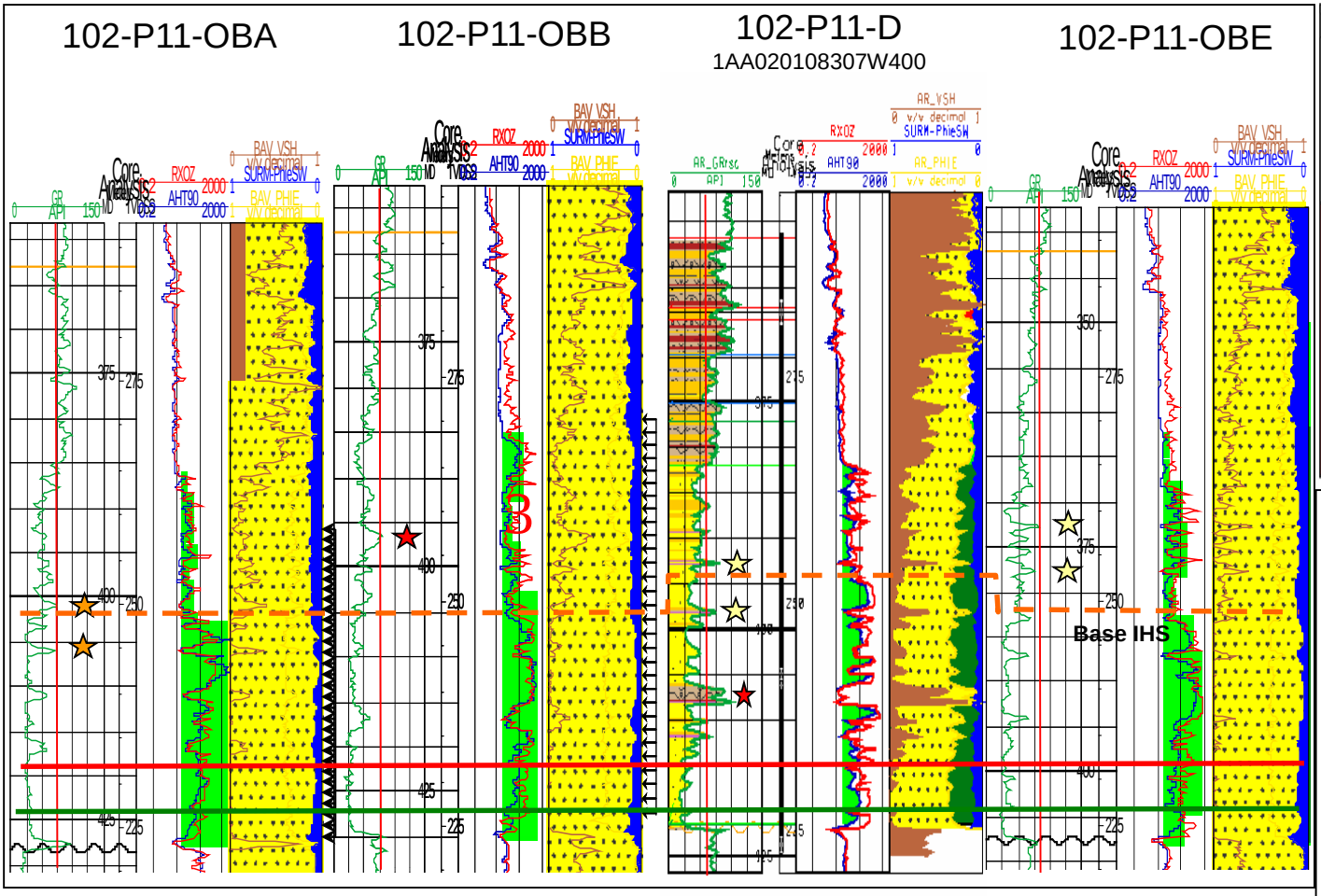
Picks

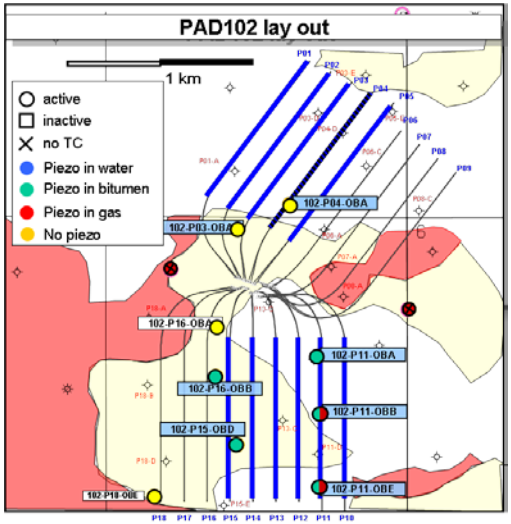
= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace





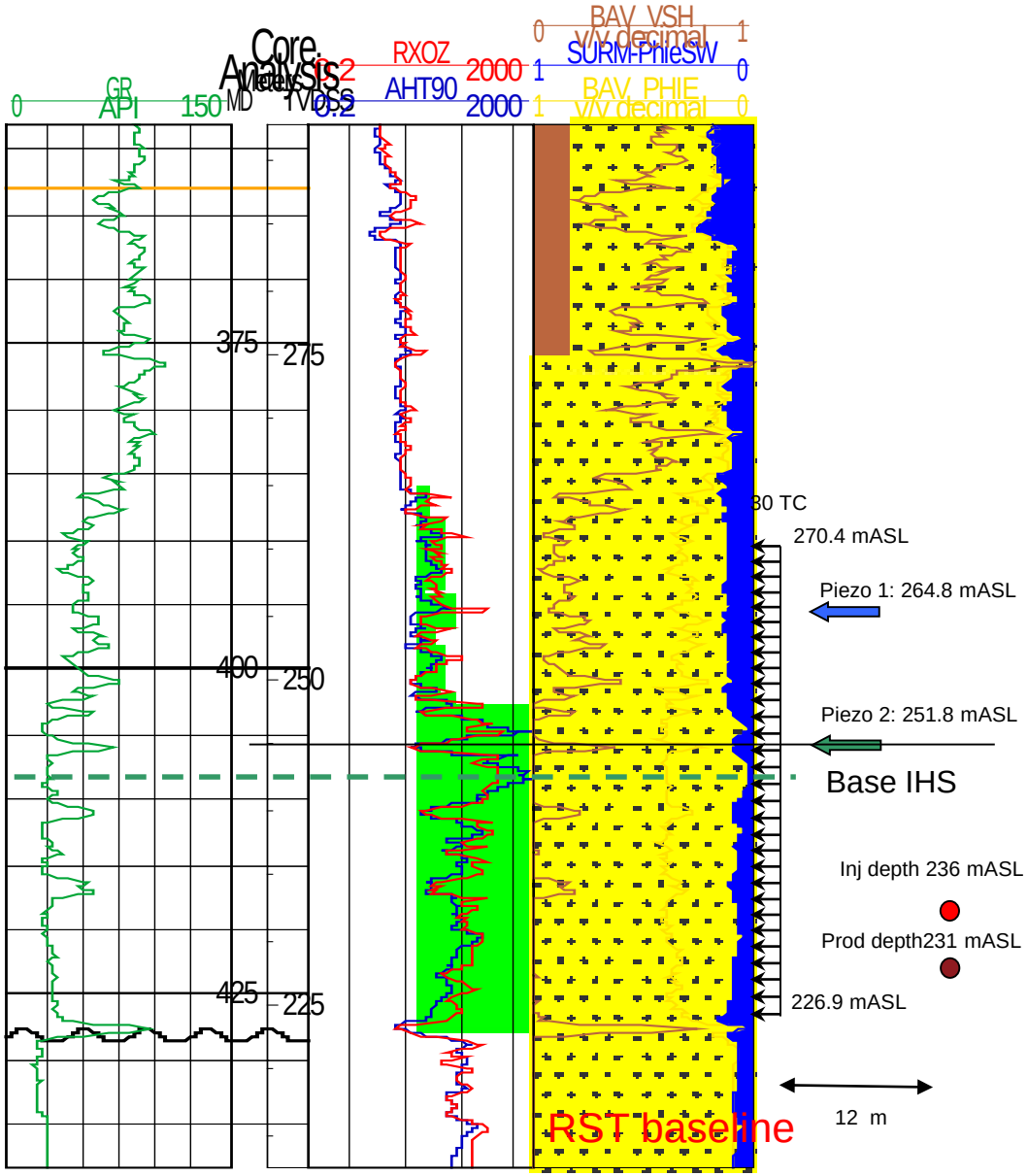
1- High CPV

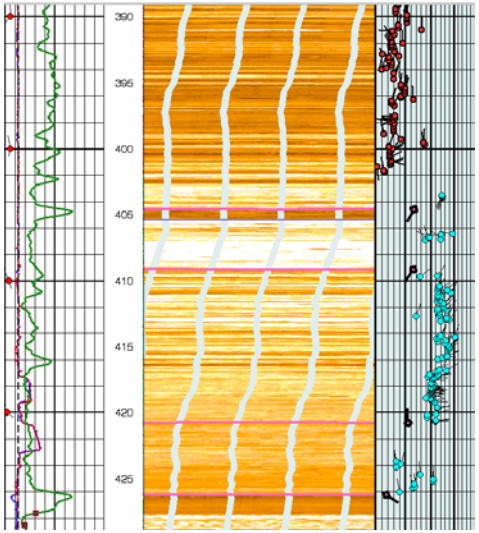
2- Good sand quality along wells

4- limited baffles issue
- 7 m above injector at 102-P11D

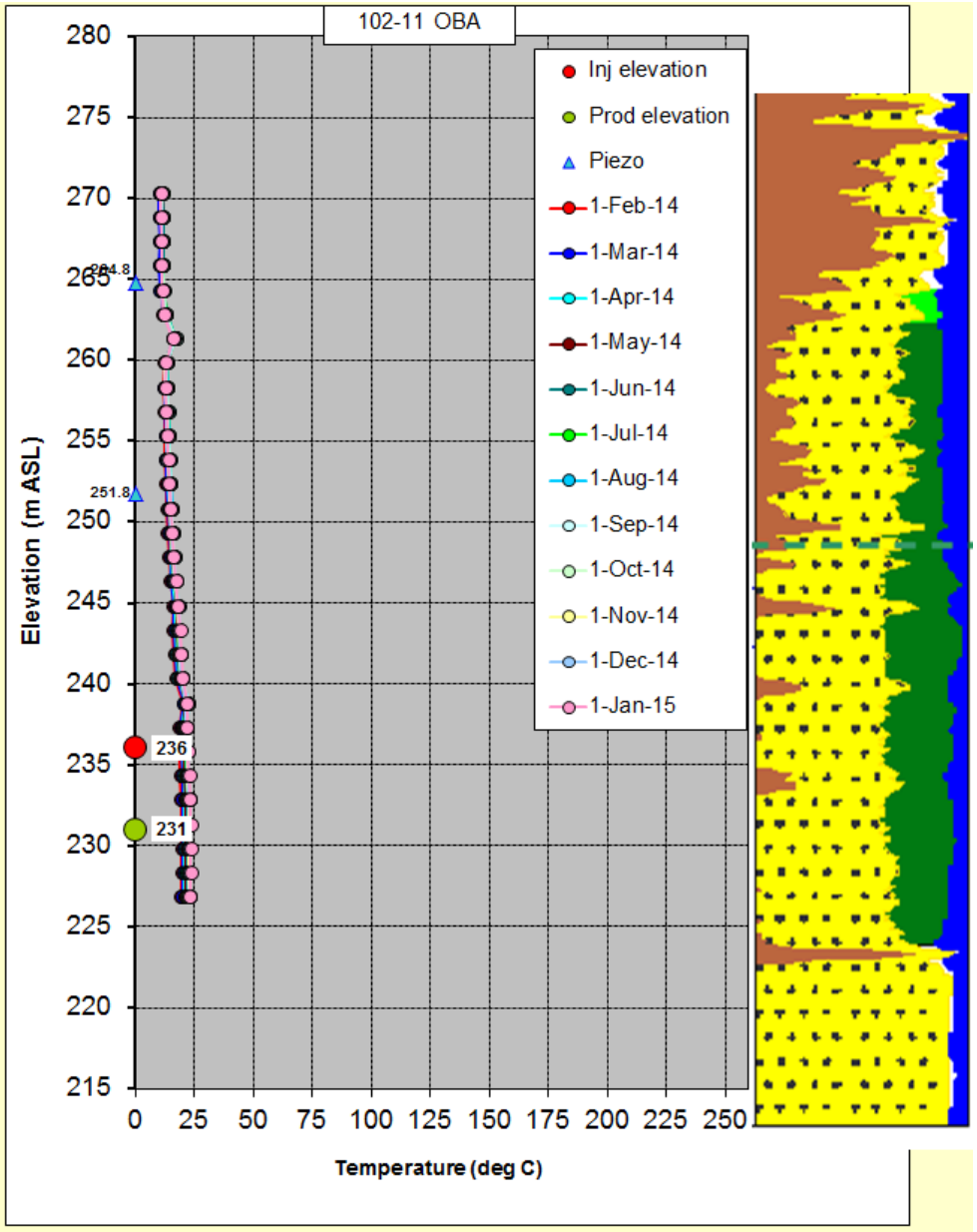
5- Thief zone issue

6- Monitoring of thief zone


Core Analysis
GR
0
API
150
MD
TVDSS
RXOZ
AHT90
0.2
2000
2000
BAV_VSH
0
v/v decimal
1
SURM-PhieSw
1
0
BAV_PHIE
1
v/v decimal
0
375
275
400
250
425
225
30 TC
270.4 mASL
Piezo 1: 264.8 mASL
Piezo 2: 251.8 mASL
Base IHS
Inj depth 236 mASL
Prod depth231 mASL
226.9 mASL
12 m
RST baseline

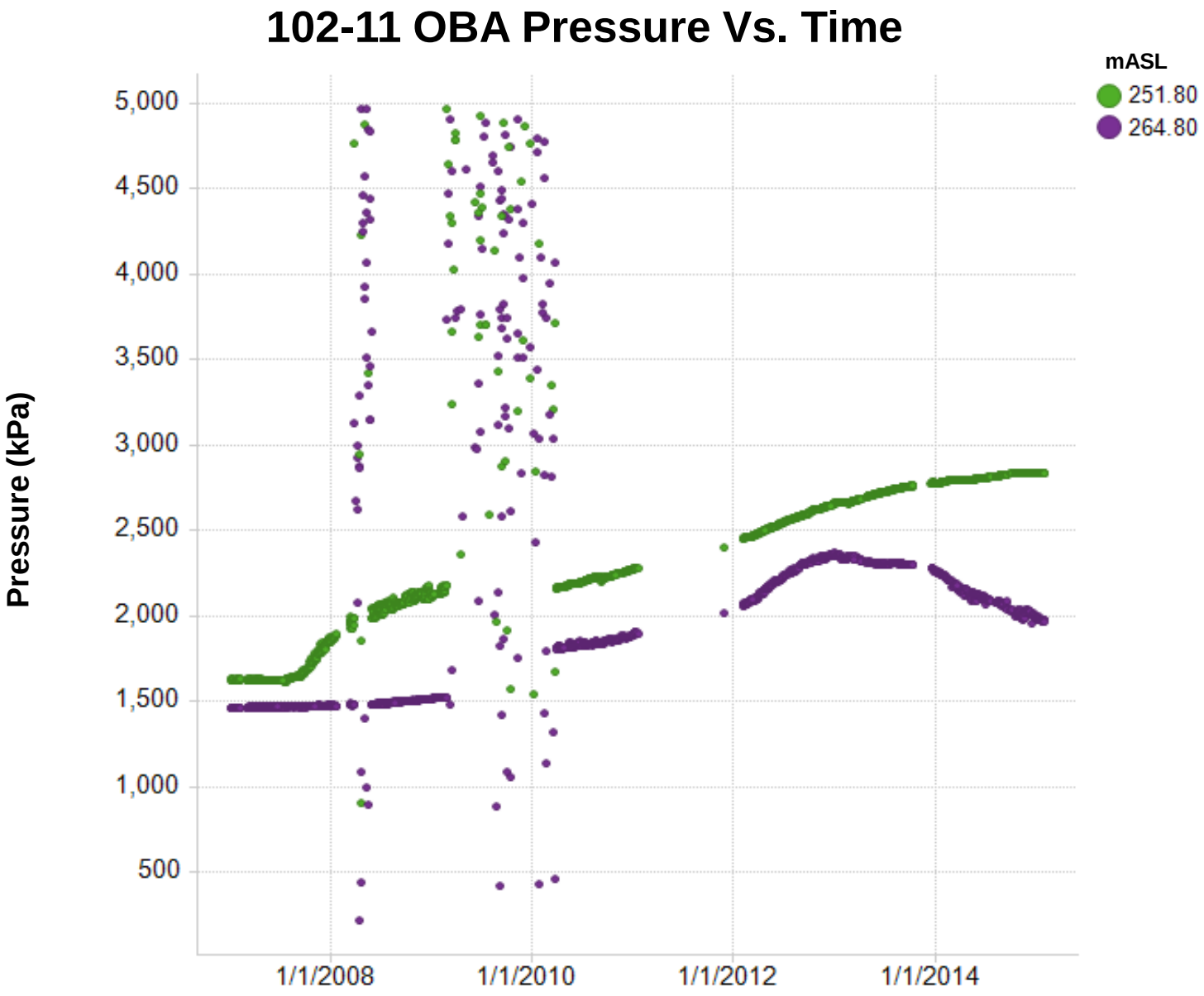

390
395
400
405
410
415
420
425

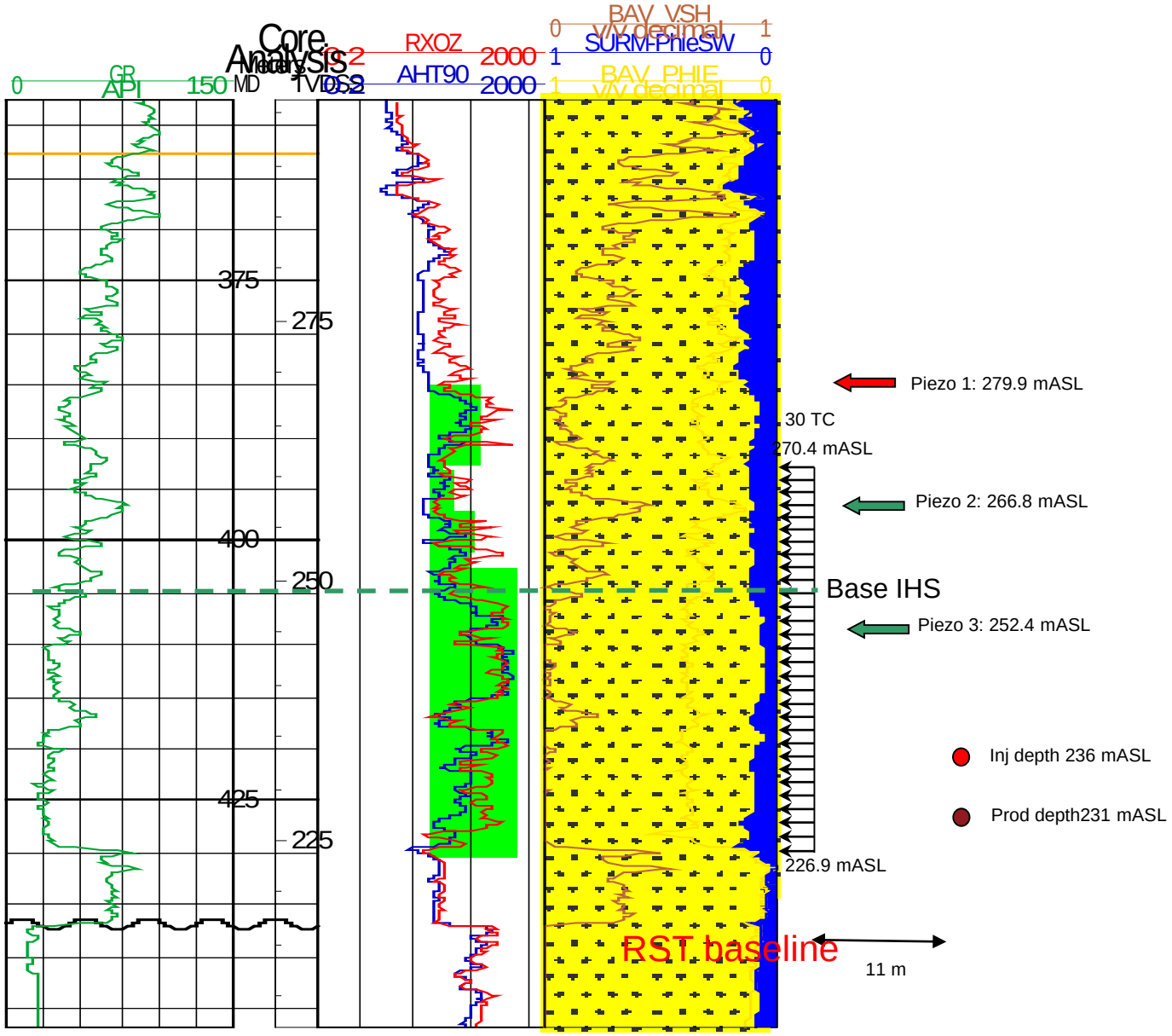
102-11 OBA
Temperature vs. Depth



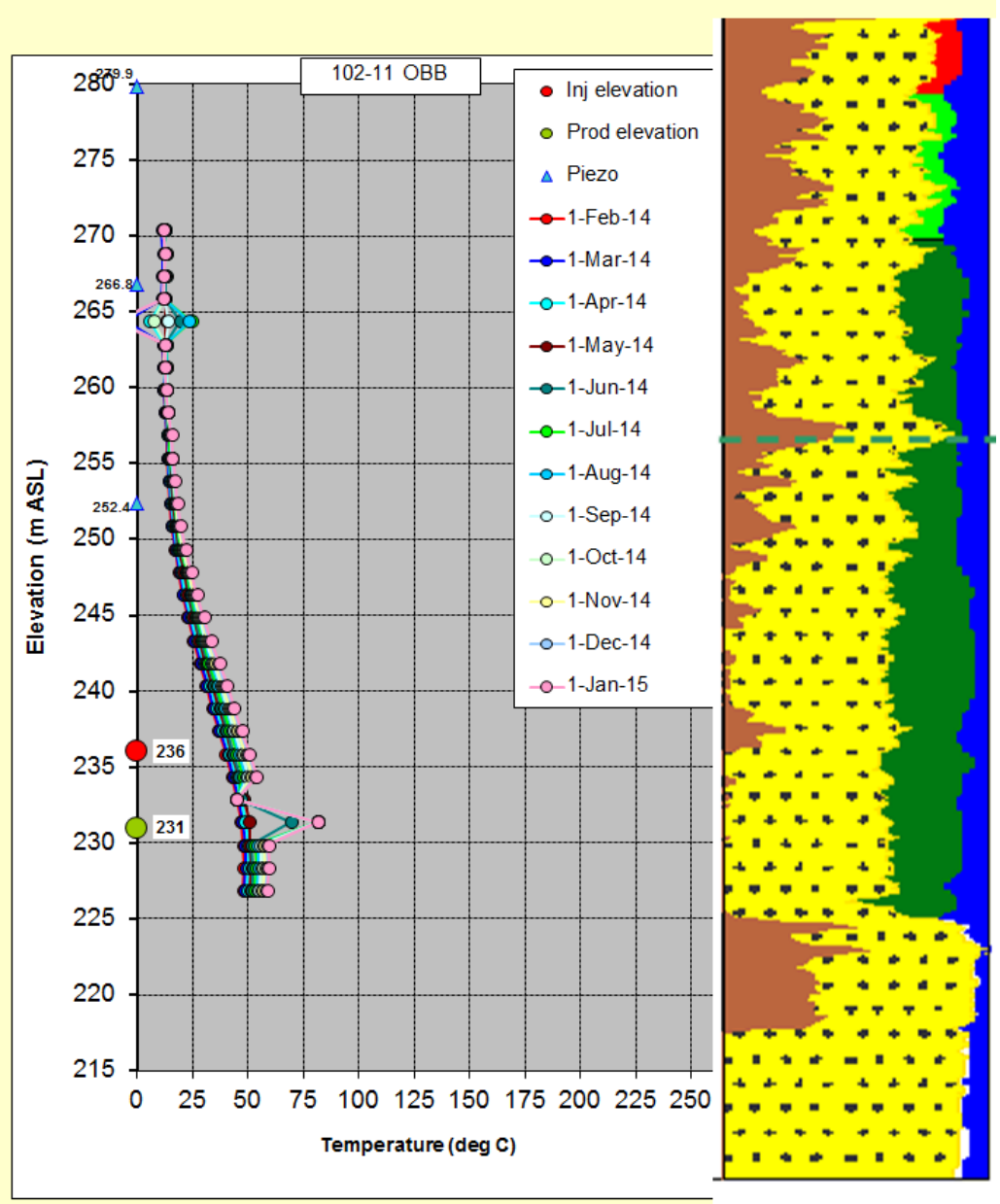
TC string replaced June 30, 2011.

Because of ground condition and according to reservoir ranking list, 102-11 OBA surface connection was completed Feb. 4, 2012.


102-11 OBA Pressure Vs. Time
mASL
251.80
264.80
Pressure (kPa)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
1/1/2008
1/1/2010
1/1/2012
1/1/2014



102-11 OBB
Temperature vs. Depth

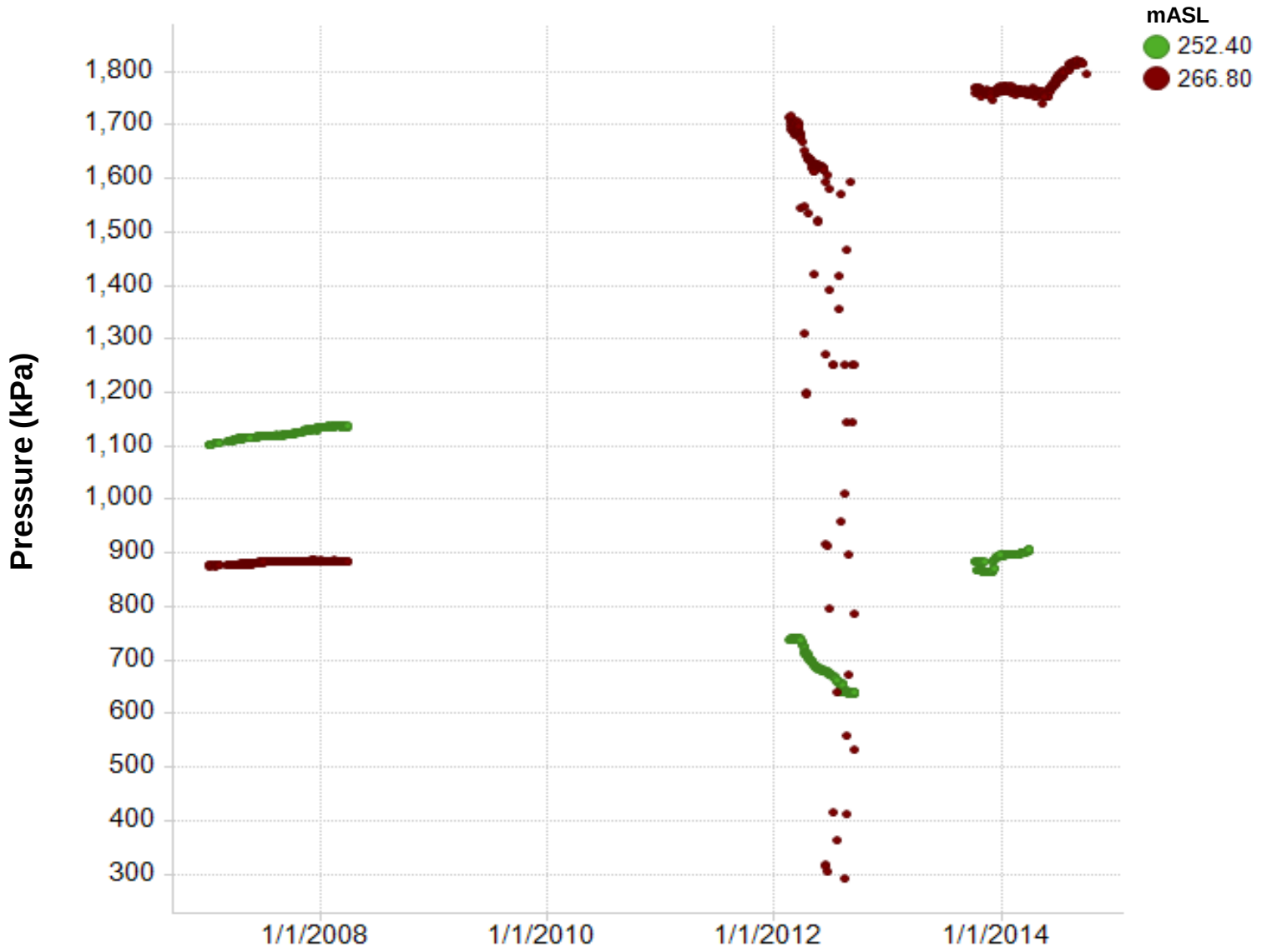


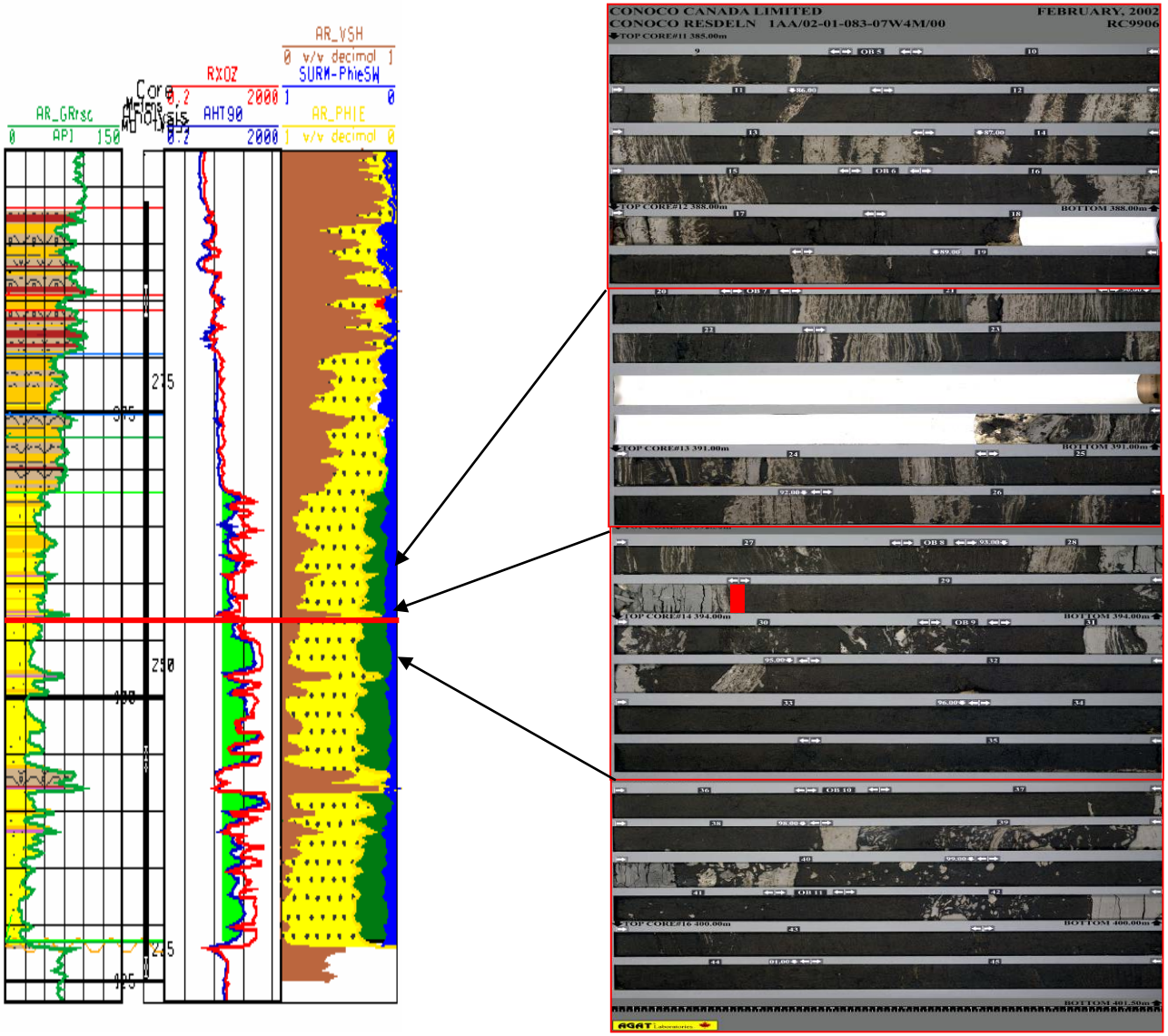
No data since March 2008

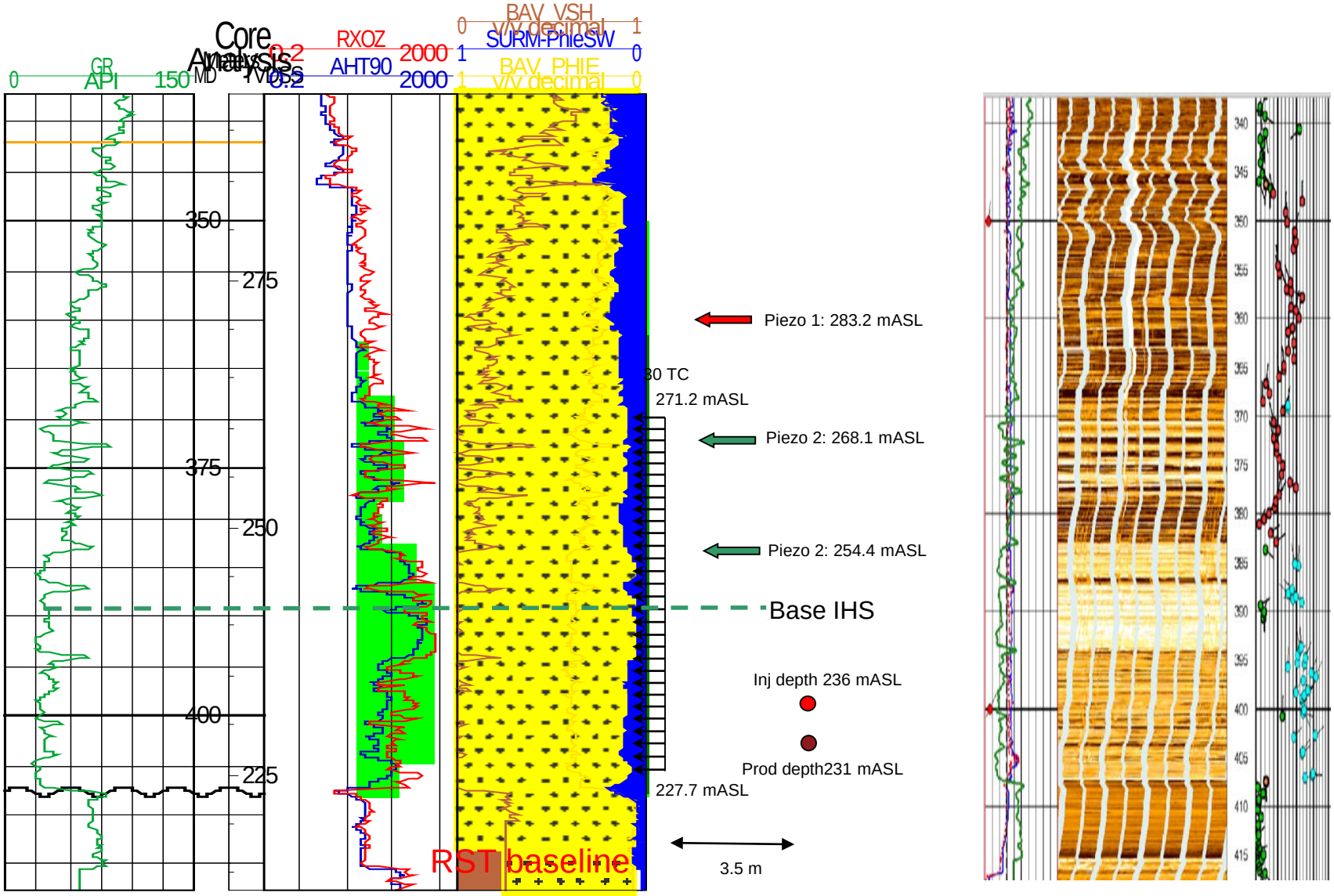
TC string replaced June 30, 2011.

First temperature readings received February20, 2014

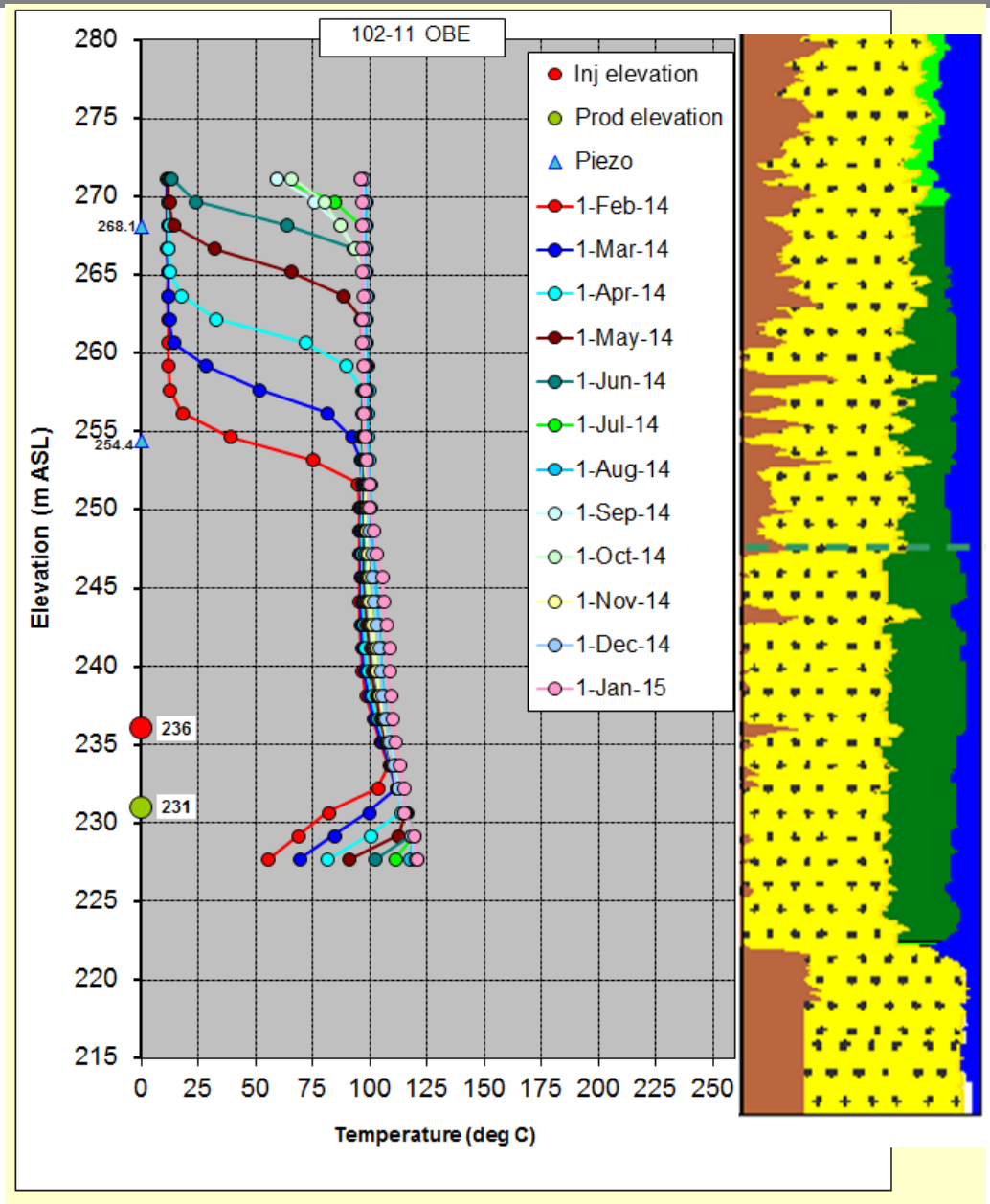
102-11 OBB Pressure Vs. Time




AR_VSH
0 v/v decimol 1
SURM-PhieSW
RXOZ
0.2 2000
AHT90
0.2 2000
AR_PHIE
v/v decimol 0
AR_GRrsc
0 API 150
CONOCO CANADA LIMITED
CONOCO RESDELN 1AA/02-01-083-07W4M/00
FEBRUARY, 2002
RC9906
TOP CORE#11 385.00m
TOP CORE#12 388.00m
BOTTOM 388.00m
TOP CORE#13 391.00m
BOTTOM 391.00m
TOP CORE#14 394.00m
BOTTOM 394.00m
TOP CORE#15 397.00m
BOTTOM 397.00m
TOP CORE#16 400.00m
BOTTOM 400.00m
BOTTOM 401.50m
AGAT Laboratories

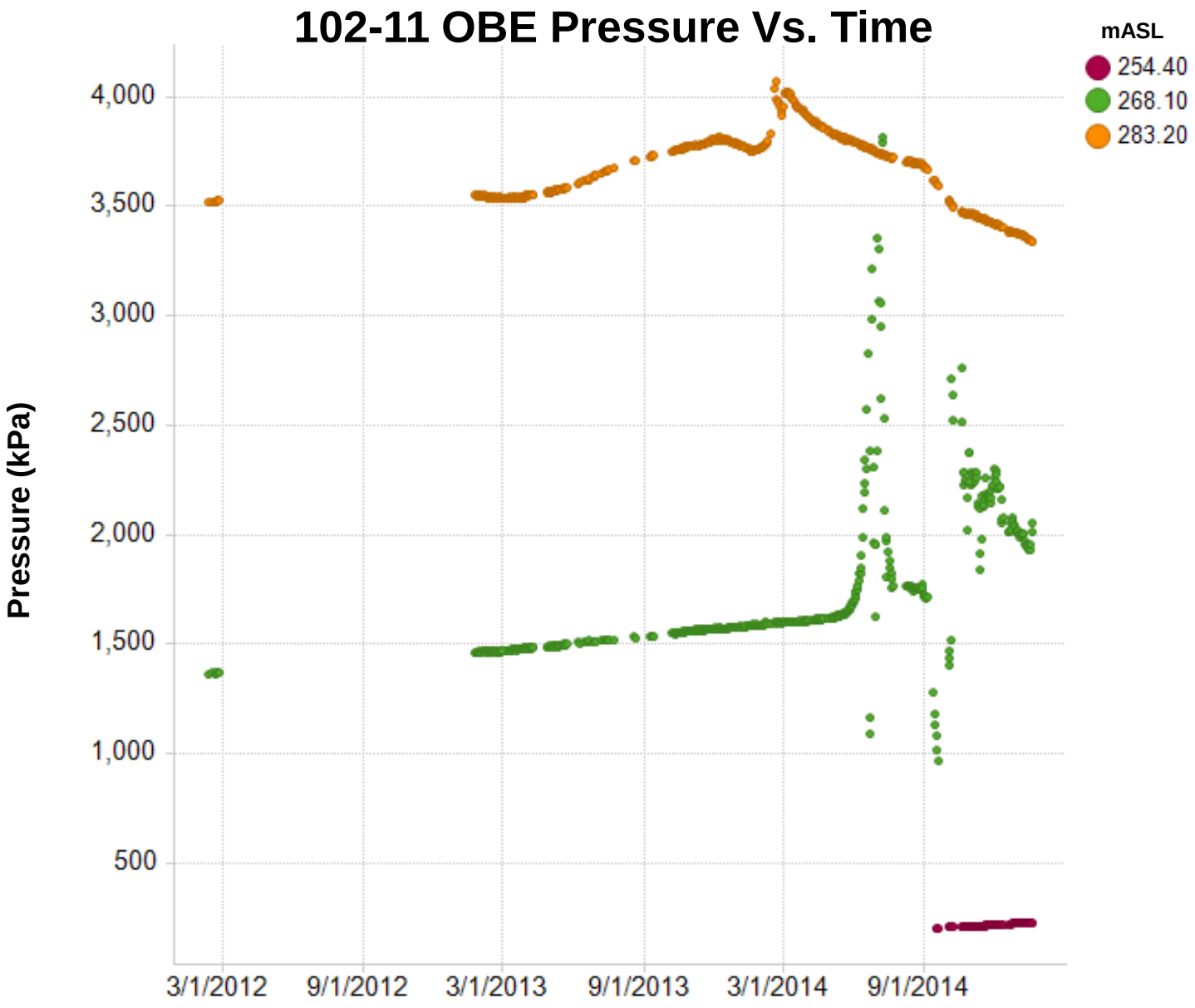

Core Analysis
GR
API
0
150
MD
TVDss
RXOZ
AHT90
0.2
2000
BAV_VSH
v/v decimal
SURM-PhieSw
BAV_PHIE
350
375
400
275
250
225
Piezo 1: 283.2 mASL
TC
271.2 mASL
Piezo 2: 268.1 mASL
Piezo 2: 254.4 mASL
Base IHS
Inj depth 236 mASL
Prod depth231 mASL
227.7 mASL
RST baseline
3.5 m

102-11 OBE
Temperature vs. Depth

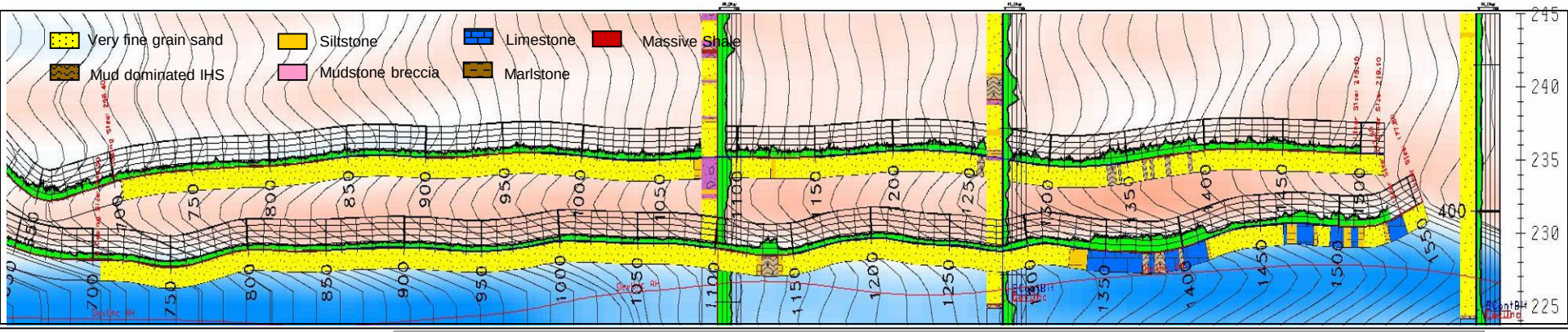


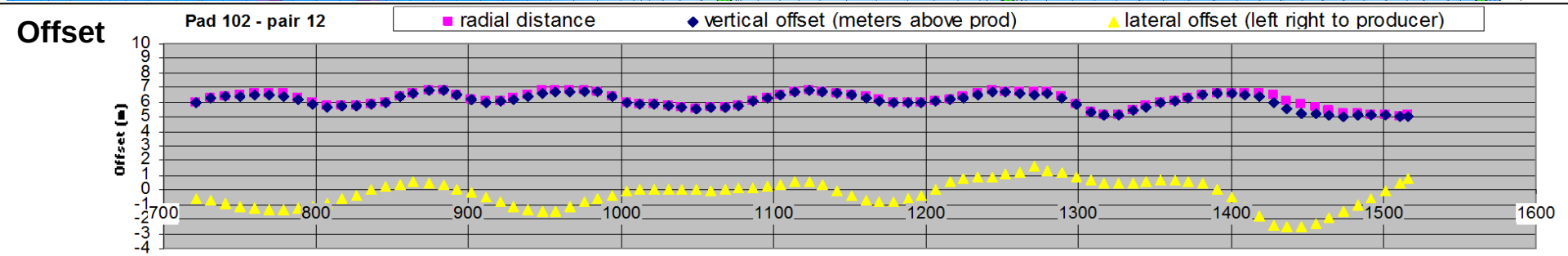
TC string replaced June 30, 2011.

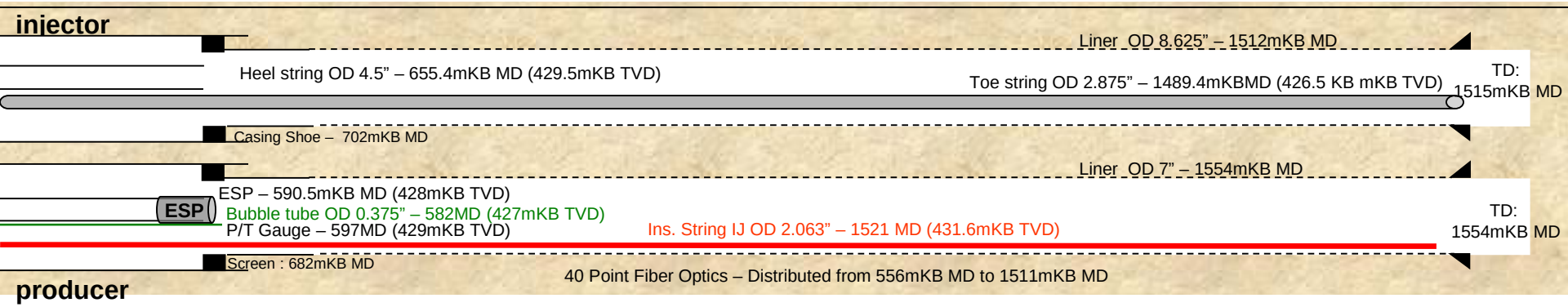
Because of ground condition and according to reservoir ranking list, 102-11 OBE surface connection was completed February 2012

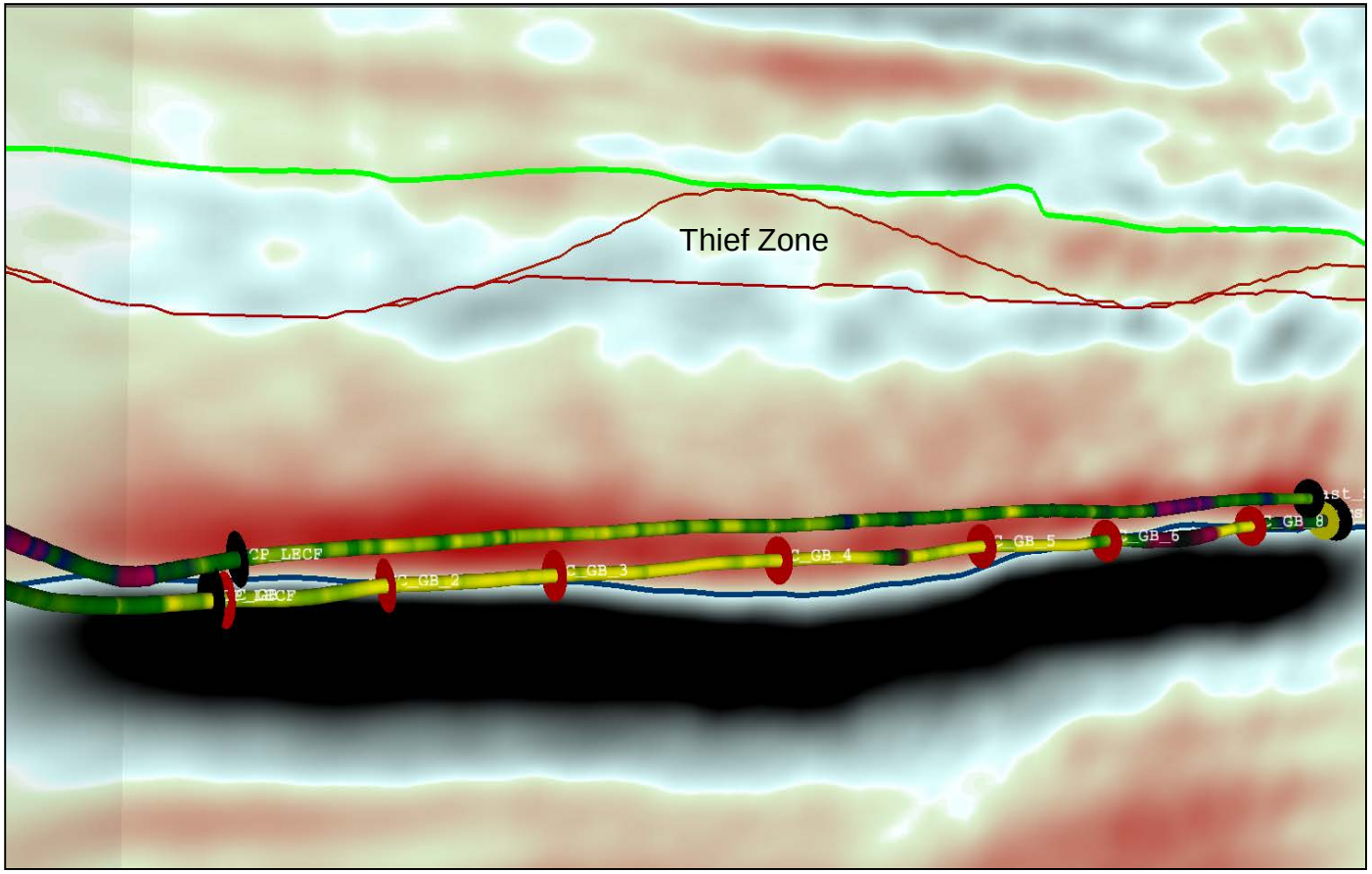

102-11 OBE Pressure Vs. Time
mASL
254.40
268.10
283.20
Pressure (kPa)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
3/1/2012
9/1/2012
3/1/2013
9/1/2013
3/1/2014
9/1/2014

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

Picks

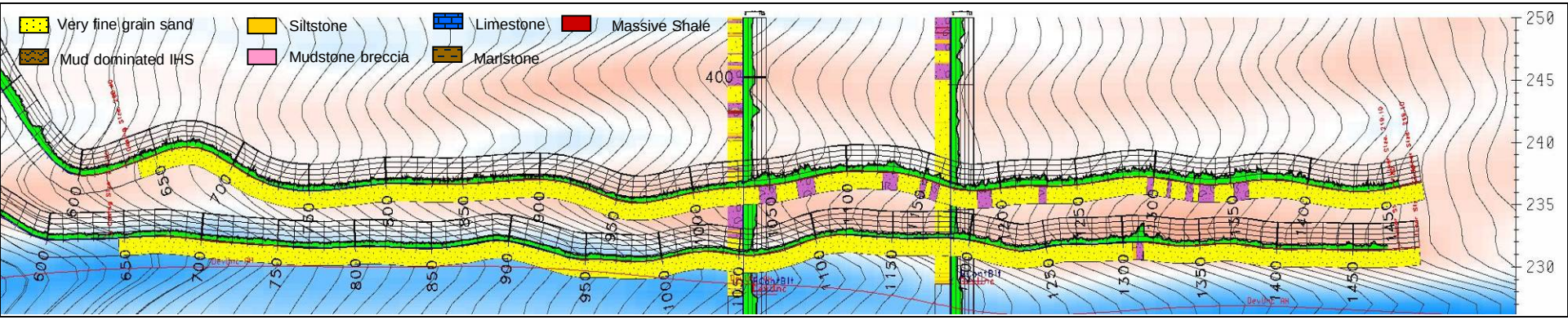
= Thermocouple

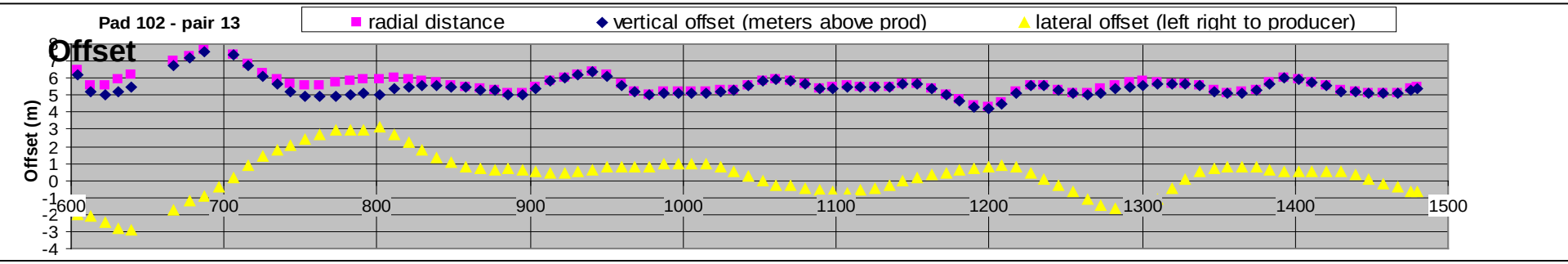
= Casing Point

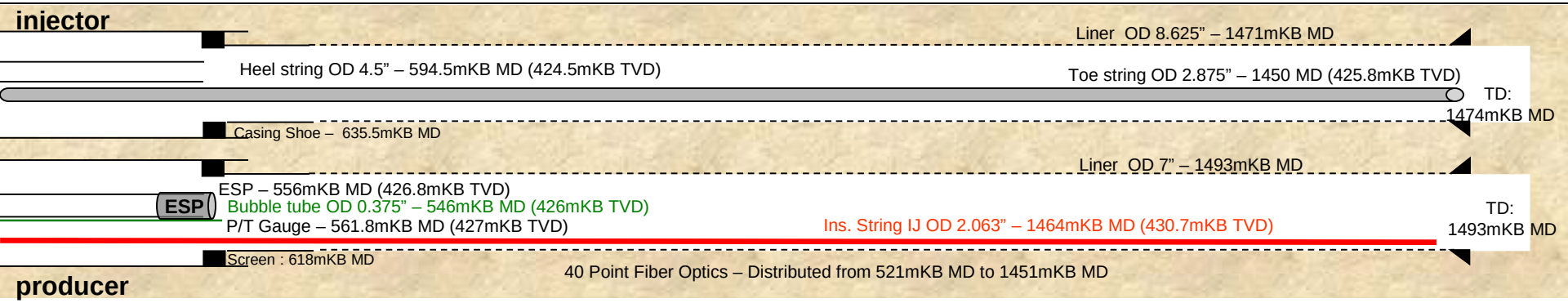
Gamma Ray Color Scale (API)

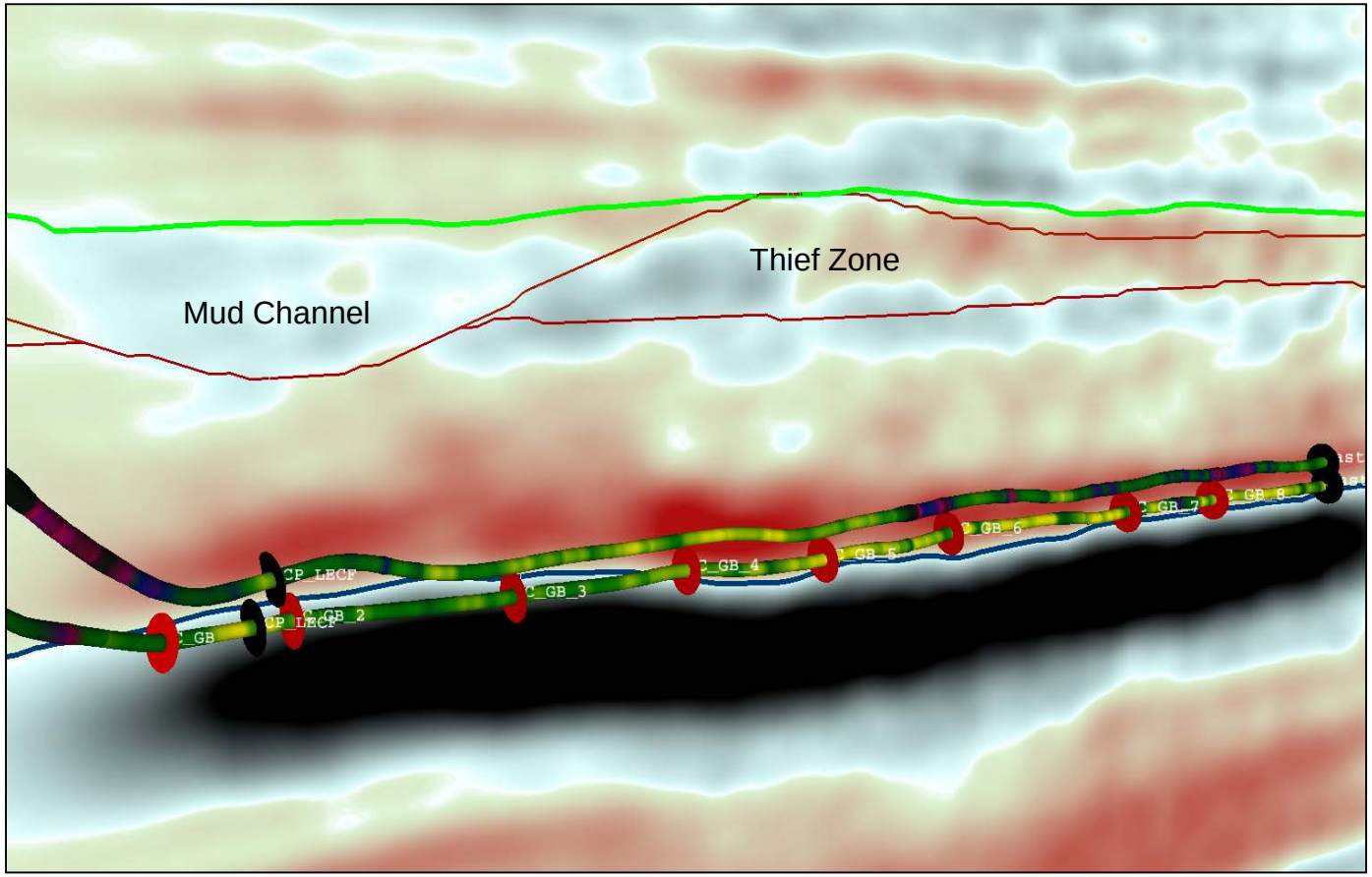
Integrated Seismic Trace

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

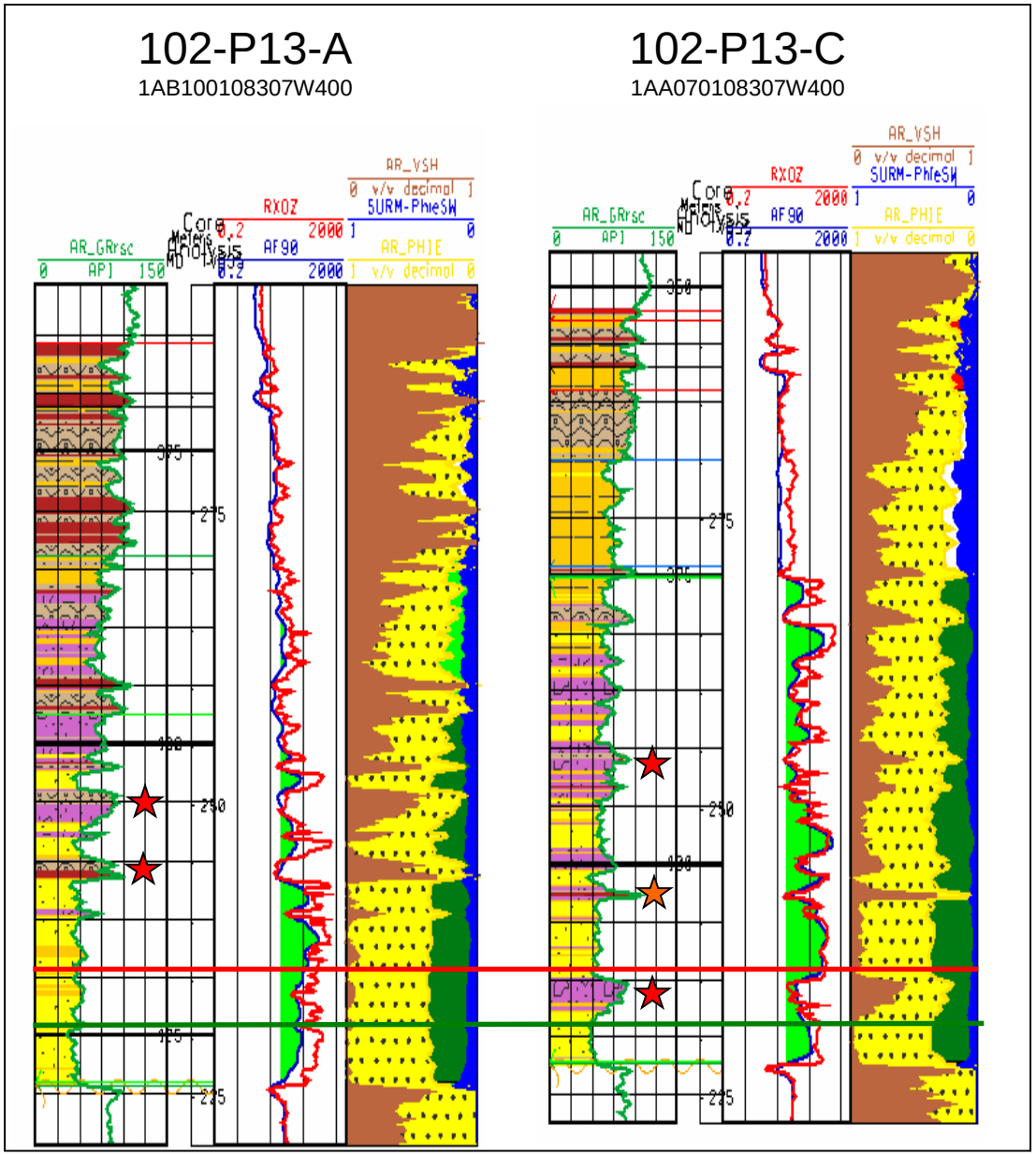
Picks

= Thermocouple

= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace



1- High CPV

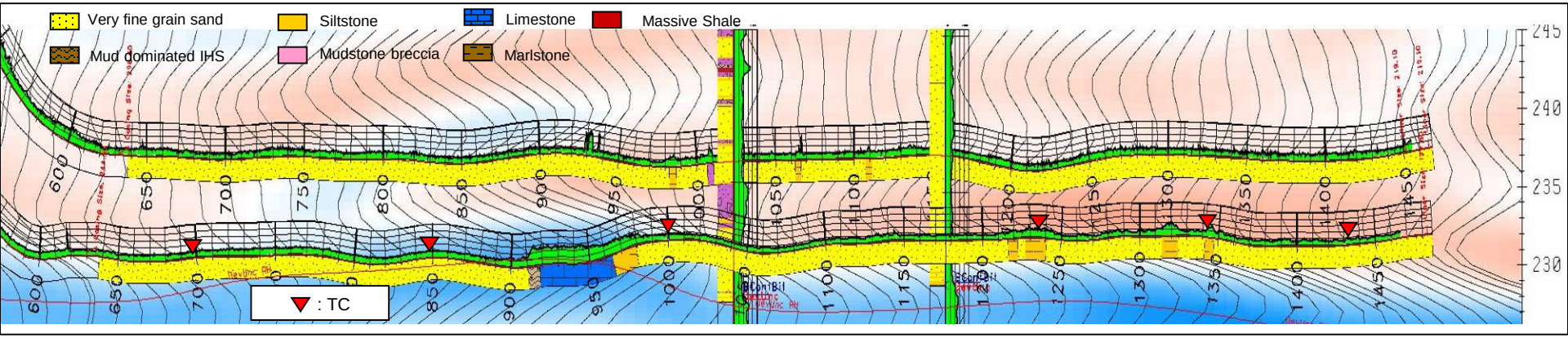
2- Good reservoir quality along the wells

3- Baffle issue:

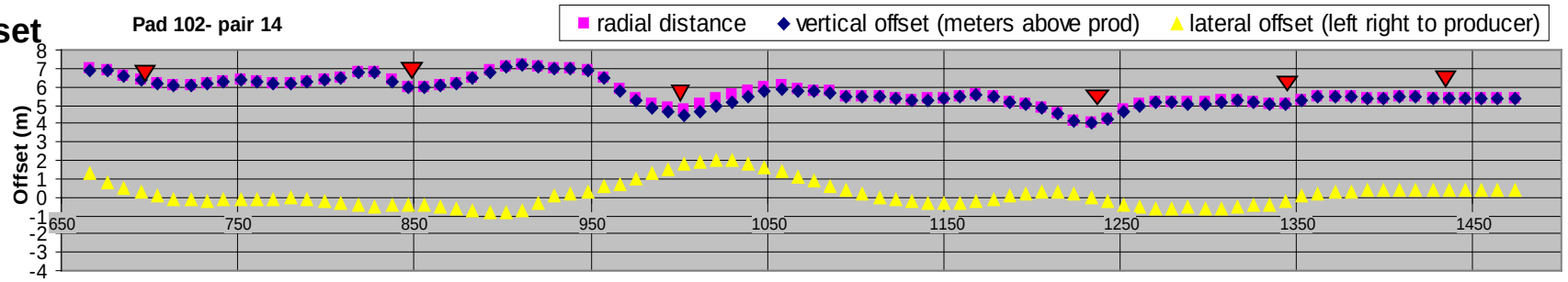
- between the injector and the producer (mid point)
- 10 m above the injector at the heel

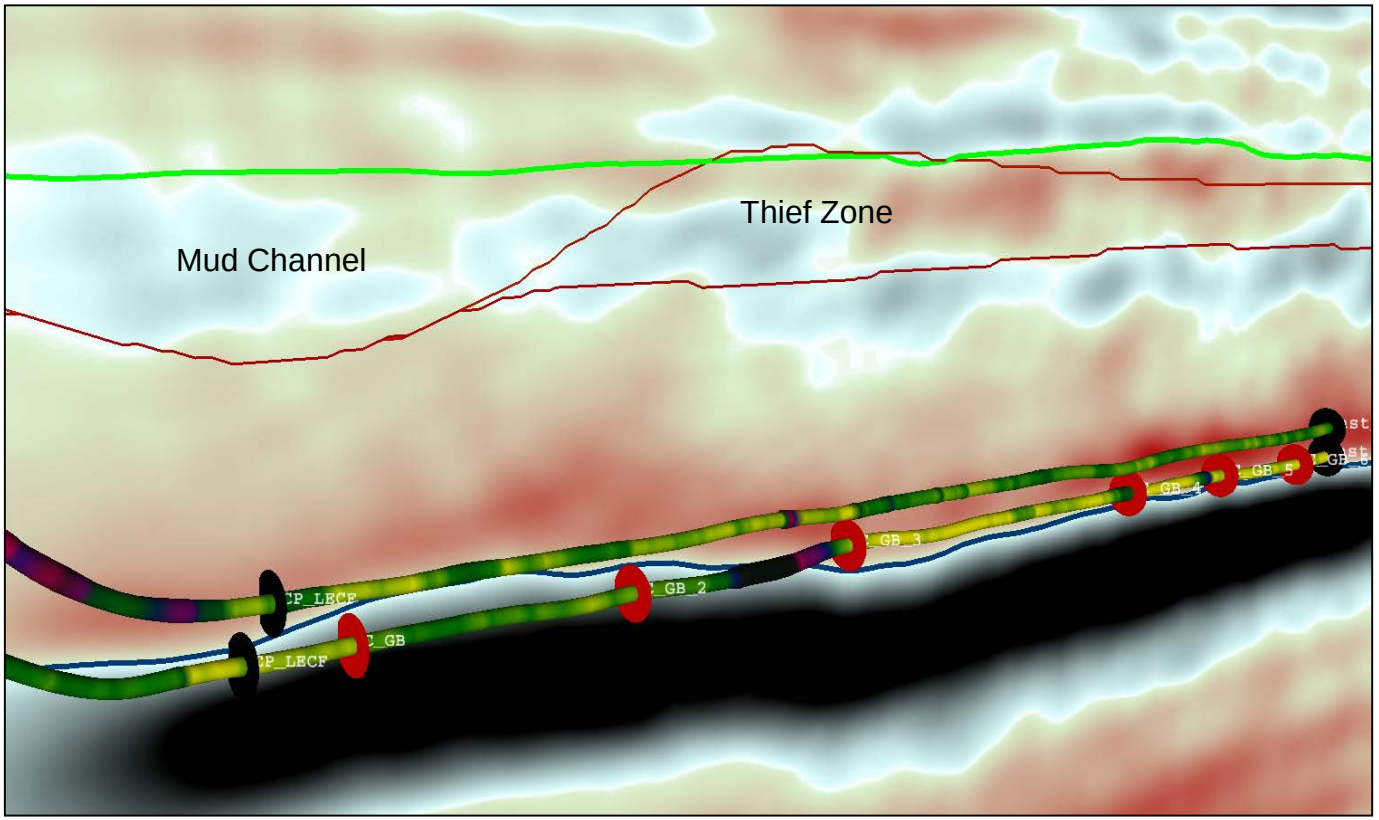
4- No monitoring

Reservoir quality



Offset





Horizons

= WAB

= TopResSeis

= BHL

Picks

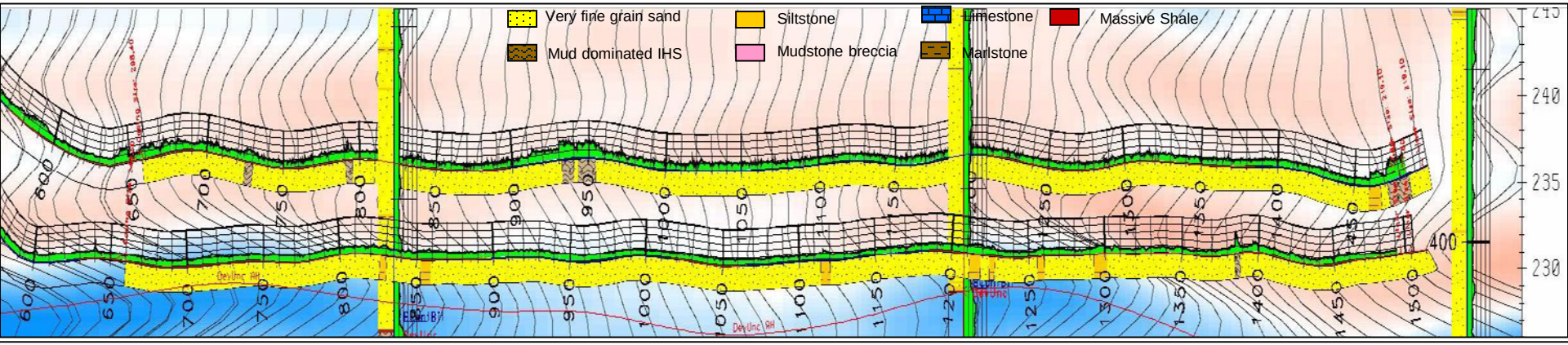
= Thermocouple

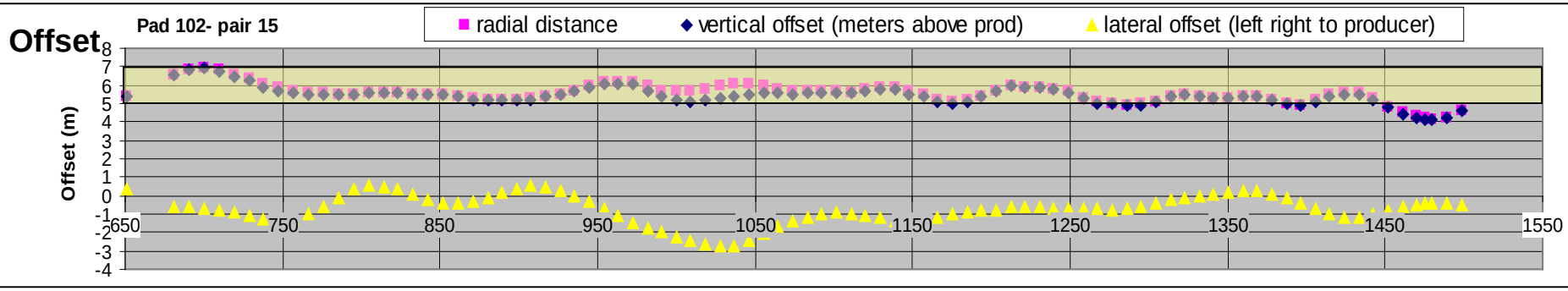
= Casing Point

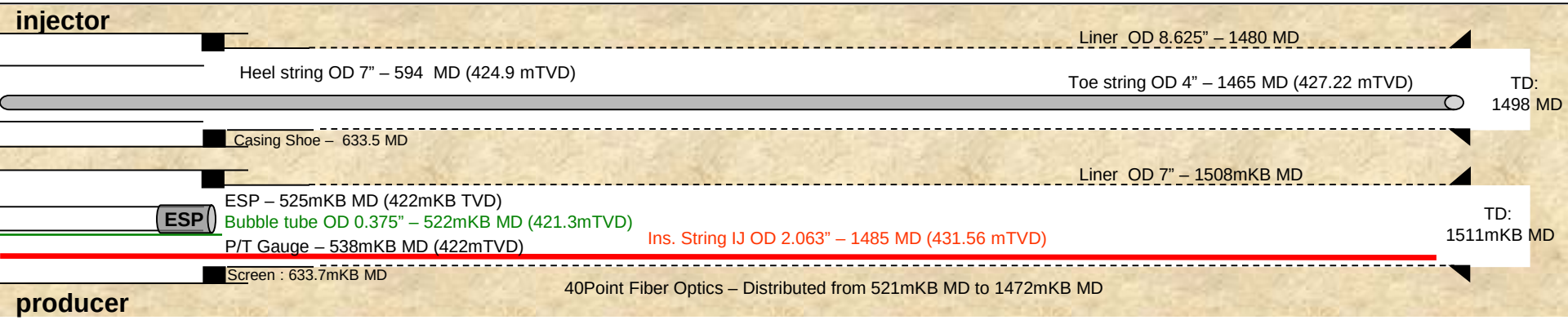
Gamma Ray Color Scale (API)

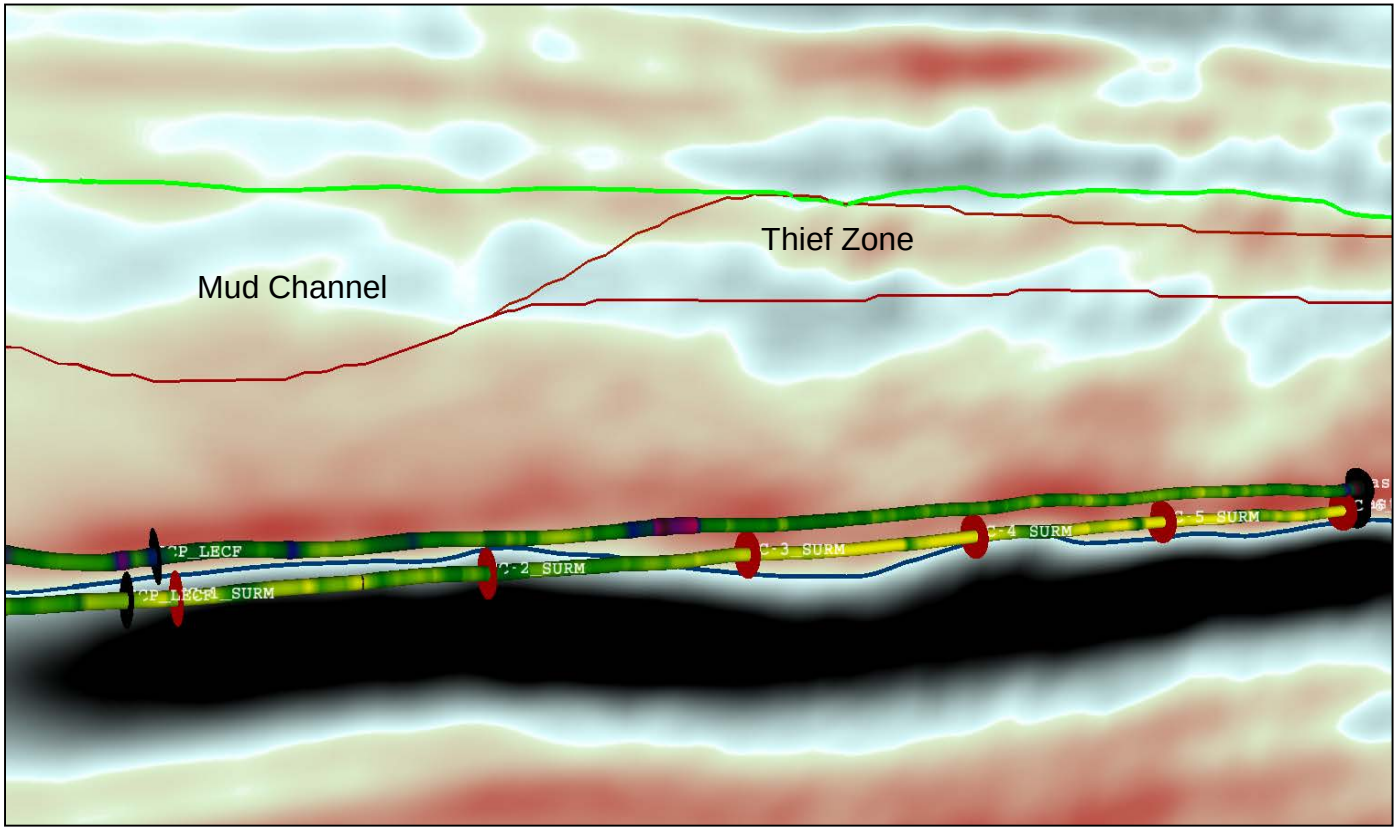
Integrated Seismic Trace

Reservoir quality









Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

= Casing Point

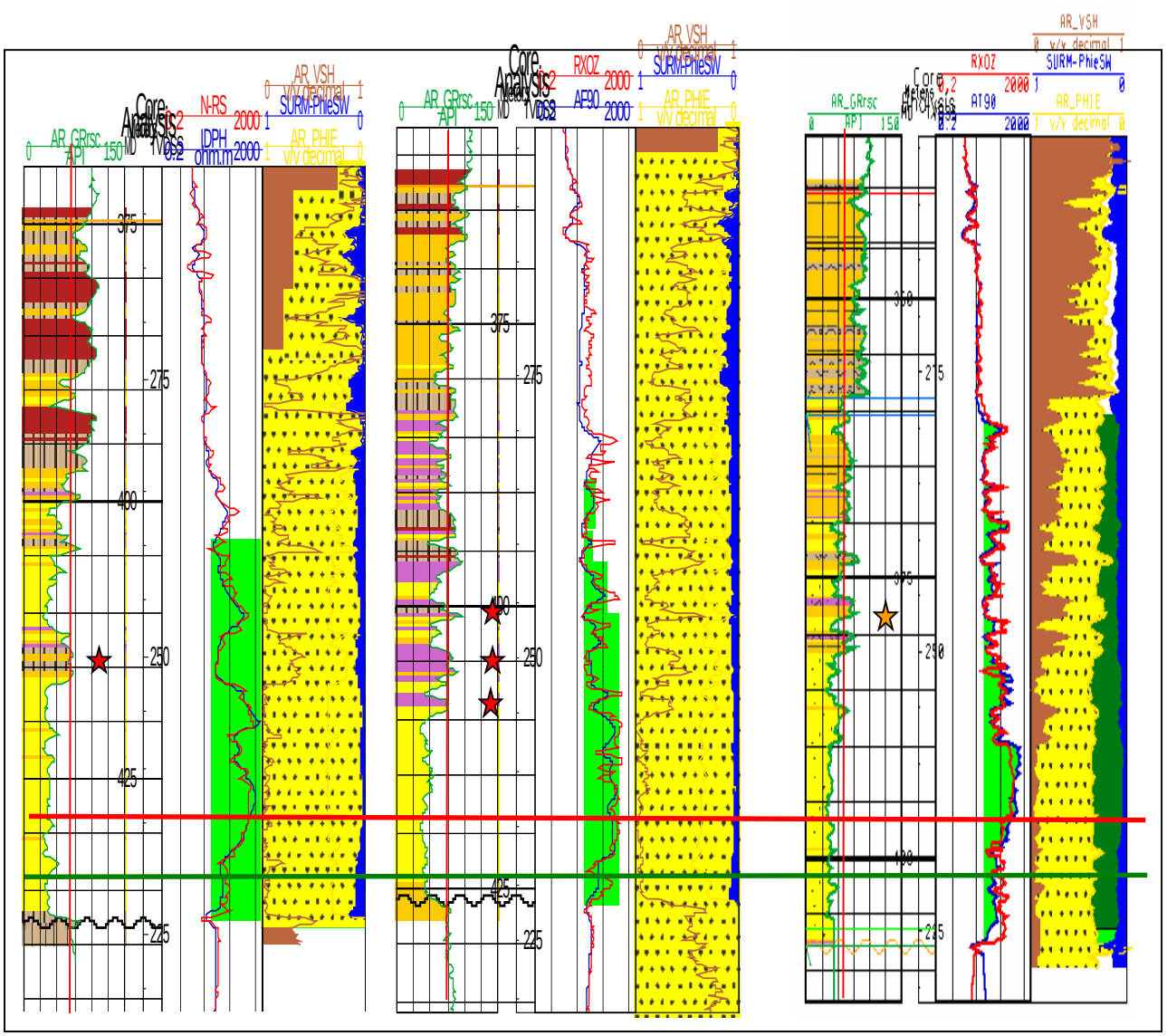
Gamma Ray Color Scale (API)

Integrated Seismic Trace

102-P16-OBB

102-P15-OBD

102-P15-E
1AA030108307W400



1- High CPV

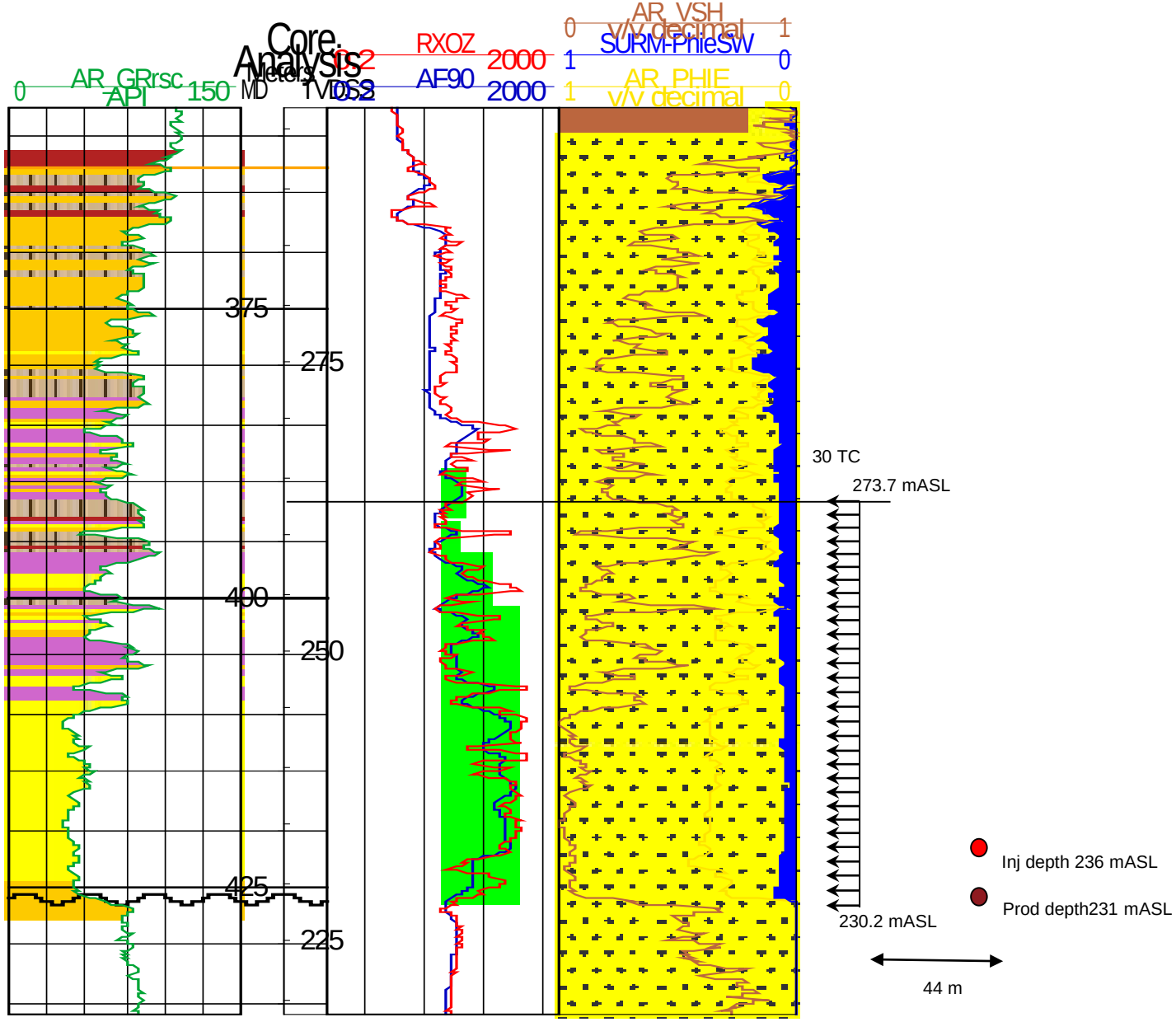
2- Excellent reservoir quality along the well

3- Edge well (to be completed later on)

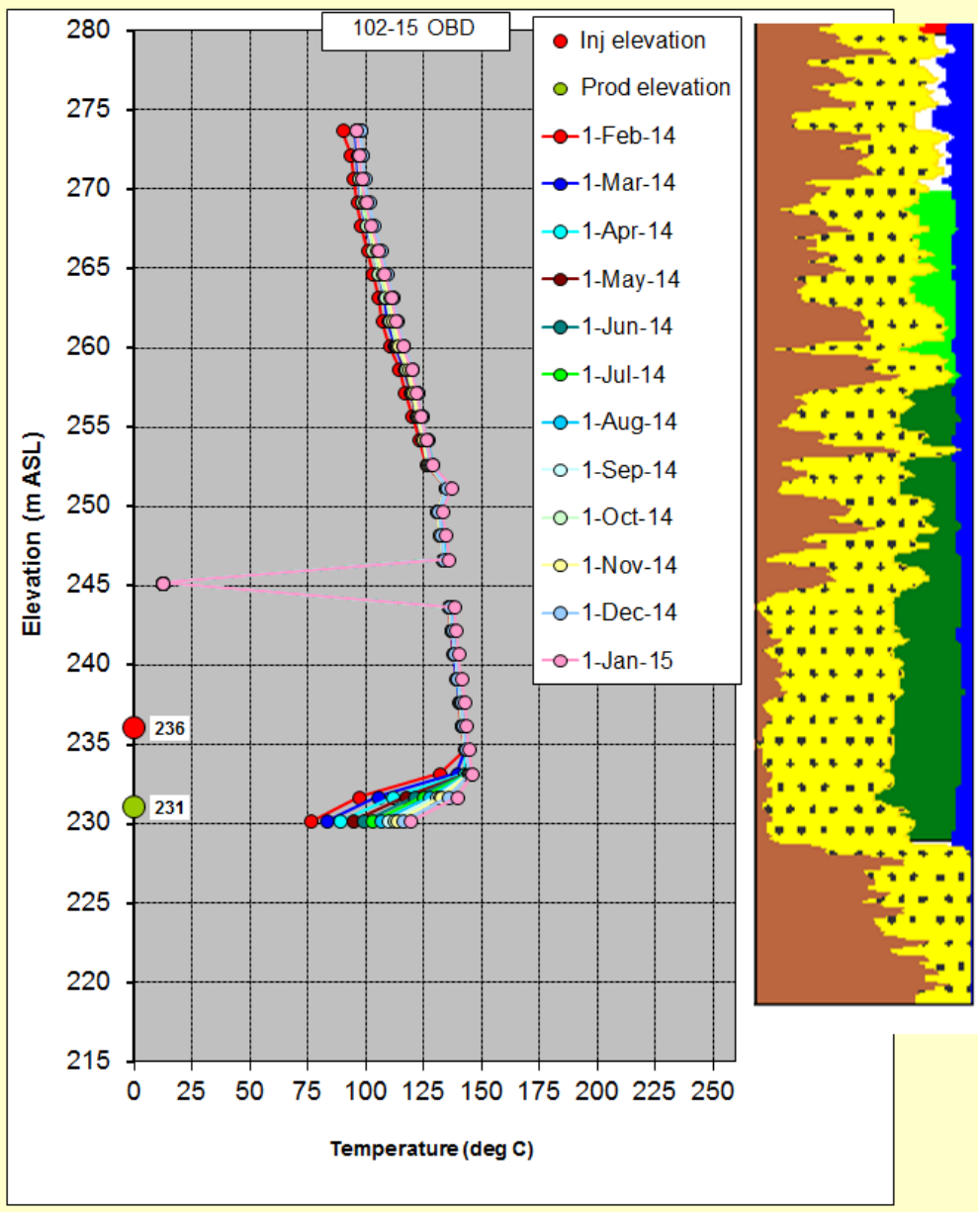
4- Baffle issue
- 10 m above inj at P15-OBD

5- Thief zone issue at the toe

6- Monitoring of baffle

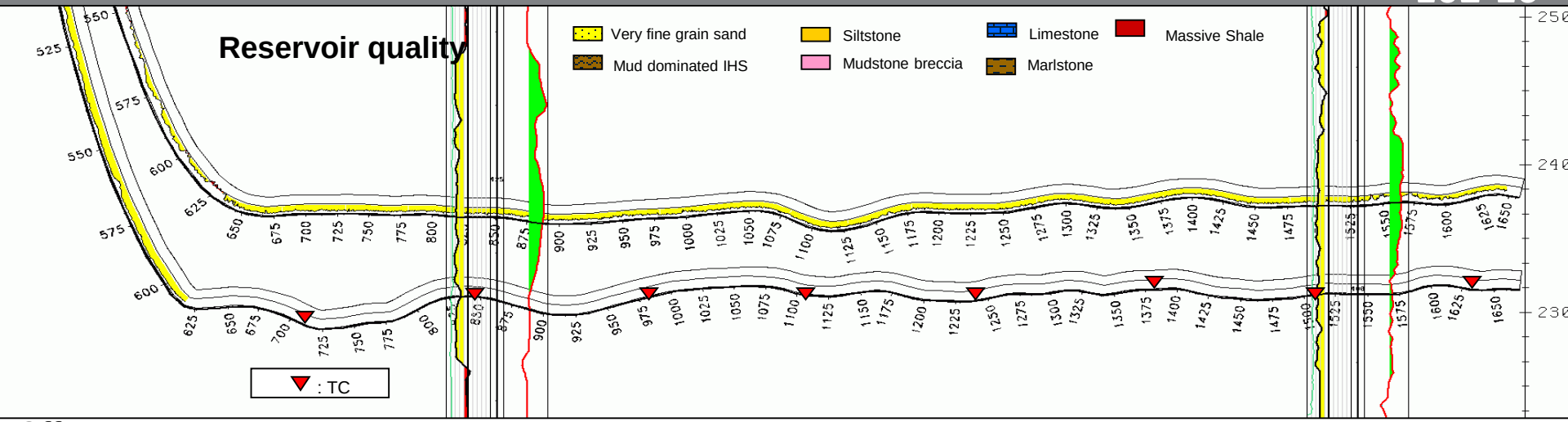

Core Analysis
AR_GRrsc
0
API
150
MD
Meters
TVD
0.2
RXOZ
2000
AF90
2000
AR_VSH
0
v/v decimal
1
SURM-PhieSW
1
0
AR_PHIE
1
v/v decimal
0
375
400
425
275
250
225
30 TC
273.7 mASL
230.2 mASL
Inj depth 236 mASL
Prod depth231 mASL
44 m

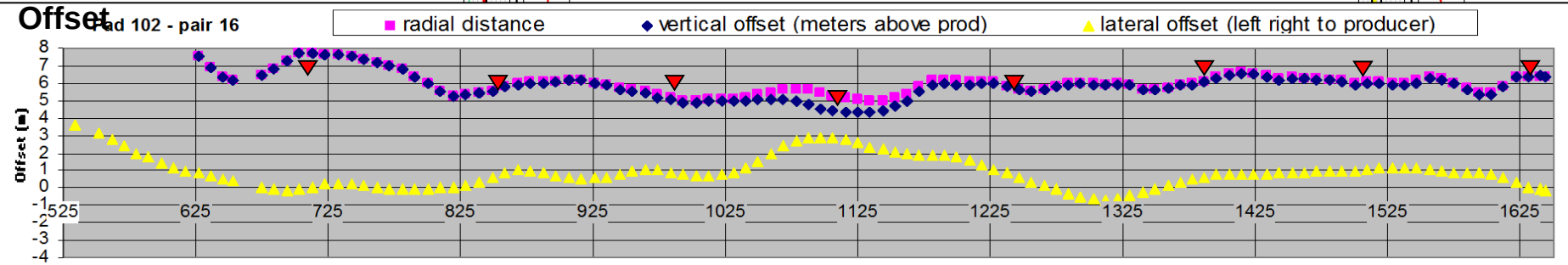
102-15 OBD
Temperature vs Depth



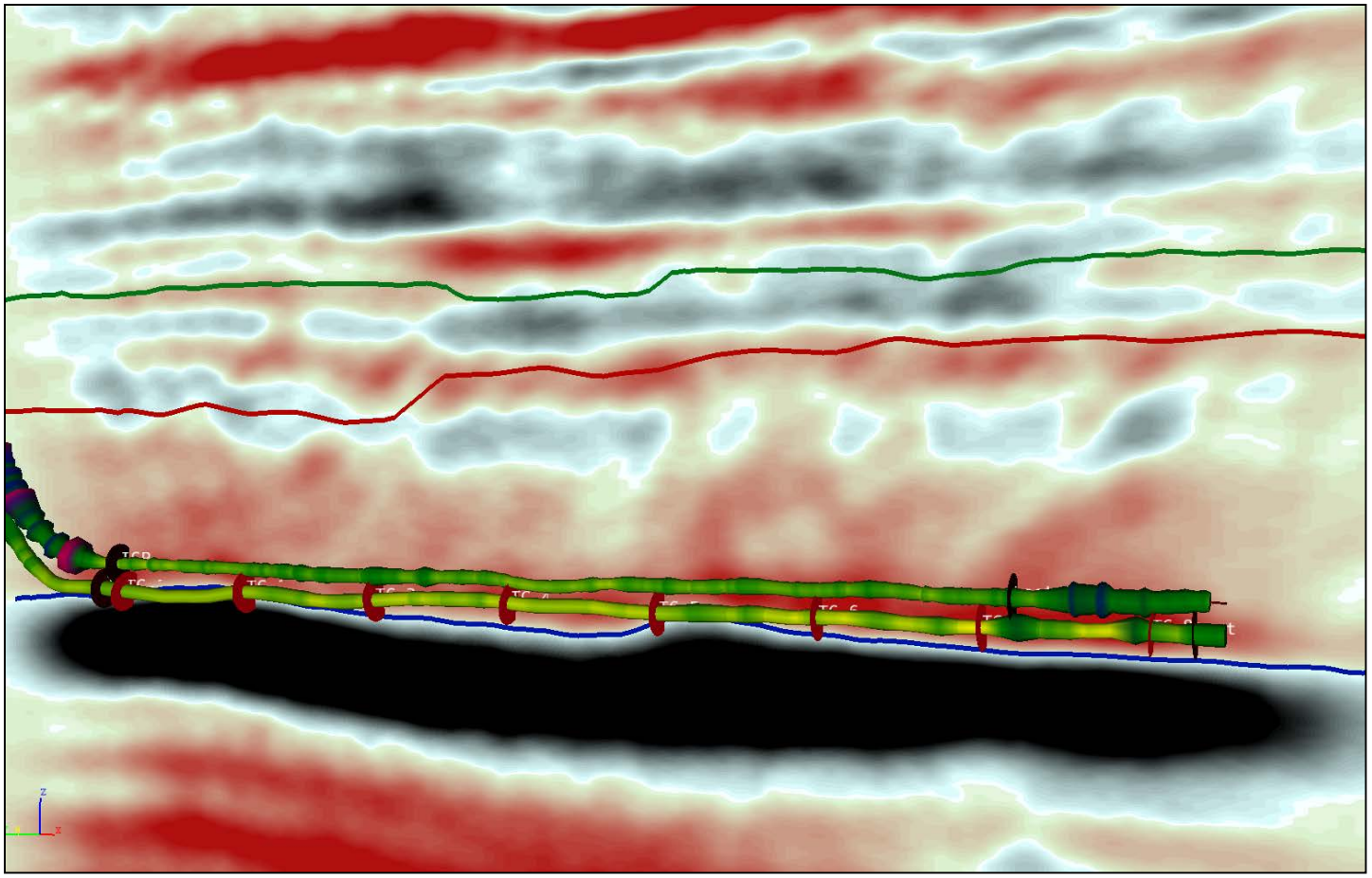
TC string replaced June 30, 2011.

Because of ground condition and according to reservoir ranking list, 102-15 OBD surface connection was completed Feb. 2012


Reservoir quality
Very fine grain sand
Mud dominated IHS
Siltstone
Mudstone breccia
Limestone
Marlstone
Massive Shale
: TC


Offset
Grid 102 - pair 16
radial distance
vertical offset (meters above prod)
lateral offset (left right to producer)
Offset (m)


injector
Liner OD 5.5" – 1655mKB MD
Heel string OD 7" – 619mKB MD (424mKB TVD)
Toe string OD 4" – 1627mKB MD (424mKB TVD)
TD: 1658mKB MD
Casing Shoe – 668mKB MD
Liner OD 7" – 1650 MD
ESP – 535.4mKB MD (417mKB TVD)
ESP
Bubble tube OD 0.375" – 525MD (413mKB TVD)
ESP Stinger Tbg. OD 3.5 – 620.8mKB MD (431.6mKB TVD)
TD: 1670mKB MD
P/T Gauge – 620MD (431.6mKB TVD)
Screen : 624.9mKB MD
producer



Horizons

= WAB

= TopResSeis

= BHL

Picks

= Thermocouple

= Casing Point

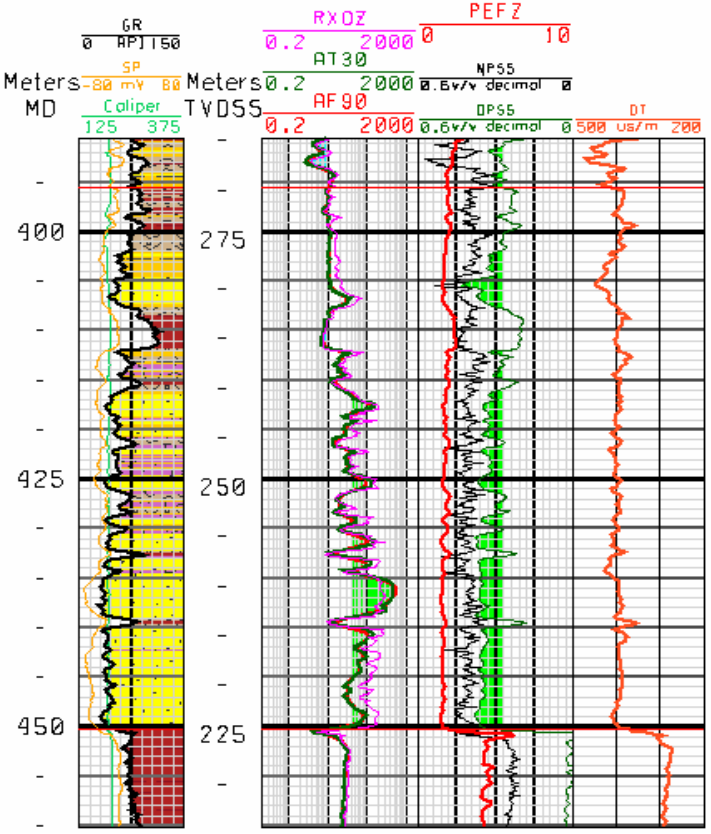
Gamma Ray Color Scale (API)

Integrated Seismic Trace

UWI: 100110108307W400

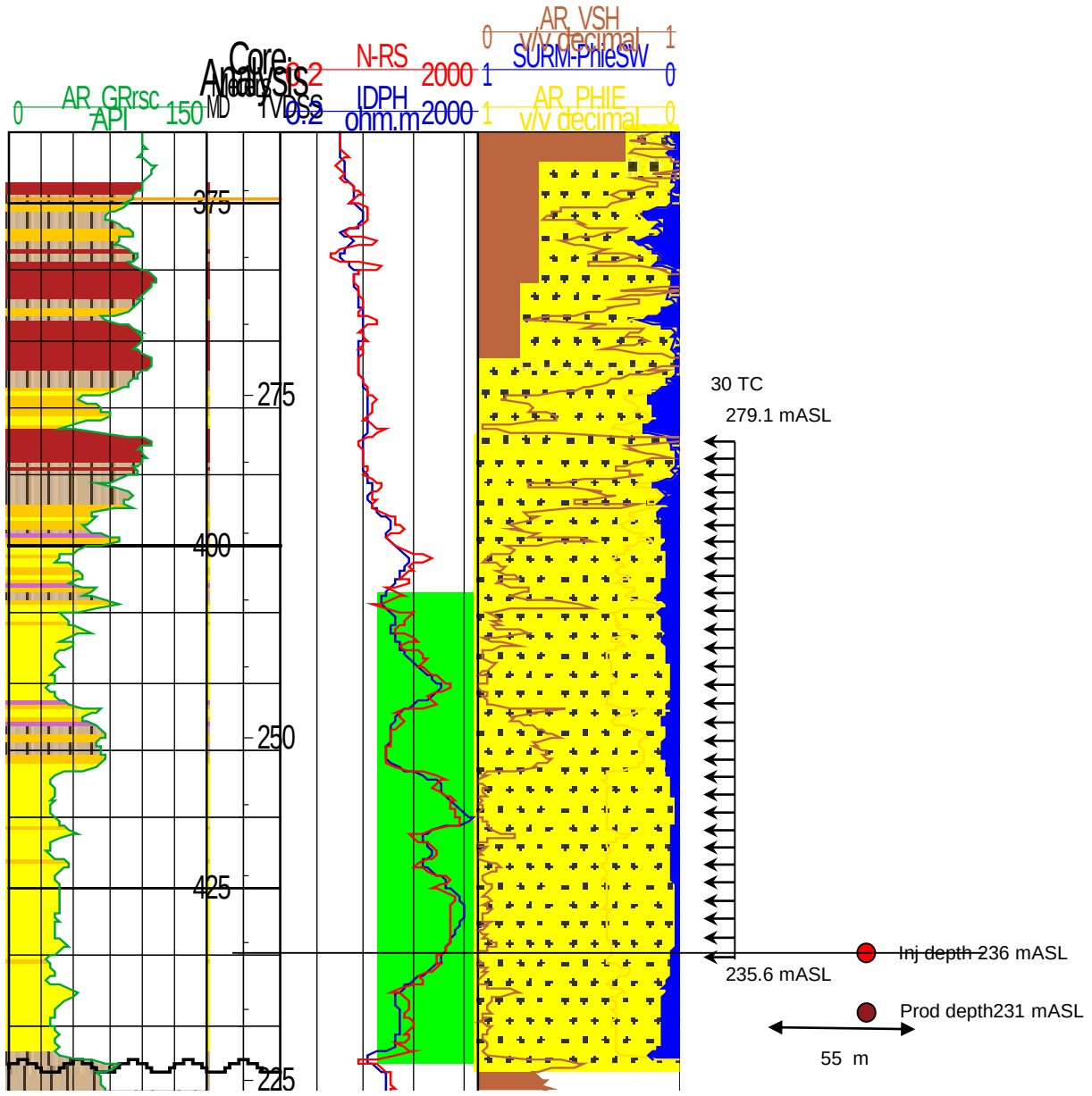
Name: 11-01
ELEV: KB 675.8 METERS

- Sand
- Sand Dominated IHS
- Mud Dominated IHS
- Mudstone Breccia
- Mudstone

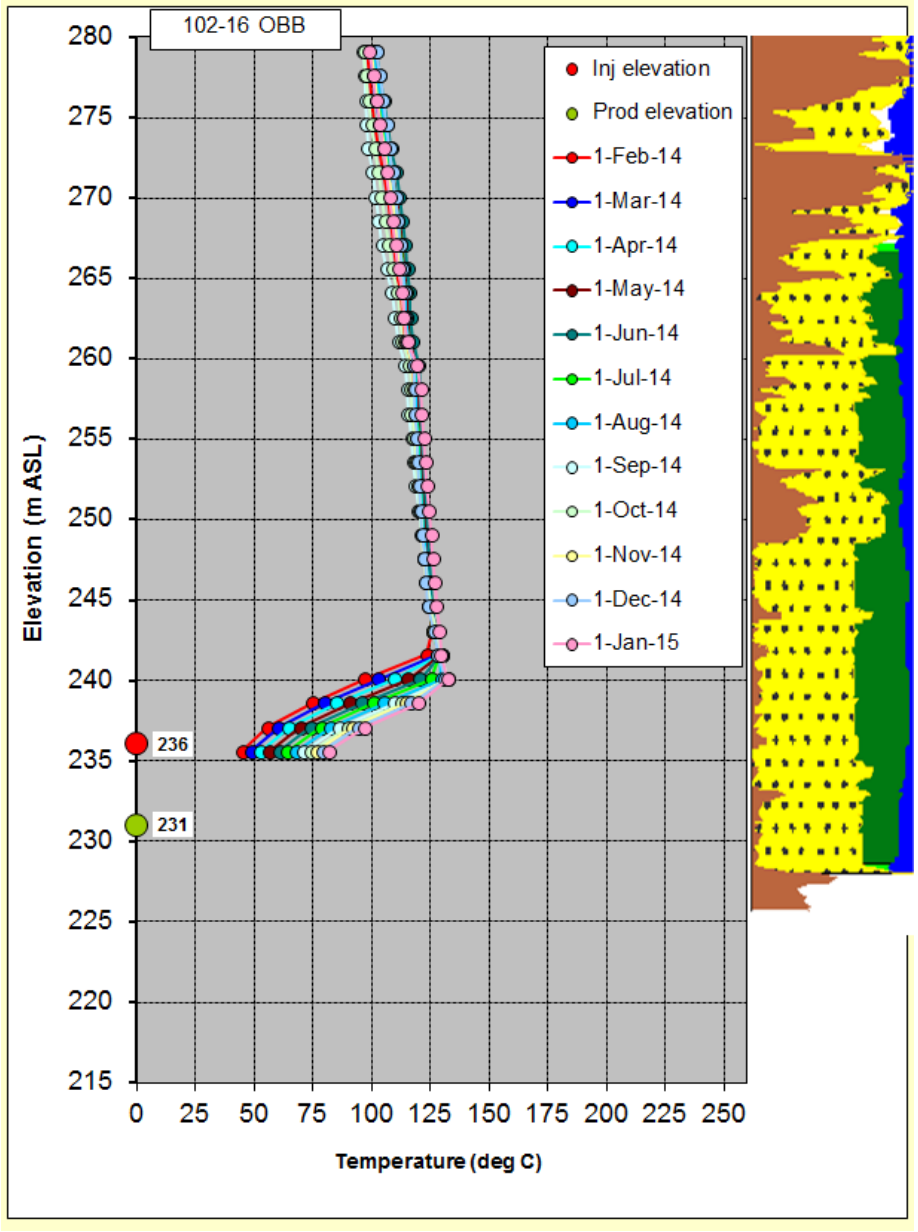


TC string removed in January 2011

- Inj depth 236 mASL
- Prod depth231 mASL


AR_VSH
0
v/v decimal
1
N-RS
2
2000
SURM-PhieSW
1
0
AR_GRrsc
0
API
150
MD
1VES
0.2
IDPH
ohm.m
2000
AR_PHIE
1
v/v decimal
0
375
275
400
250
425
225
30 TC
279.1 mASL
Inj depth 236 mASL
235.6 mASL
Prod depth231 mASL
55 m

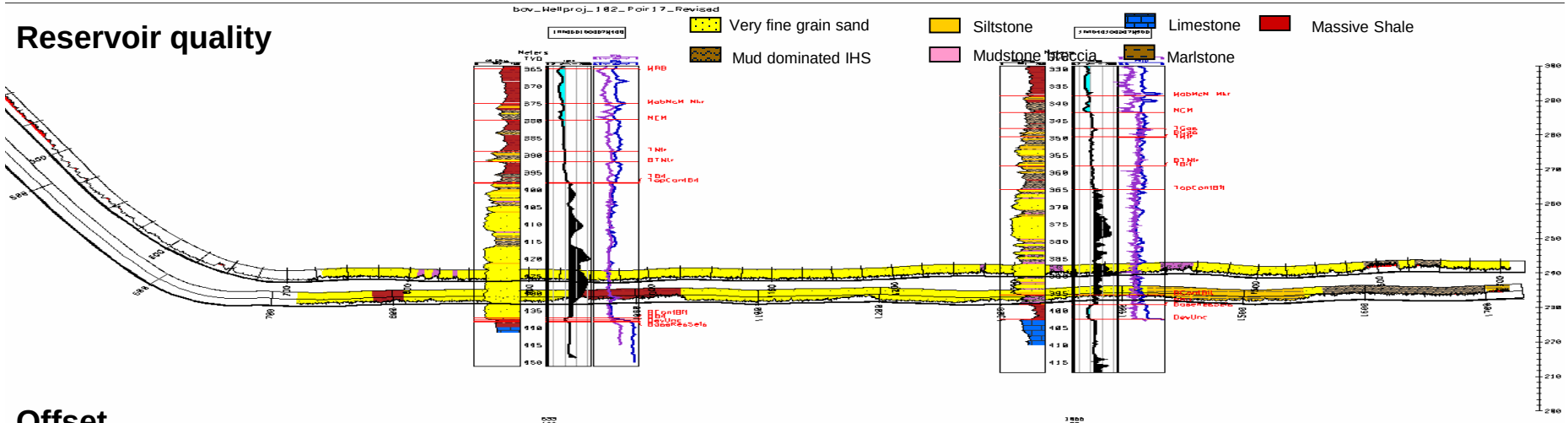
102-16 OBB
Temperature vs. Depth



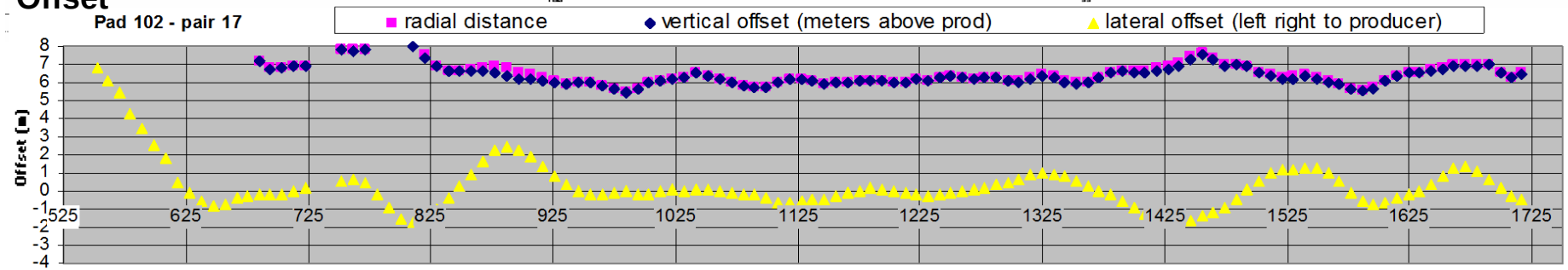
TC string replaced June 26, 2011.

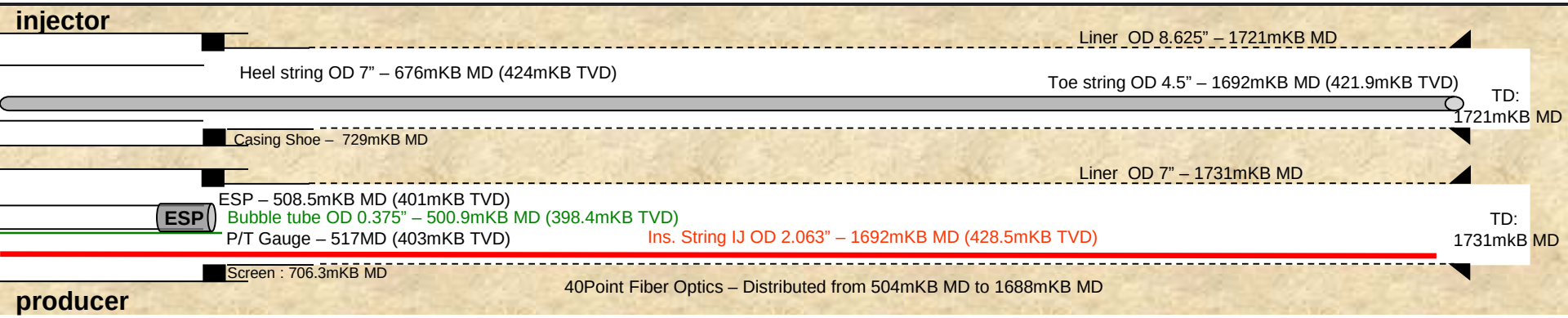
Because of ground condition and according to reservoir ranking list, 102-16 OBB surface connection was completed Feb. 2012

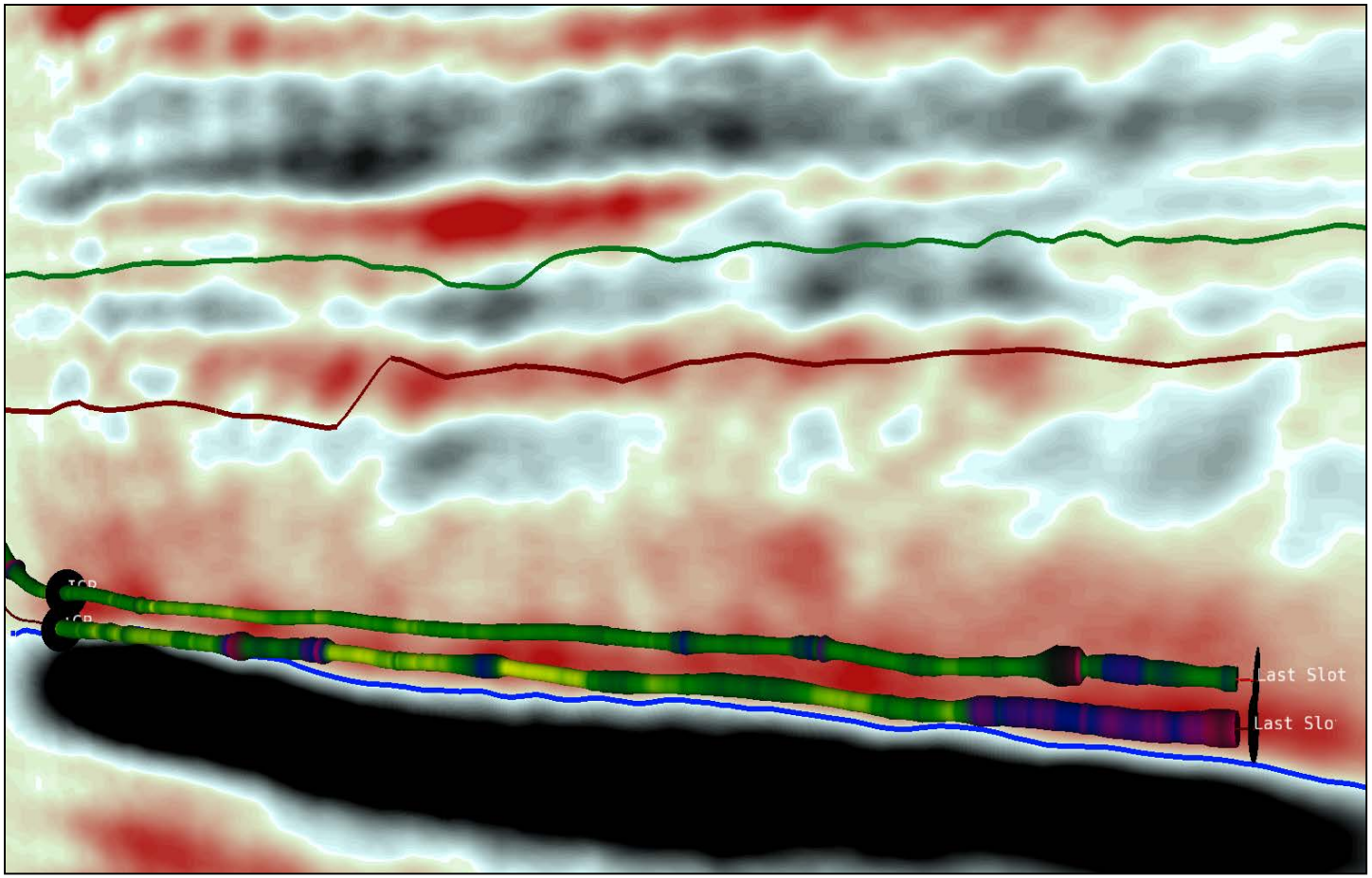
Reservoir quality



Offset







Horizons

= WAB

= TopResSeis

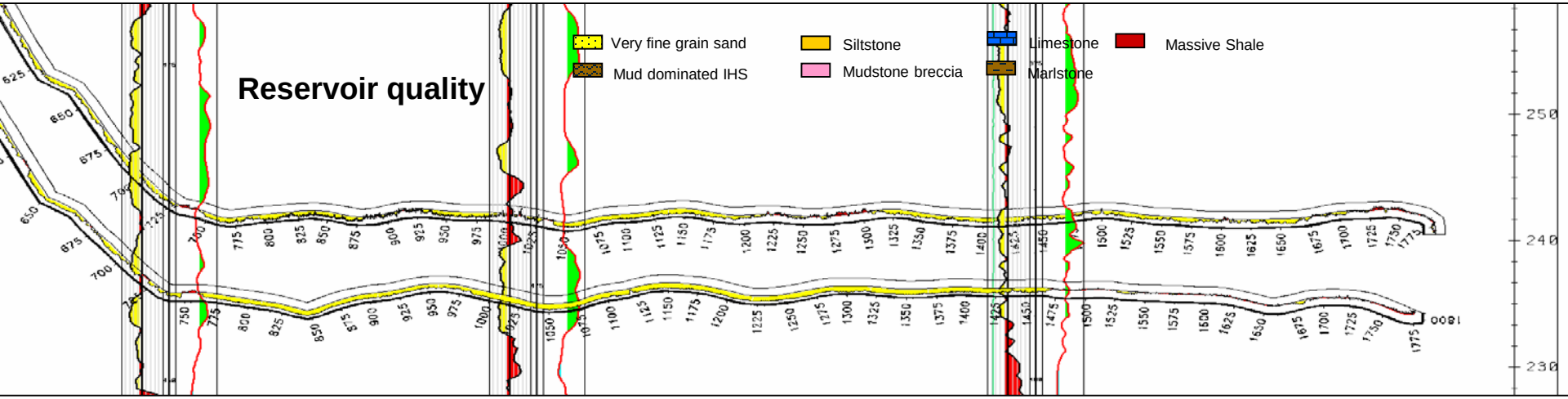
= BHL

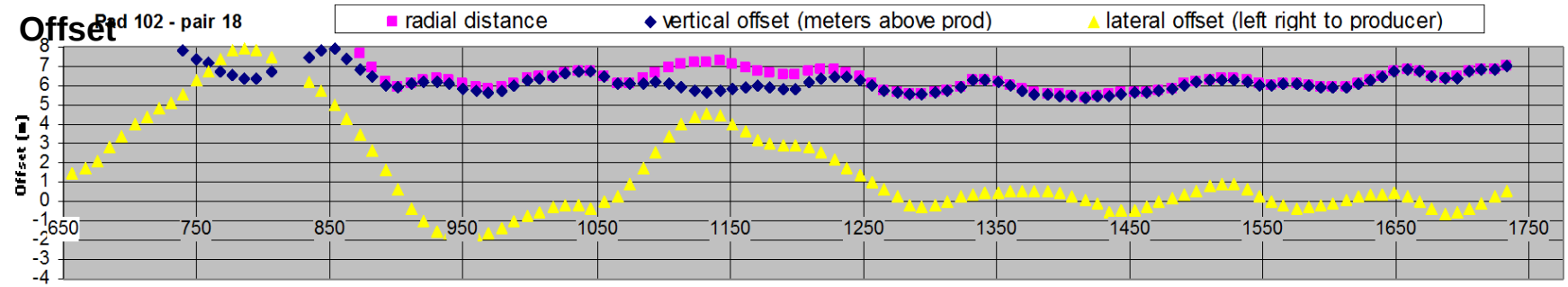
Picks

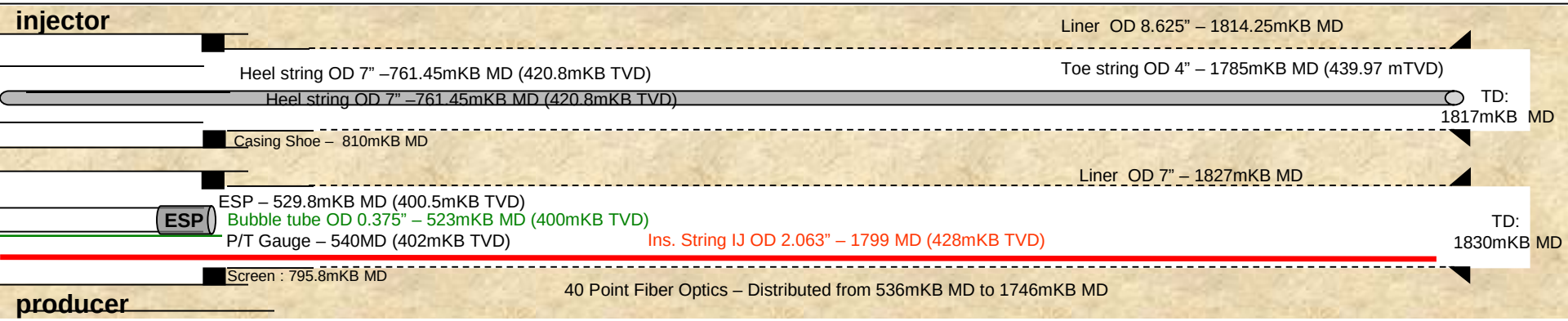
= Casing Point

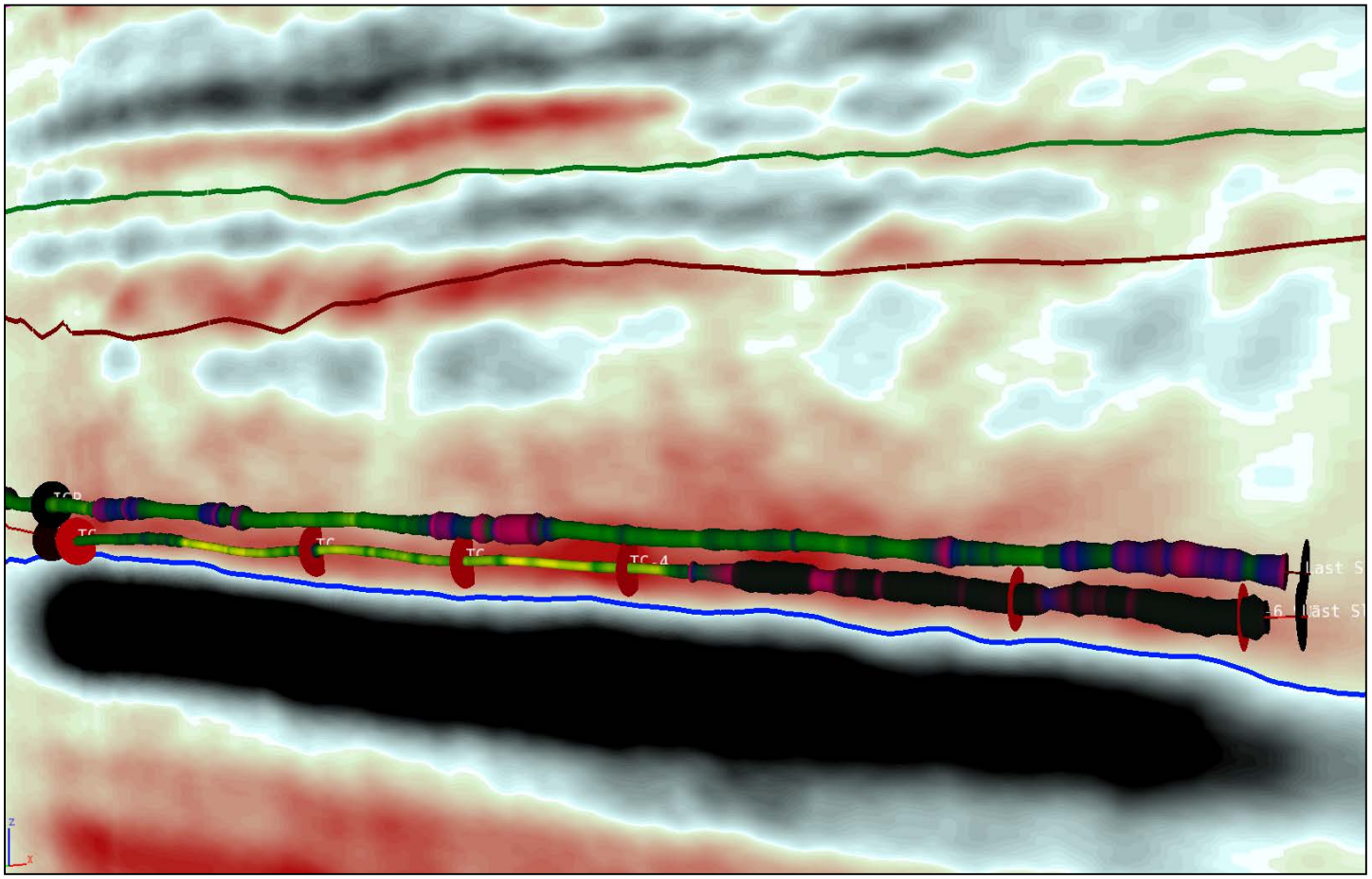
Gamma Ray Color Scale (API)

Integrated Seismic Trace


Reservoir quality
Very fine grain sand
Mud dominated IHS
Siltstone
Mudstone breccia
Limestone
Marlstone
Massive Shale


Offset
Pad 102 - pair 18
radial distance
vertical offset (meters above prod)
lateral offset (left right to producer)
Offset (m)
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
650
750
850
950
1050
1150
1250
1350
1450
1550
1650
1750


injector
Liner OD 8.625" – 1814.25mKB MD
Heel string OD 7" –761.45mKB MD (420.8mKB TVD)
Toe string OD 4" – 1785mKB MD (439.97 mTVD)
Heel string OD 7" –761.45mKB MD (420.8mKB TVD)
TD:
1817mKB MD
Casing Shoe – 810mKB MD
Liner OD 7" – 1827mKB MD
ESP – 529.8mKB MD (400.5mKB TVD)
ESP
Bubble tube OD 0.375" – 523mKB MD (400mKB TVD)
P/T Gauge – 540MD (402mKB TVD)
Ins. String IJ OD 2.063" – 1799 MD (428mKB TVD)
TD:
1830mKB MD
Screen : 795.8mKB MD
40 Point Fiber Optics – Distributed from 536mKB MD to 1746mKB MD
producer



Horizons
= WAB
= TopResSeis
= BHL

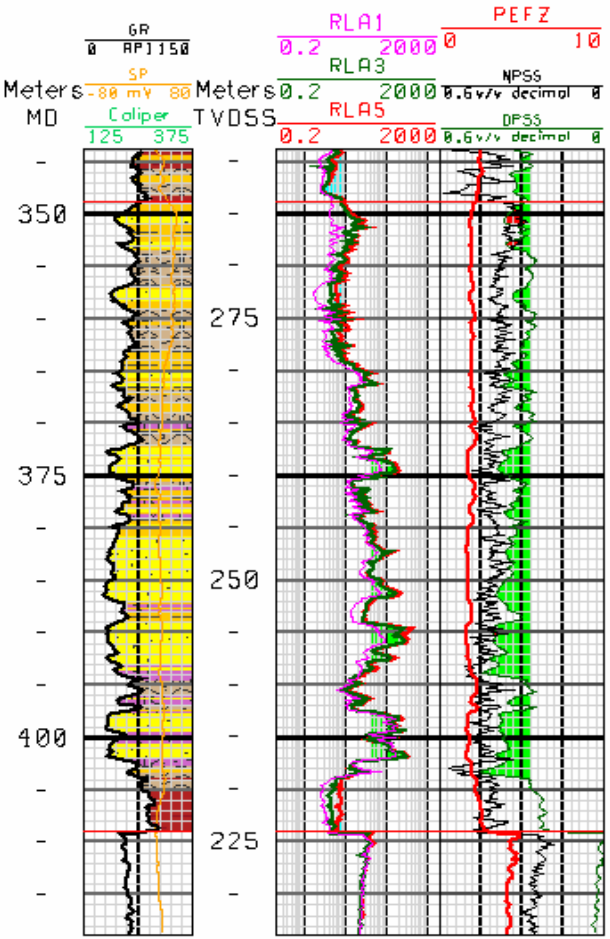
Picks
= Thermocouple
= Casing Point

Gamma Ray Color Scale (API)

Integrated Seismic Trace

UWI: 100040108307W400

Name: 04-01
ELEV: KB 634.9 METERS



- Sand
- Sand Dominated IHS
- Mud Dominated IHS
- Mudstone Breccia
- Mudstone

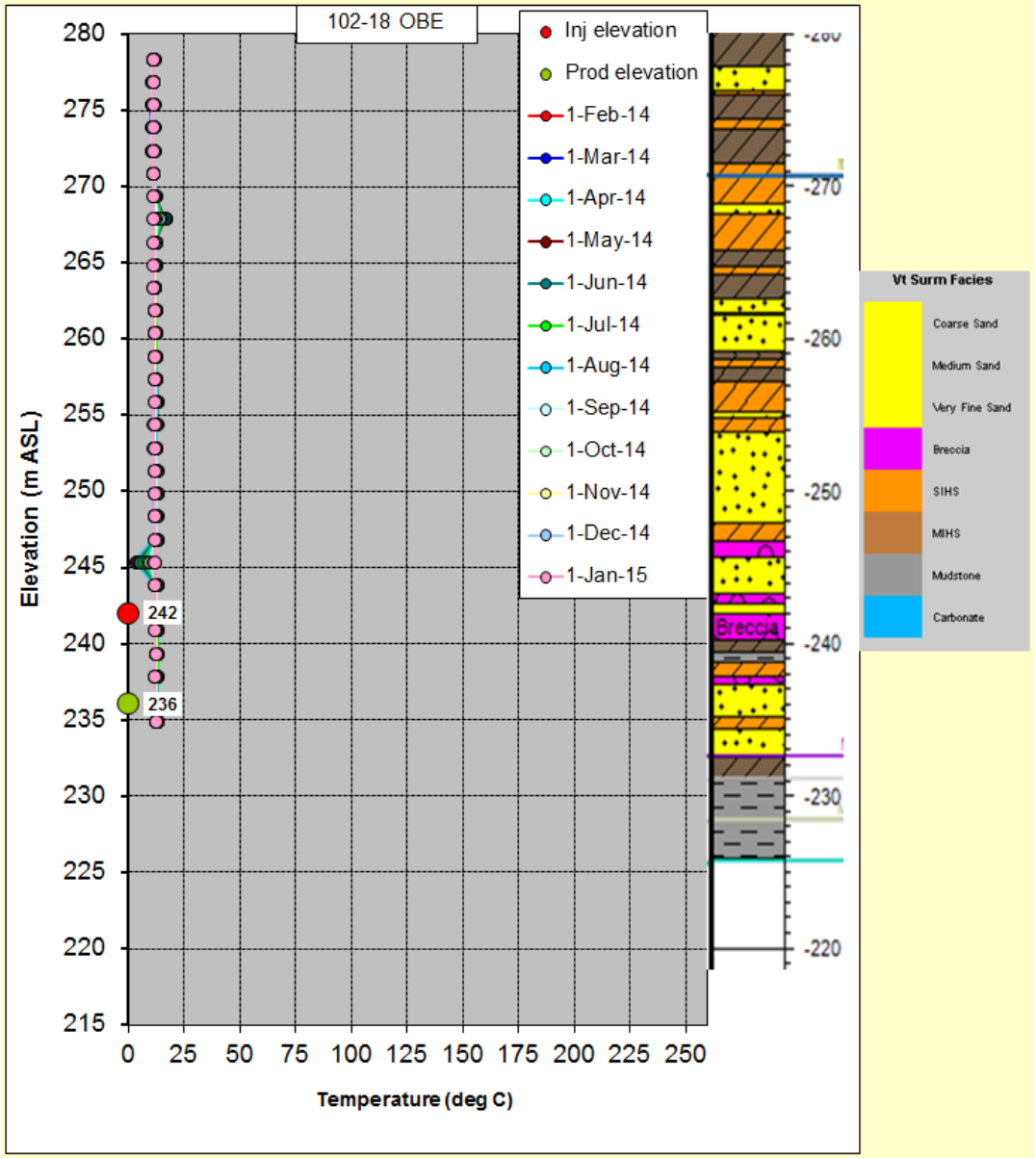
30 TC
271.4 mASL

227.9 mASL

Inj depth 242 mASL

Prod depth236 mASL

102-18 OBE
Temperature vs. Depth



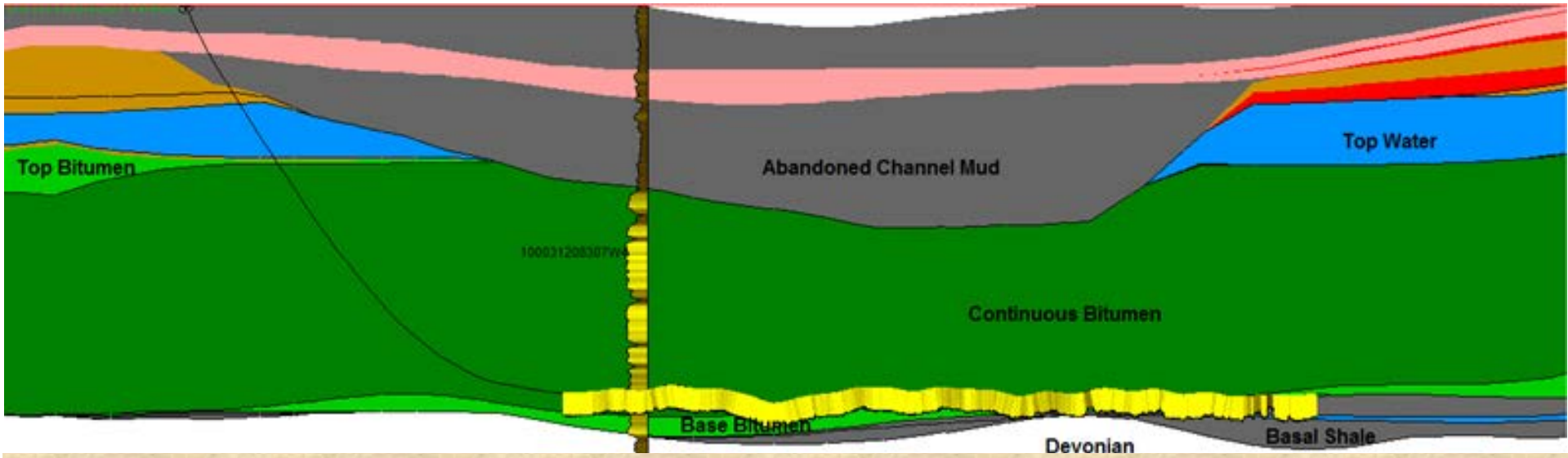
TC string replaced June27, 2011.

Because of ground condition and according to reservoir ranking list, 102-18 OBE surface connection was completed Feb. 2012

TC communications lost in March 2013

Reservoir quality

Fishbone drain well drilled August 2013



producer

Liner OD 6.625" – 1539mKB MD

Heel string OD 7" –783.86mKB MD

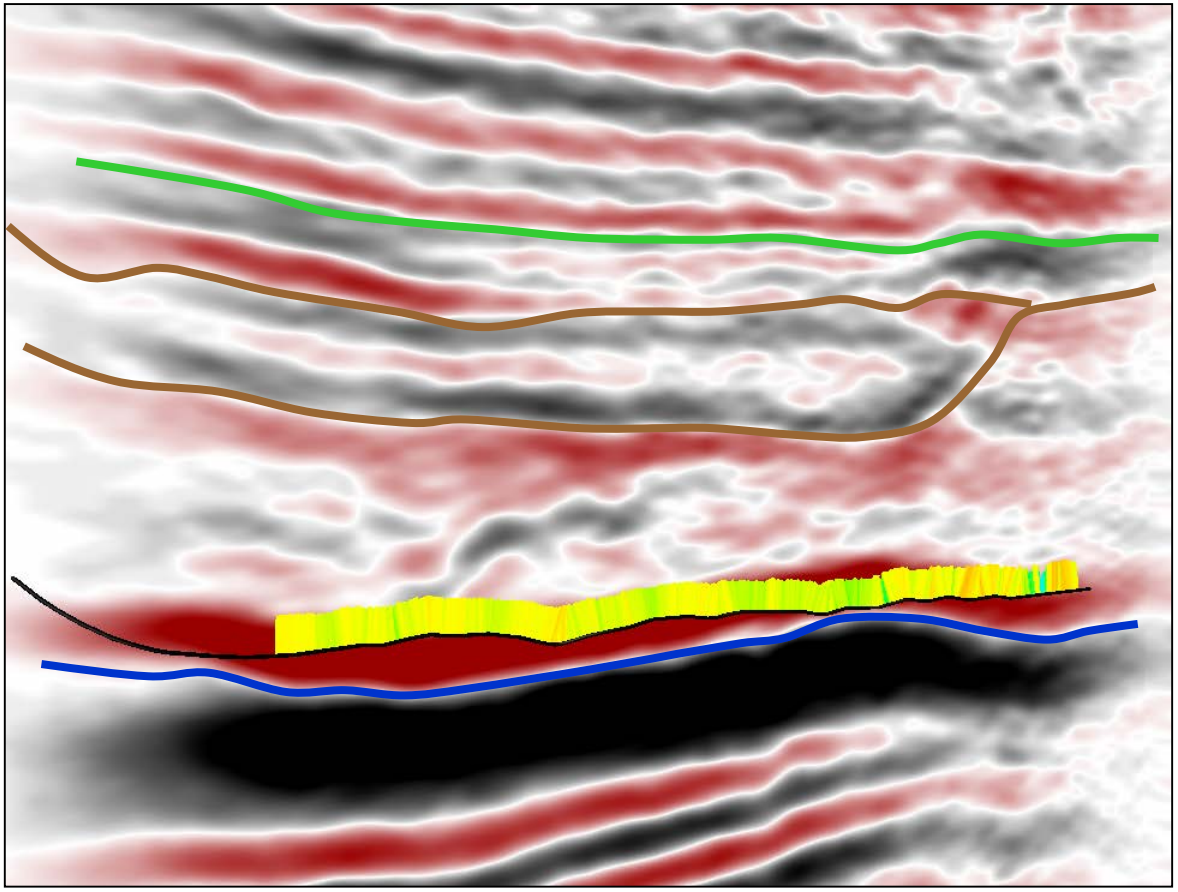
PCP Progressing Cavity Pump – 770.48mKB MD

Liner OD 7" – 1632mKB MD

Bubble tube OD 0.375" – 756.4mKB MD

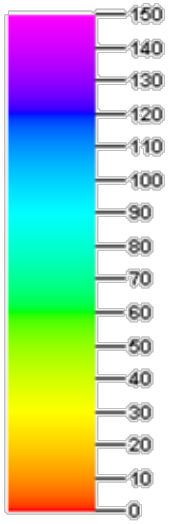
Casing Shoe: 1520.73mKB MD

Lxdata pressure/temperature fiber optic coil.



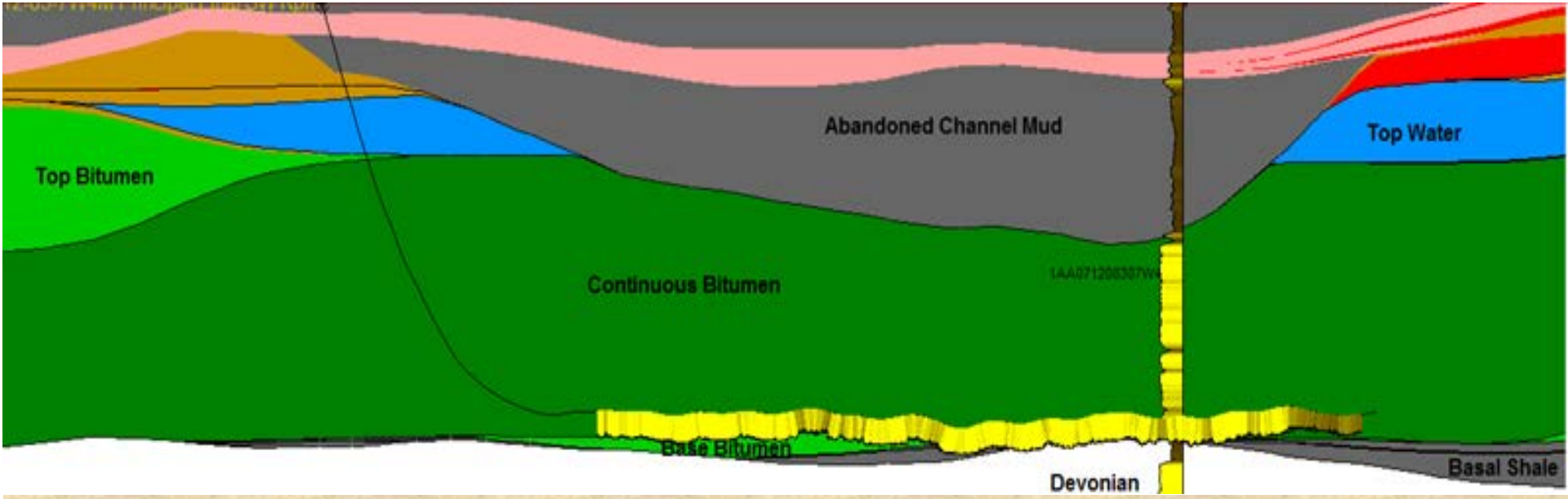
Horizons
= WAB
= TopResSeis
= BHL

Gamma Ray Color Scale (API)



Reservoir quality

Fishbone drain well drilled September 2013



producer

Liner OD 6.625" – 1539mKB MD

Heel string OD 7" –670.46 mKB MD

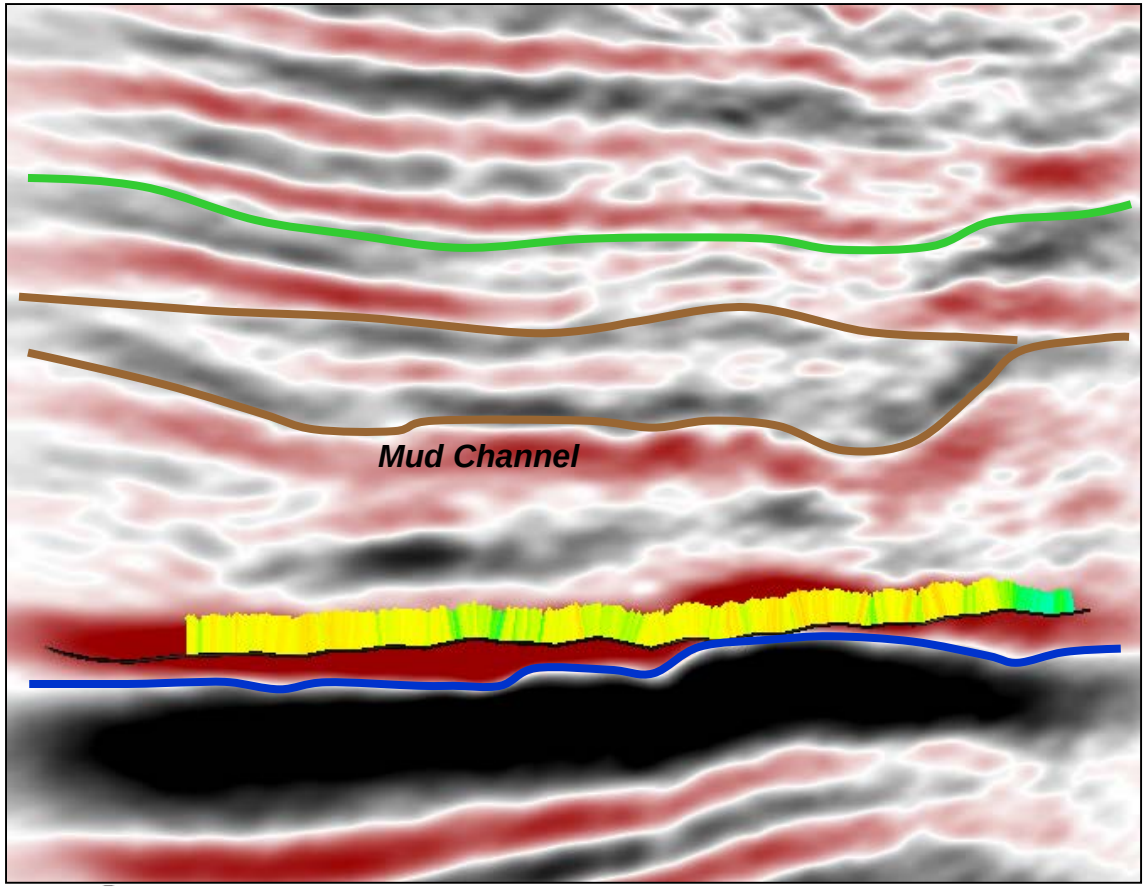
TD: 1589mKB MD

PCP Progressing Cavity Pump – 653.92mKB MD

Bubble tube OD 0.375" – 641.94mKB MD

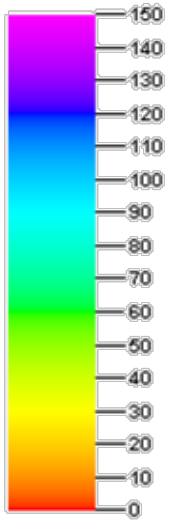
Casing Shoe: 1522.89mKB MD

Lxdata pressure/temperature fiber optic coil.

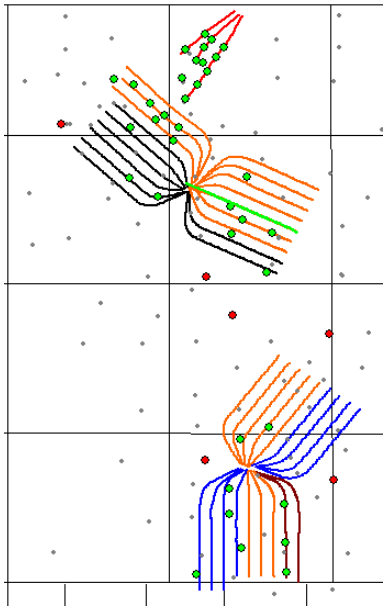


Horizons
= WAB
= TopResSeis
= BHL

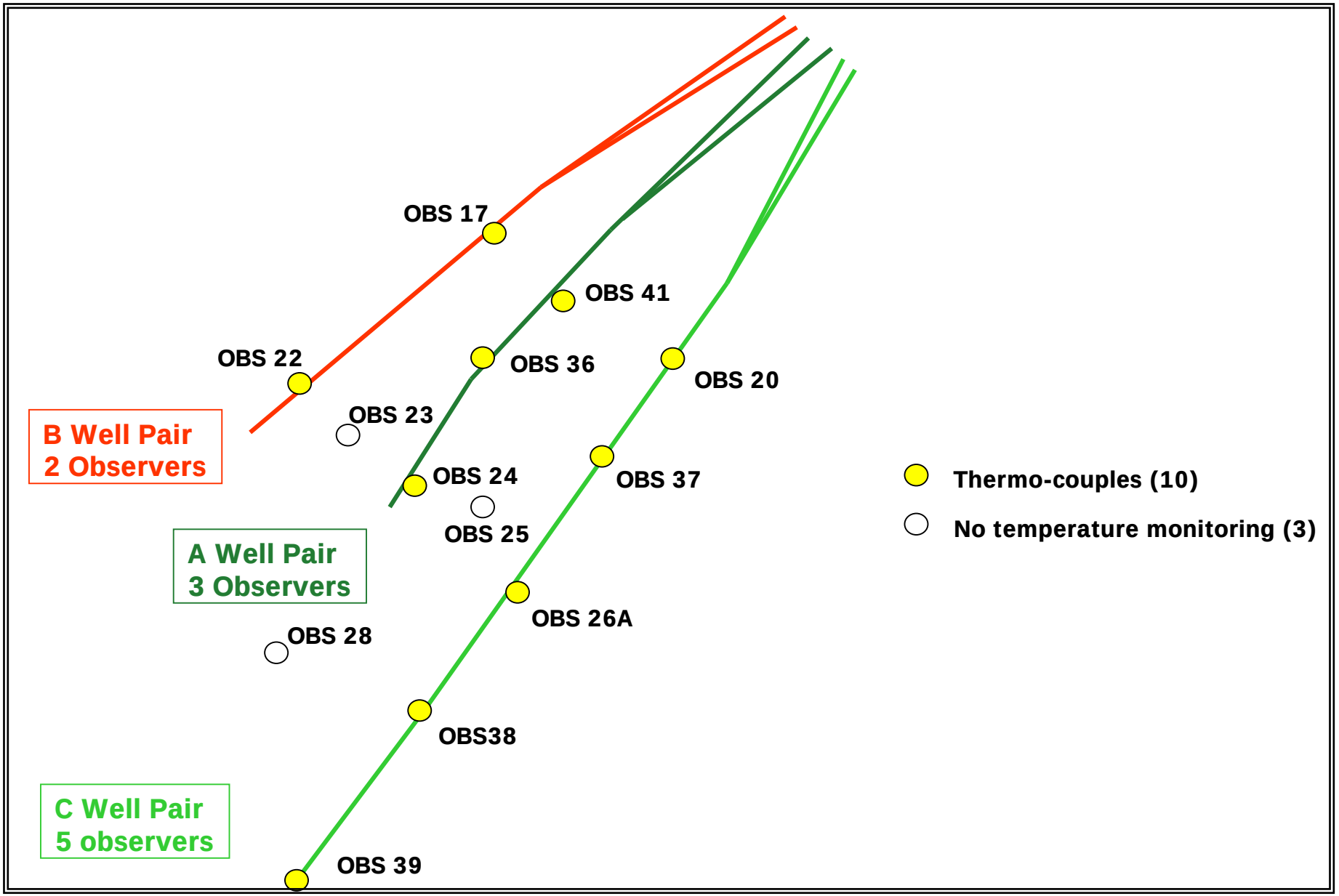
Gamma Ray Color Scale (API)

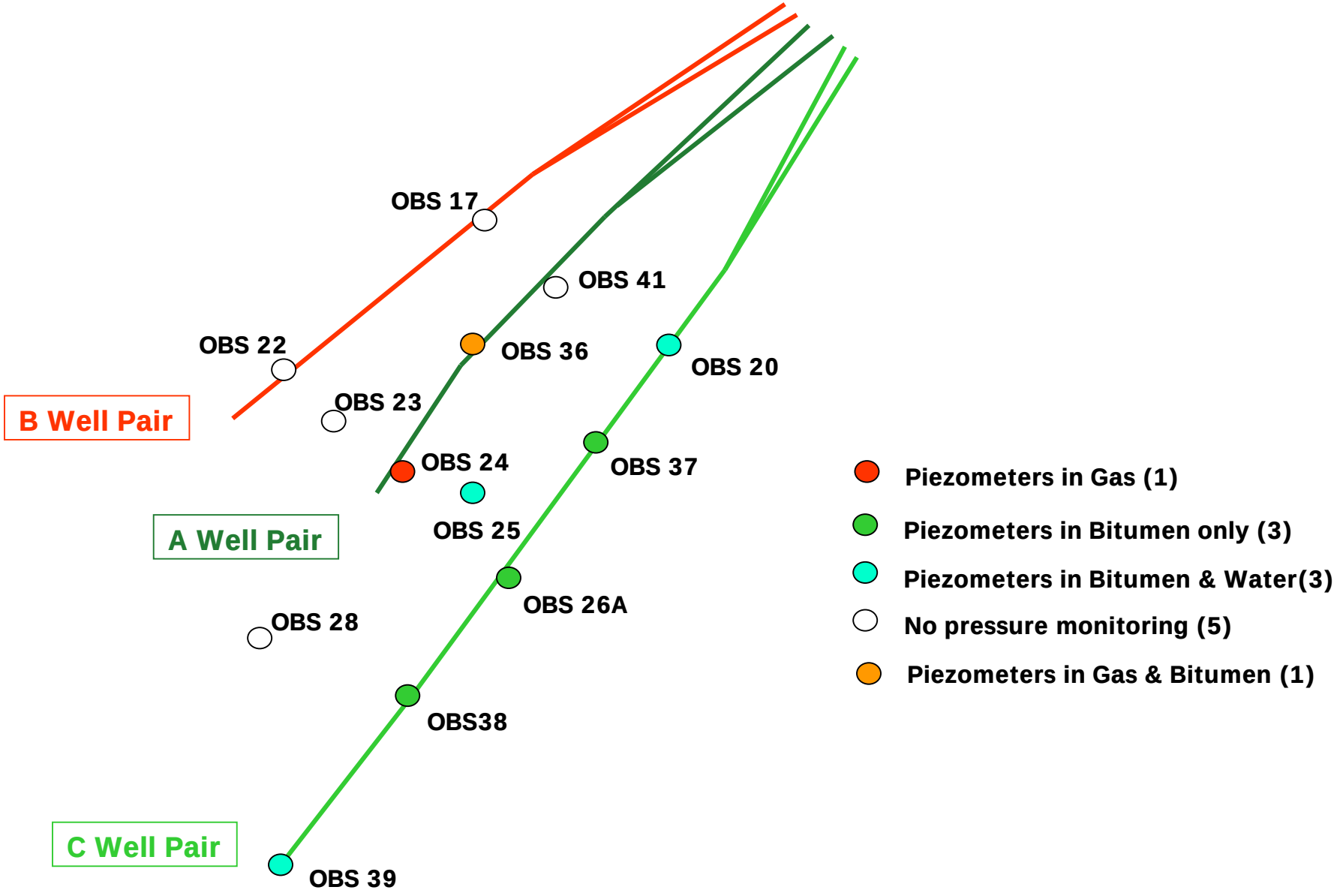


- SAGD Wellpairs
  - Thermocouples in producers and injectors
  - Bubble tubes for pressure measurement on producers
  - Blanket gas for pressure measurement on injectors
- Observation wells
  - 13 total

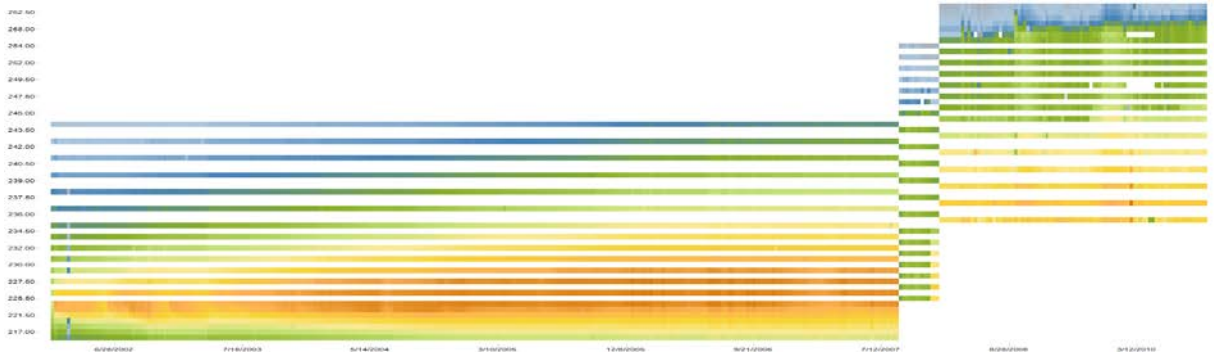


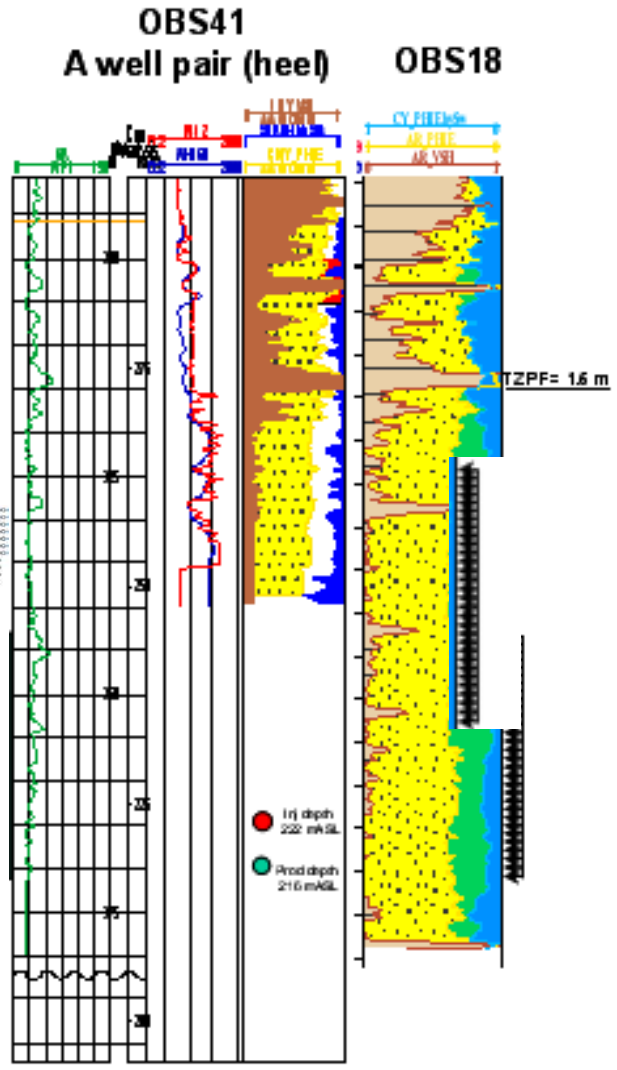
Date	A Well Pair	B Well Pair	C Well Pair
	Chamber pressure (kPa)	Chamber pressure (kPa)	Chamber pressure (kPa)
Feb-14	1701	1693	#N/A
Mar-14	1717	1662	#N/A
Apr-14	1705	1655	#N/A
May-14	1634	1644	#N/A
Jun-14	1638	1642	#N/A
Jul-14	1637	1647	#N/A
Aug-14	1640	1651	#N/A
Sep-14	1641	1659	#N/A
Oct-14	1636	1662	#N/A
Nov-14	1777	1668	#N/A
Dec-14	1594	1653	#N/A
Jan-15	1660	1660	#N/A


OBS 17
OBS 41
OBS 22
OBS 36
OBS 20
OBS 23
B Well Pair
2 Observers
OBS 24
OBS 37
OBS 25
A Well Pair
3 Observers
OBS 26A
OBS 28
OBS38
C Well Pair
5 observers
OBS 39
Thermo-couples (10)
No temperature monitoring (3)

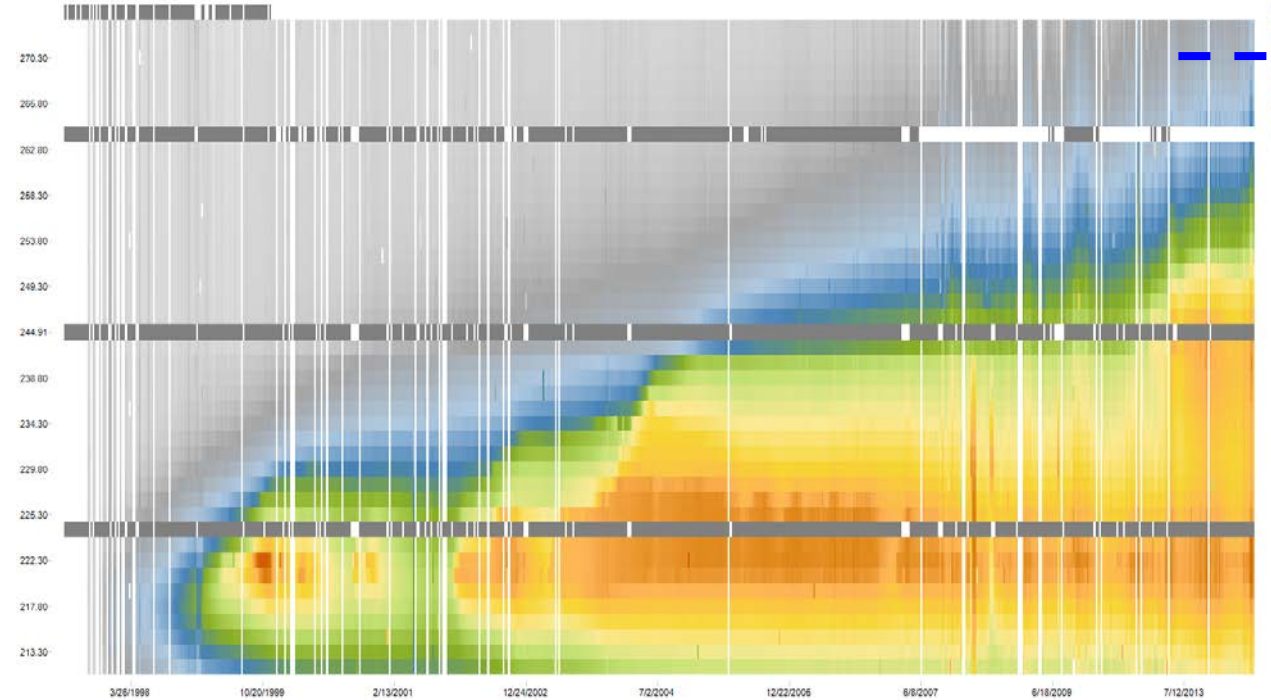

OBS 17
OBS 41
OBS 22
OBS 36
OBS 20
B Well Pair
OBS 23
OBS 24
OBS 37
OBS 25
A Well Pair
OBS 26A
OBS 28
OBS38
C Well Pair
OBS 39
Piezometers in Gas (1)
Piezometers in Bitumen only (3)
Piezometers in Bitumen & Water(3)
No pressure monitoring (5)
Piezometers in Gas & Bitumen (1)

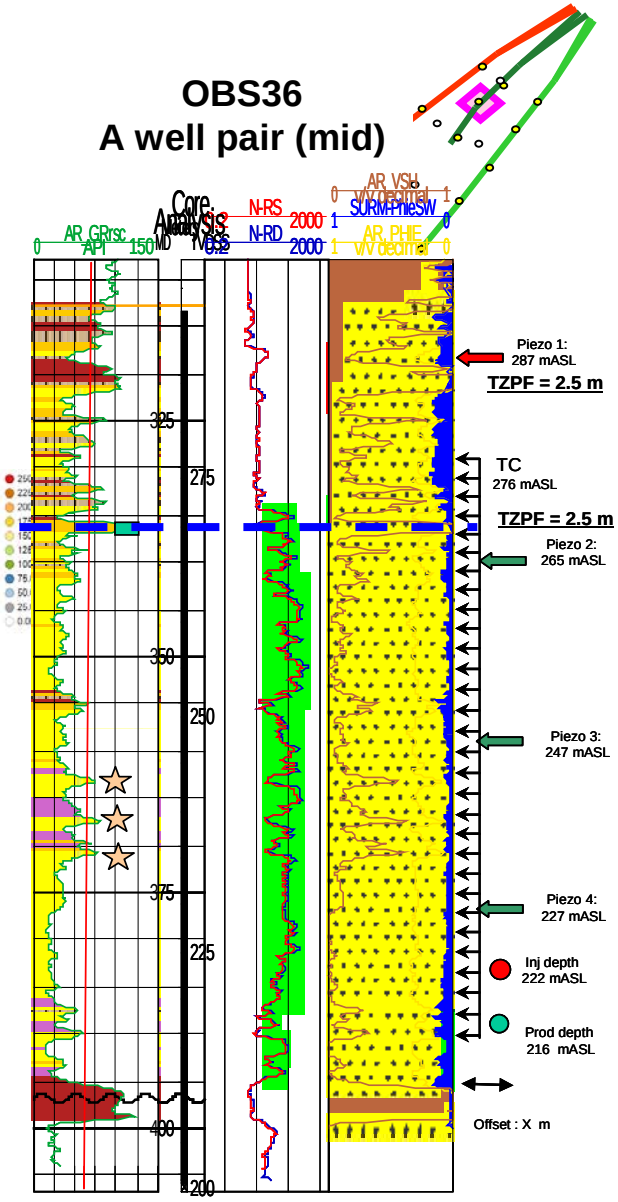
A Well Pair
OBS41 (Heel)

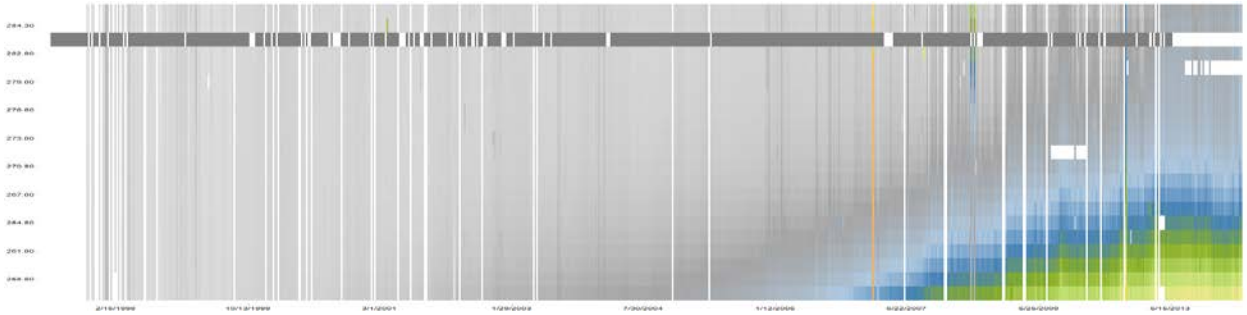


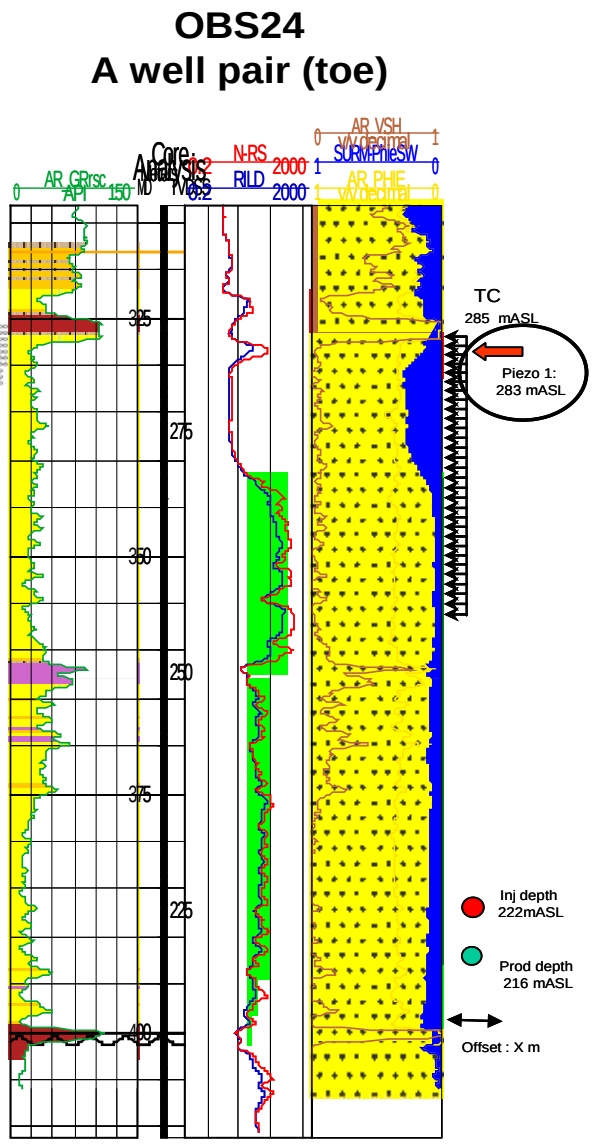


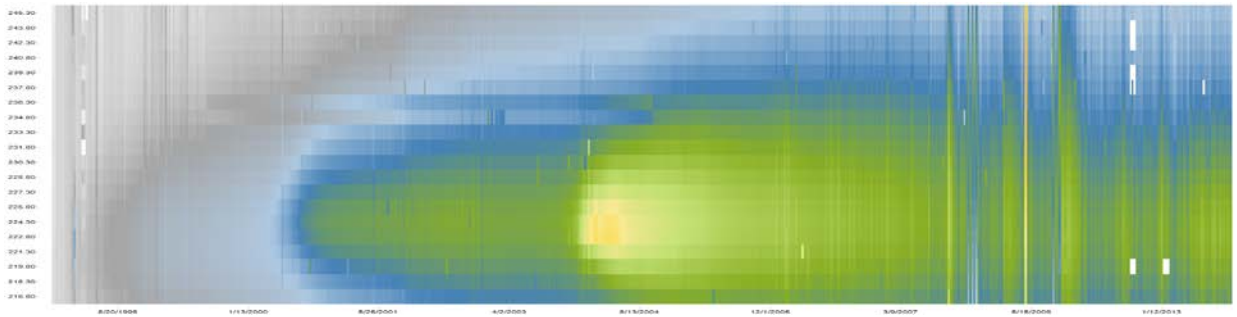
OBS 36 indicates presence of conductive heating past breccia barrier

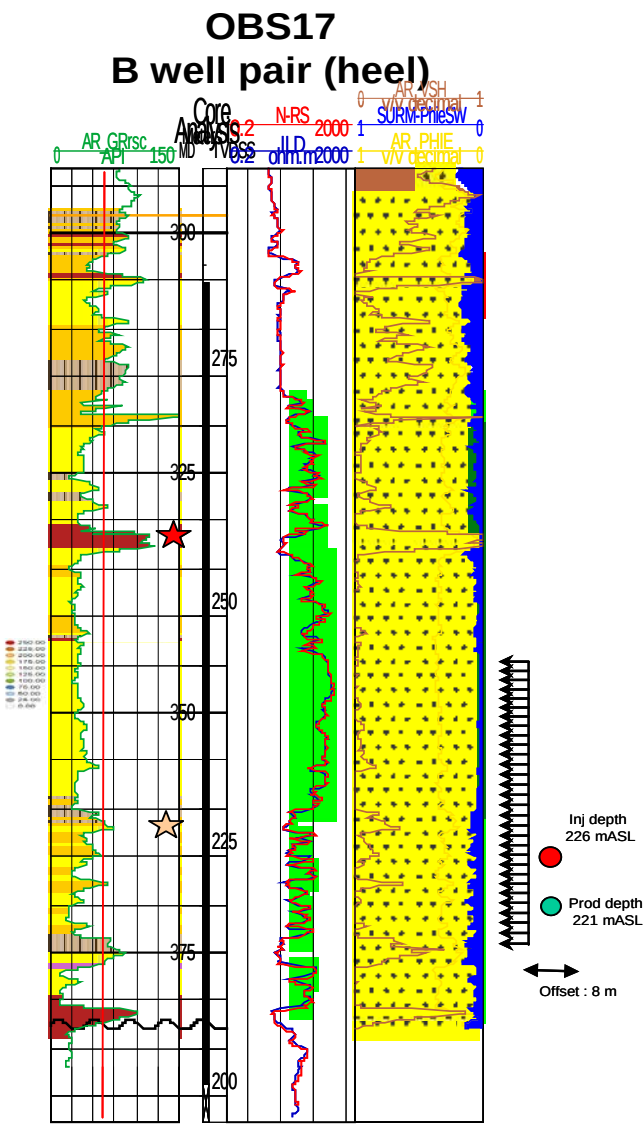




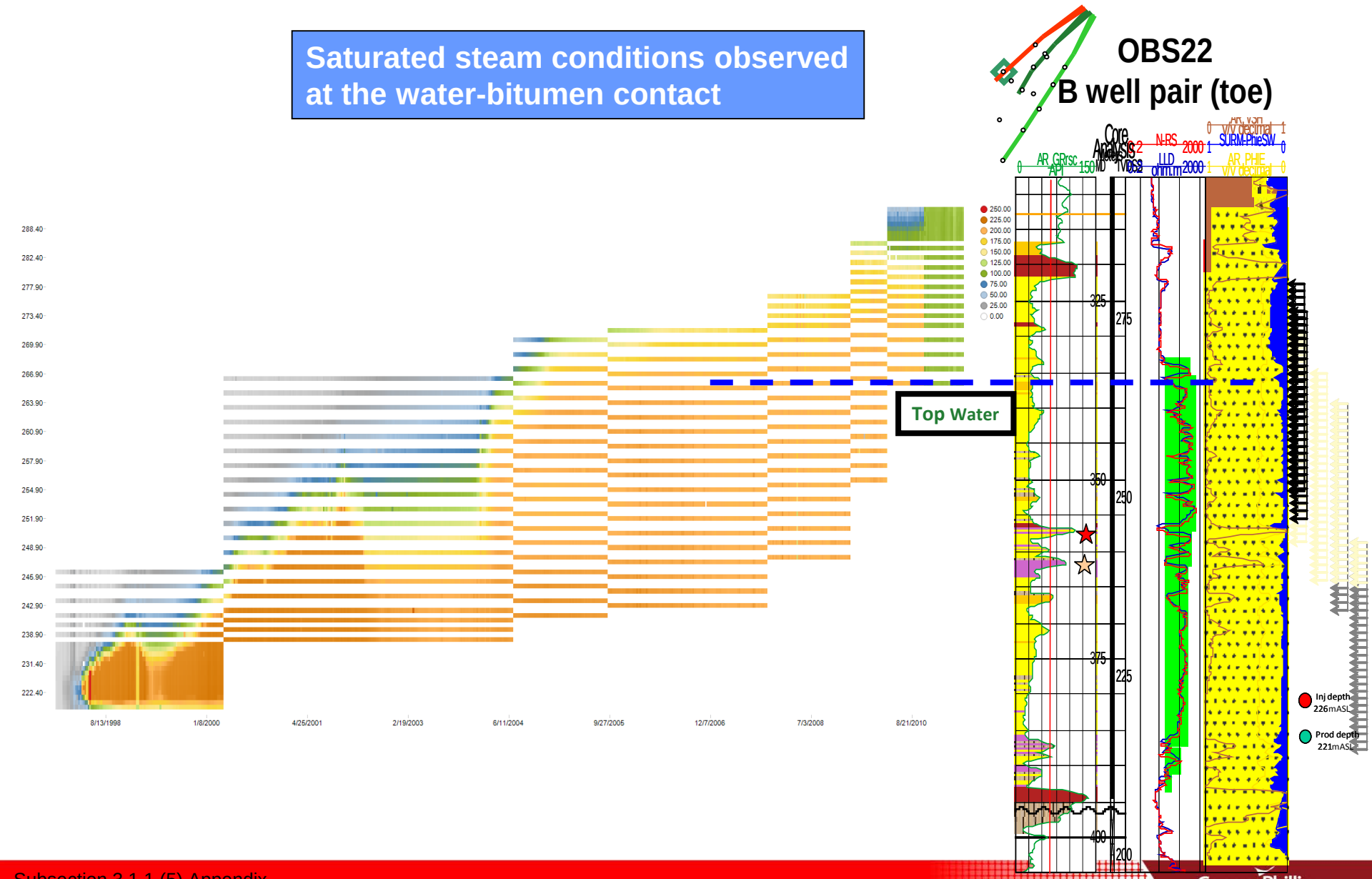



OBS24
A well pair (toe)
AR_GRrsc
API
150
MD
N-RS
RILD
2000
AR_VSH
SURVFilesW
AR_PHIE
TC
285 mASL
Piezo 1:
283 mASL
325
275
350
250
375
225
400
Inj depth
222mASL
Prod depth
216 mASL
Offset : X m



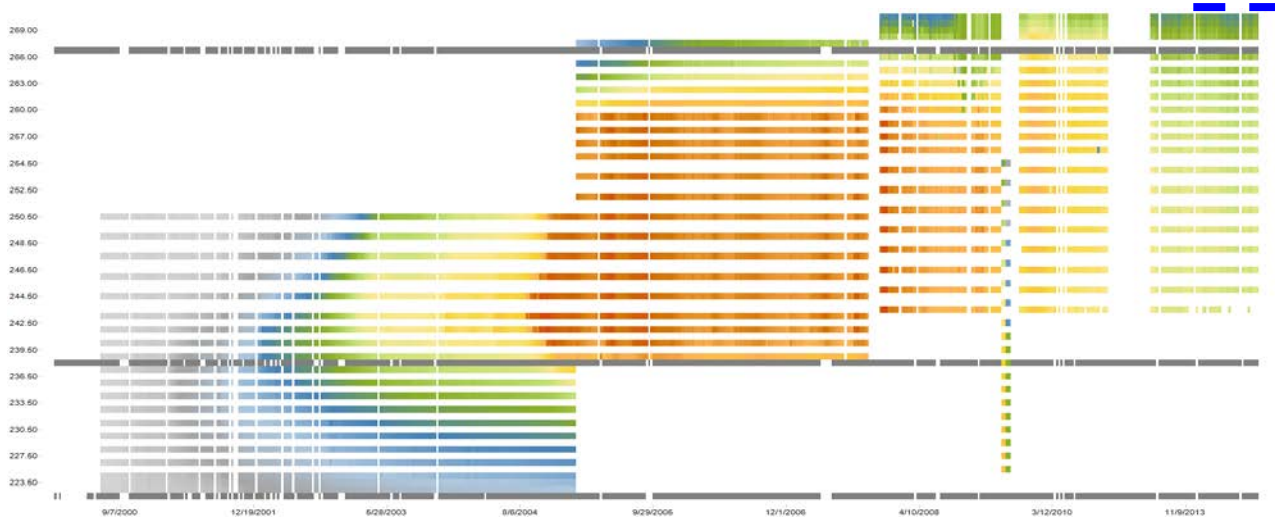

OBS17
B well pair (heel)
AR_GRrsc
API
150
MD
N-RS
2000
ILD
ohm.m
2000
AR_PHIE
SURM-PhieSW
AR_VSH
300
275
325
250
350
225
375
200
Inj depth
226 mASL
Prod depth
221 mASL
Offset : 8 m

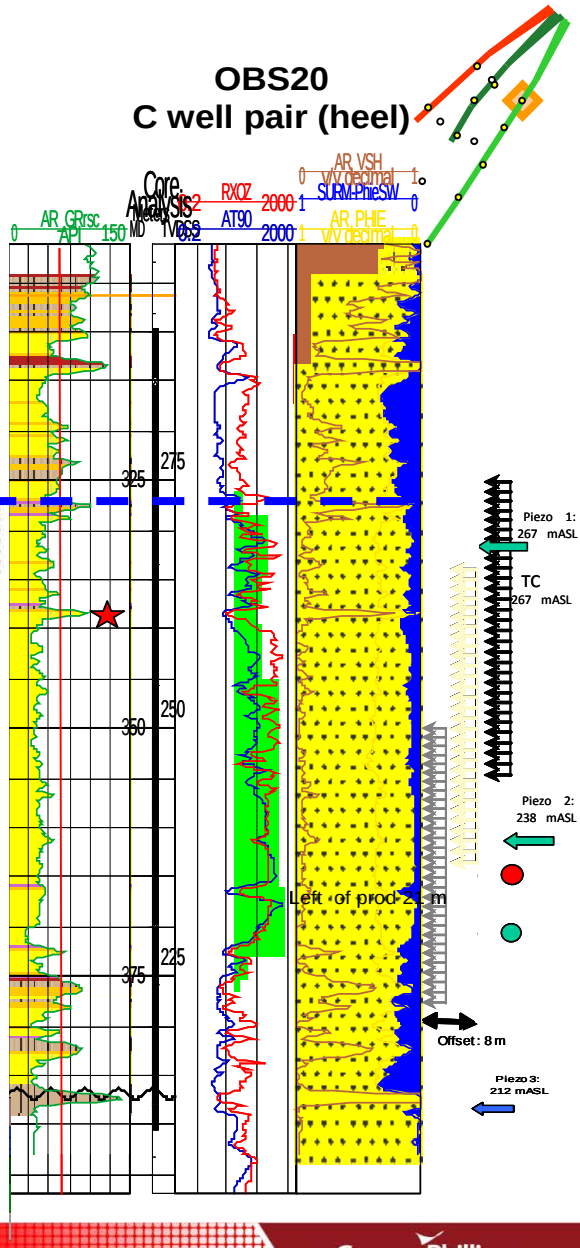
Saturated steam conditions observed at the water-bitumen contact

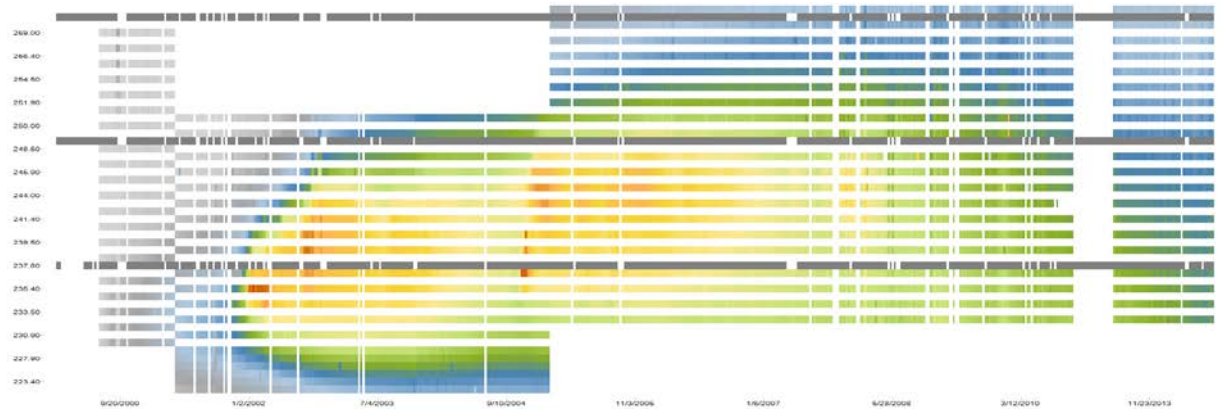


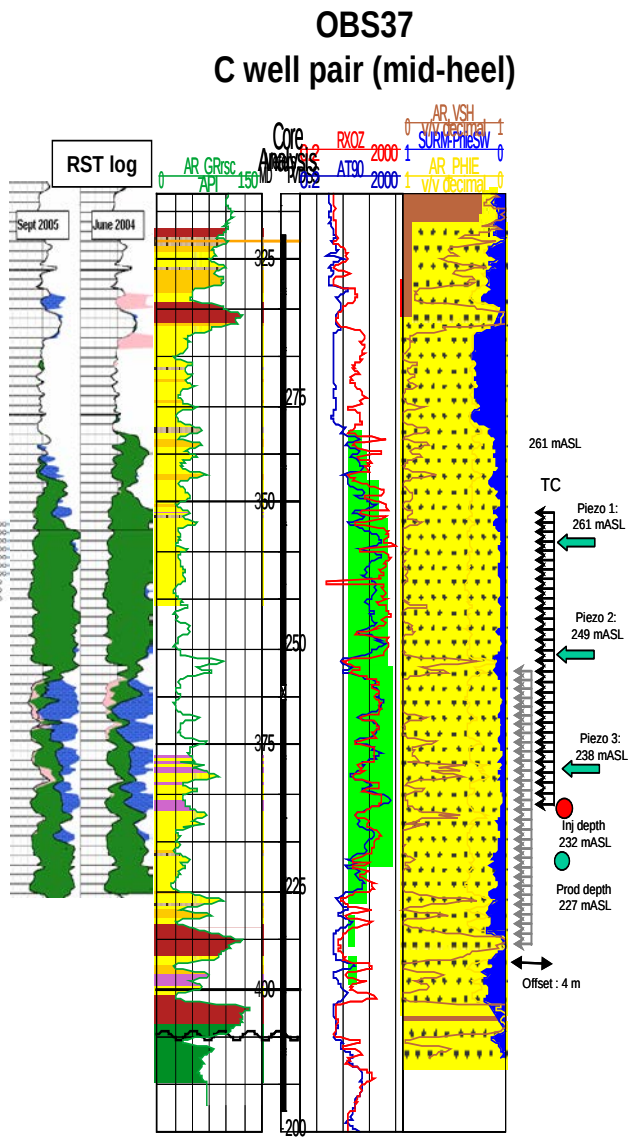
ConocoPhillips

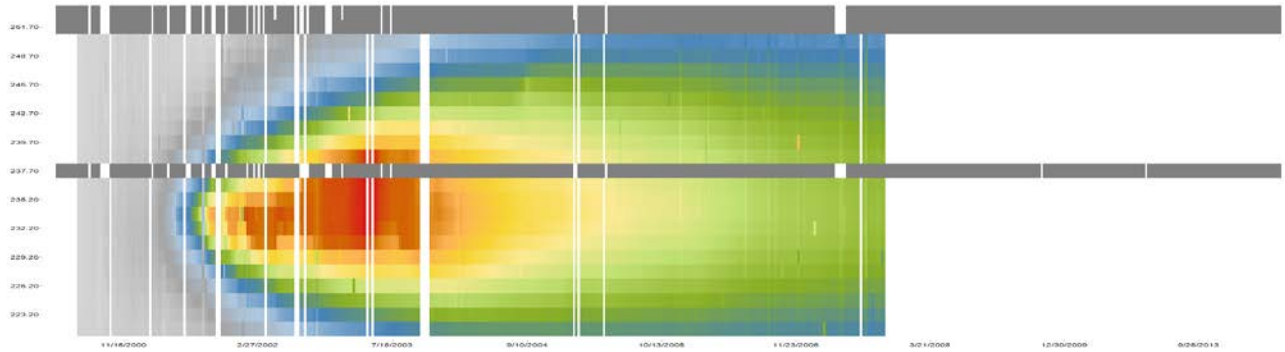
Inability to injection at heel allowed chamber to retract/cool off

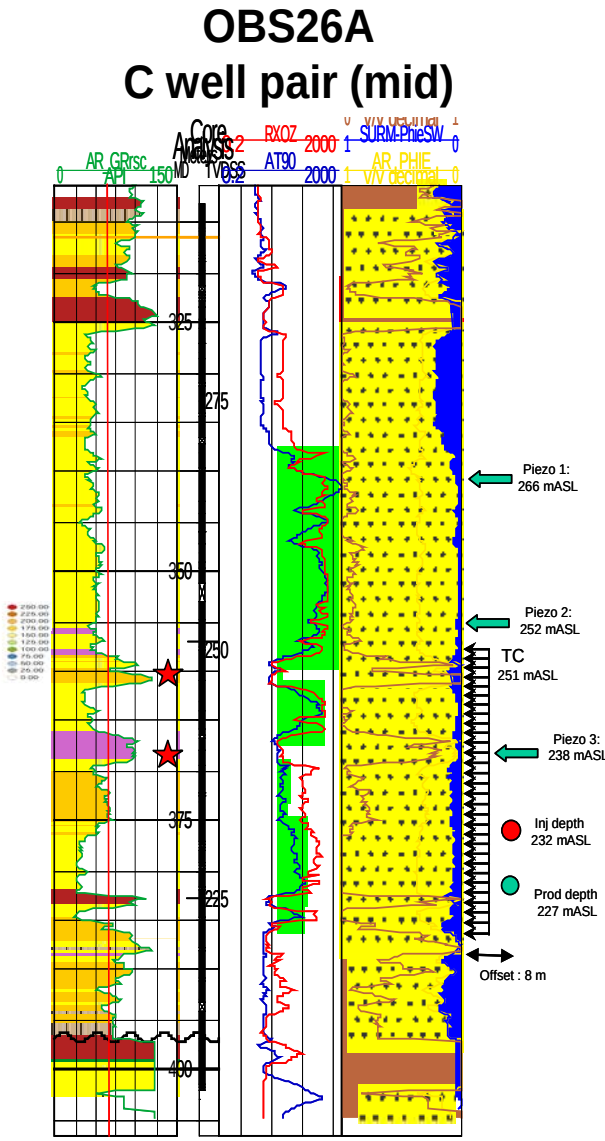


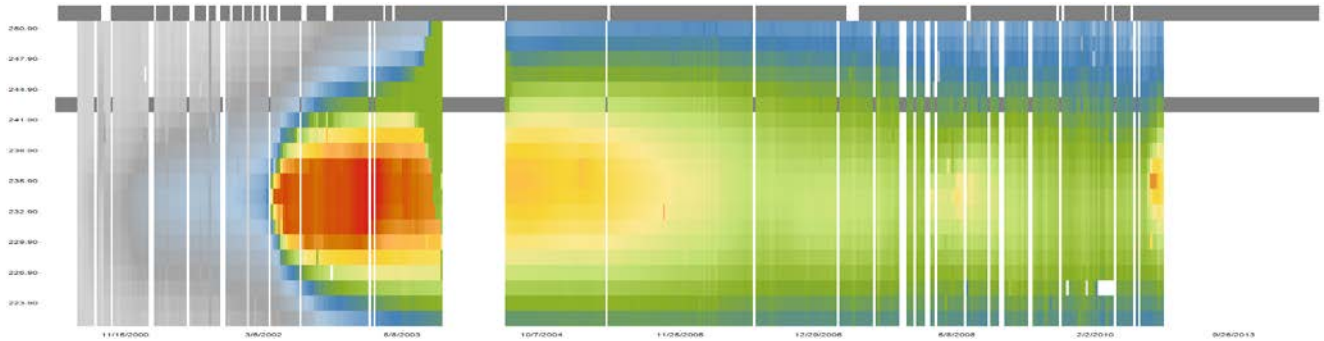


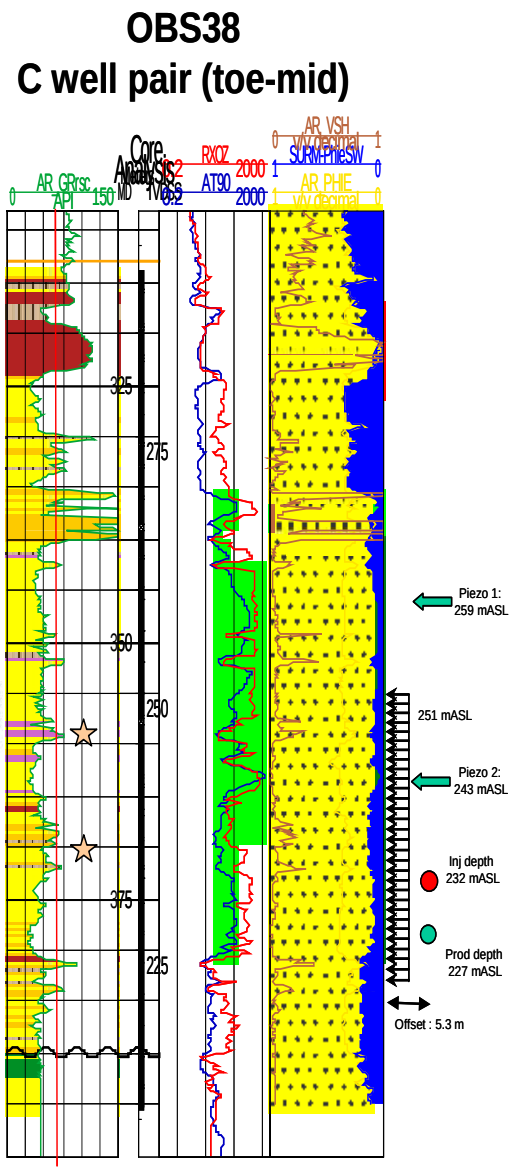



OBS37
C well pair (mid-heel)
RST log
Core Analysis
AR_GRsc
API
RXOZ
AT90
AR_VSH
SURM-PHIESW
AR_PHIE
Sept 2005
June 2004
261 mASL
TC
Piezo 1:
261 mASL
Piezo 2:
249 mASL
Piezo 3:
238 mASL
Inj depth
232 mASL
Prod depth
227 mASL
Offset : 4 m




OBS26A
C well pair (mid)
AR_GRrsc
API
RXOZ
AT90
SURM_PhieSW
AR_PHIE
Piezo 1:
266 mASL
Piezo 2:
252 mASL
TC
251 mASL
Piezo 3:
238 mASL
Inj depth
232 mASL
Prod depth
227 mASL
Offset : 8 m





Instrumentation pulled in 2014

OBS39
C well pair (toe)