

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary Designate

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



January 9, 2017

TO: Daniel Sanchez, UIC Program Manager, OCD

FROM: Phillip Goetze, Engineering Bureau, OCD

RE: SUMMARY OF SECOND INJECTION SURVEY ACTIVITIES FOR THE MARALO SHOLES B WELL NO. 2 (API 30-025-09806; SWD-1127); OWL SWD OPERATING LLC

This document is a summary of recent activities related to the subsequent testing performed by the operator, OWL SWD Operating LLC (OWL), following the meeting in Santa Fe with representatives from OWL on October 24, 2016. The result of the meeting was to have a new survey with an injection profile over the entire open-hole interval along with an additional effort to be conducted by OWL to demonstrate that the injection interval is not hydrologically connected with the Capitan Reef aquifer system. OWL designated Mr. Chad Kronkosky, P.E., CEK Engineering LLC (CEK) of Lubbock, TX as the principal investigator for the effort.

General Notes: The well was initially tested in September 2016 without any modifications or maintenance of the injection interval. Results of this first survey activity were inconclusive with regards to the distribution for the entire permitted interval due to debris in the borehole. However, the pre-survey testing of the well did not demonstrate upward migration of fluids between the production casing and the intermediate casing or any issues with the existing tubing and packer system.

Recent Activities: Consultant for OWL provided a Sundry NOI to the District Supervisor for the second injection survey on November 15, 2016, following discussions on possible deepening of the exiting open-hole interval to provide additional borehole depth to accommodate survey logging tools. This proposal was withdrawn by the consultant and the final proposed plan included only a cleaning of the borehole to the original depth of 3055 feet BGS.

Prior to testing of the injection interval, the contactor reconfigured and replaced the valve recently installed in the 8⁵/₈-inch casing.

OWL activities at the well were initiated on November 28, 2016, and completed on December 9, 2016. A detailed summary of daily reports by OWL's contractors is attached. Most notable items of the activities upon cursory review were:

1. the original plan to run the coil tubing and clean out the borehole with the injection tubing in place was not successful requiring the removal of the injection tubing for the complete cleaning of the injection interval;

2. injection survey was only conducted with only one rate of 5 BPM;
3. spinner (Indepth Injection) survey found no indications of leakage in the vicinity of the squeezed perforations; and
4. both surveys (Pump-In Tracer and Indepth Injection Profile) were able to record information over the deepest open-hole interval not tested in the first test activities. Copies of the test results as submitted by OWL are attached.

The tubing and packer was replaced in the well on December 9. A mandatory mechanical integrity test was conducted on the well and witnesses by Division, allowing the well to return to injection operation.

Division personnel were present at the wellhead to witness the actual testing activities. No issues or unusual circumstances occurred at the wellhead during the cleanout and testing activities.

Future Activities:

1. Review of final report to be submitted by OWL within the next two weeks;
2. Continued compilation and verification of hydrology data offered by the USGS and NMOSE for this area of the Capitan Reef aquifer system;
3. Complete effort to compile and correlate available geophysical logs in area to confirm Hiss's interpretation (as summarized in NMBGMR Resource Map 6) and compare with preliminary cross-sections provided by CEK;
4. Continued discussions with BLM and NMBGMR personnel for technical input and assistance in review of available data; and
5. Prepare and submit final report of findings with recommendations to Director.

Attachments:

Maralo Sholes B No. 2 Well Diagram
OWL SWD Operating LLC: Daily Summaries for Second Injection Surveys
OWL SWD Operating LLC: Results of Indepth Injection Profile
OWL SWD Operating LLC: Results of Pump-In Tracer

Cc: D. Catanach, Director, OCD

Oil Conservation Division
Energy, Minerals, and Natural Resources Department
State of New Mexico



Maralo Sholes B Well No. 2 (SWD-1127)

API 30-025-09806

OWL SWD Operating, LLC

UL P, Sec 25, T25S, R36E, NMPM; Lea County

Footage: 660' FSL & 660' FEL

Spud Date: 5/25/1947

Status: Former Yates Producer

Author: PRG

GL:3021

BORE HOLE & CASING SIZES

CEMENTING HISTORY

[NR: not reported]

150 sxs; calculated to surface

410

NR & 10-3/4"

Santa Rosa fm at 450

[Potential UDWS]

Only "mudded in" reported.

Rustler fm at 990

Rustler (10' water) at 1050

Top of salt at 1120

NR & 8-5/8"

1225

1455

TOC 7" Calculated

150 sxs; 1st calculated TOC: 2000'

**Perforation History
(Based on C-103s in Well File):**

1961: Operator plugs back well from oil zone (2950-2955); perfs added from 2871' to 2910' to develop gas cap.

1981: Operator squeezed perfs from 2871' to 2910' (2000 lbs with 150 sxs); new PBTD 2832'; new perfs from 2733' to 2824'.

2003: Operator TA well; set CIBP at 3055' and cap with 35' of cement; passed pressure test.

2008: Operator reports Yates perfs 2733' to 2824' already squeezed off; tagged fill and cement at 2822'; drill 40' of cement and CIBP and deepen to current TD of 3055'.

Bottom of salt at 2552

2733

2849

2871

2935

2950

3055

Squeezed Perfs (2733-2824)

Packer & 4-1/2" tubing

Plugged Perfs (2871-2910)

NR & 7"

Open Hole TD (1947)

Open-hole PB with perfs at 2871

Open Hole TD (2008)

Injection Survey 9/2/2016

10 Min. Packer Check at 2830'
[No leakage at packer indicated]
20 Min. Upward Channel
Checks at 2865'
[No upward migration indicated]
Fill from 3005' to 3055'
Tracer survey indicates 20% of
fluid volume exiting borehole
from 2935' to 2955'; results
inconclusive.

Capitan Reef at 3320 (Hiss, 1975)

OWL SWD Operating

Maralo Sholes B #2

11/28/16

08:15 arrived location Baker Hughes Coil tubing (Alex Prado, Corey Denzy, Jace Huddle, Rogelio Sosa) rigging up Reservoir Services (Richard Valencia, Abraham Rodriguez) for water transfer, Thru-Tubing Solutions (Darel) thru tubing motor and bit WTX (Robert Pringle) OWL (Tyler Richardson)

09:00 Shut down rig up due to high winds

10:15 Resume rig up

11:00 Renegade wireline (Munny Flores, Zack Ortis) Jim Smith (spinner and temp tools) arrives

11:15 Safety meeting with Baker Hughes and personnel on location

11:30 pressure test wellhead

11:45 RIH with coil and wash out nozzle

13:00 Tagged at 3008' by coil tubing measurements using Nitrogen to lift returns back to surface Reservoir Services monitoring flow back tank for returns Getting back returns equal to amount pumped well not taking fluids

14:30 Leave location coil not making any new hole as of yet

11/29/16

08:30 Arrived location Baker Hughes has been released made no progress on drilling out Will rig up pulling unit this evening to drill out WTX (Robert Pringle) OWL (Tyler Richardson) ESC (Energy Service Company) pulling unit crew (Francisco Silva, Michael Sanchez, Juan Terrazas, Jesse Hernandez)

10:30 Leave location

11/30/16

0830 Arrive location ESC unit laying down 4.5 csg and pkr

09:30 Out of the hole with 4.5 csg and pkr changing tongs and BOP rams from 4.5 to 3.5 for workover string waiting for work string to arrive

10:15 Work string arrives Well-Foam equipment arrives

12:15 RIH with tubing and scraper

12:45 Tongs broke waiting on new set

14:00 Leave location

12/1/16

10:00 Arrive location crew TOO H with tubing and scraper WFR (Wellbore Fishing and Rental tools)(Drew) Ran scraper to 2930'

10:30 RIH with tubing and 6.25 bit (WFR)

11:00 Renegade Wireline arrives

11:30 Rig up Well-Foam continue RIH with tubing and 6.25 bit

12:45 Pickup next joint of tubing and RIH

13:30 Start clean out

14:00 FTH vacuum truck arrives to empty half tank

14:30 Leave location

12/2/16

09:30 Arrive location Renegade Wireline RIH with Temp tool and Spinner wireline td 3072' correlated to casing bottom. Tubing tally td 3057' not using KB on either measurement.

12:00 Leave location

Initial readings on the spinner log show fluids going into the formation at 3005-3010' computed logs should be sent to Santa Fe by @ 12/6/16.

They will run tracer scan after Spinner runs are complete no data on that log yet.

12/3/16

Robert Pringles called said finished running RA Tracerscan (Renegade Wireline Mike Salas) on 12/2/16, 12/3/16 RIH with 3.5 work string to lay down then RIH with 4.5" casing and packer Made it most of the way in will wait til morning to nipple down BOP and circulate packer fluid. Said Tracer showed fluid going into permitted zone. Computed logs will be sent to Santa Fe around 12/6/16 POOH w/4.5" casing and packer lay down 4.5" casing, pick up and RIH w/3.5" work string

12/4/16

Received call from Robert Pringles, said that they had nipped down the BOP and was circulating packer fluid. Tried to test and got communication between 7" and 8 5/8" casings, will trip out of hole and pick 3.5" work string up to find leak

12/5/16

12:40 Arrived location to check on progress, POOH with 3.5" work string, Using plugs and packer to isolate where communication between the 7" and 8 5/8" is coming in at, 13:30 RIH w/work string and packer RIH 8 stands and pressure tested below packer held 500# POOH w/4 stands and pressure check below packer.

12/6/16

09:30 POOH W/3.5 work string and RPB found leak at 30' laying work string down Will dig out cellar to top of 8 5/8 @ 20' below surface and check on where leak is.

11:30 out of the hole laid down work string and pkr

12:15 start rigging pulling unit

13:30 finish rigging down unit

14:00 start digging out cellar

12/7/16

12:00 arrive location, Backhoe is back filling hole so rig can back in and rig back up. A culvert has been put inside the cellar. Will put fence around after finish with the well.

12:30 spotting unit to rig up

13:00 rigging up unit

12/8/16

12:30 arrive location 4.5" csg already in the hole, BOP still on well circulating packer fluid. Will run MIT on 12/9/16 at 09:00

12/9/16

09:00 MIT/BHT-OK Ran with 540# ended with 525# 32 minute test
Energy Services Company (Cleve) Ser#6973 Cal date 12/8/16 1000# spring

Left chart with Robert (OWL) Energy Services Company Pulling unit crew will back fill cellar and connect lines back up after rigging down unit.

11:00 leave location Crew rigging down pump truck from well to connect and pump out plug in packer

13:00 Robert called said unit is rigged down and well is hooked back up.



INDEPTH INJECTION PROFILE

Company		OWL	
Well		Maralo Sholes B #2	
Field		Yates & Seven Rivers	
County		Lea	
State		NewMexico	
Company		OWL	
Well		Maralo Sholes B #2	
Field		Yates & Seven Rivers	
County		Lea	
State		New Mexico	
Location:		API # : 30-025-09806	
SEC		TWP 25S RGE 36E	
Permanent Datum		Ground Level	
Log Measured From		Kelly Bushing	
Drilling Measured From		Kelly Bushing	
Elevation		3021'	
K.B. ?		D.F. ?	
G.L. 3021'			
Date		12/2/2016	
Run Number		run #1	
Depth Driller		3055	
Depth Logger		3070	
Bottom Logged Interval		3070	
Top Log Interval		2700	
Open Hole Size		6.25"	
Type Fluid		water	
Density / Viscosity		n/a	
Max. Recorded Temp.		89 F	
Estimated Cement Top		n/a	
Time Well Ready		upon Arrival	
Time Logger on Bottom		11:20	
Equipment Number		Renegade #95	
Location		Levelland, Tx.	
Recorded By		Jim Smith	
Witnessed By			
Borehole Record		Tubing Record	
Run Number		Bit	
From		To	
Size		Weight	
n/a		n/a	
From		To	
n/a		n/a	
Casing Record		Size	
Surface String		10.34"	
Prot. String		8.56"	
Production String		7"	
Liner			
Weight		Top	
Bottom			

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

GAMMA RAY, CCL, X - Y CALIPER,PRESSURE, TEMPERATURE, 7" FULLBORE SPINNER

DATA ACQUIRED BY " INDEPTH PRODUCTION SOLUTIONS "

LOG TIED IN WITH CSG SHOE @ 2935'

INJECTION RATE WAS 5 BPM DURING INJECTION PASSES

INTERVAL SUMMARY TABLE

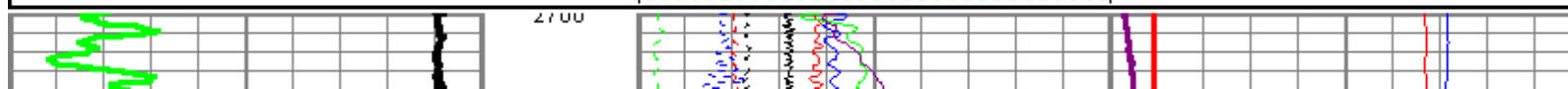
ZONES (FT)				WATER		
				STB/D		
INT.	Top	Bot		QWZT	QWZI	%QWI
1	2900	3005		-6874	0	0%
2	3005	3010		-6874	-3307	48%
3	3010	3025		-3566	-453	7%
4	3025	3040		-3113	-995	14%
5	3040	3050		-2118	-263	4%
6	3050	3055		-1856	-1343	20%
7	3055	3060		-513	-161	2%
8	3060	3062		-352	-352	5%
9	3062	3065		0	0	0%
TOTALS					-6874	100%

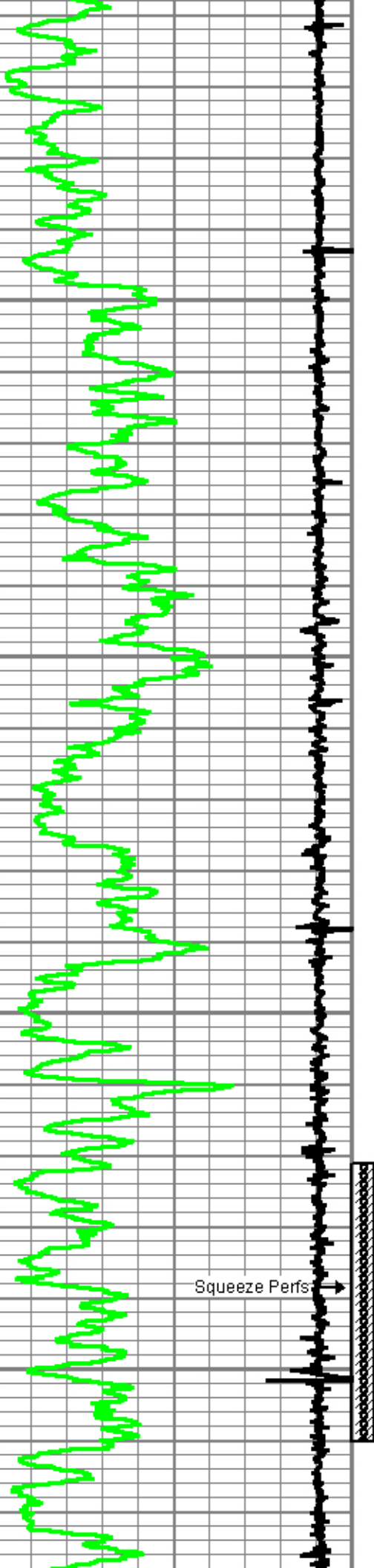


Merged Spinner Passes

Database File: marales sholes b002.db
 Dataset Pathname: merge1
 Presentation Format: sparall2
 Dataset Creation: Fri Dec 02 21:50:29 2016
 Charted by: Depth in Feet scaled 1:240

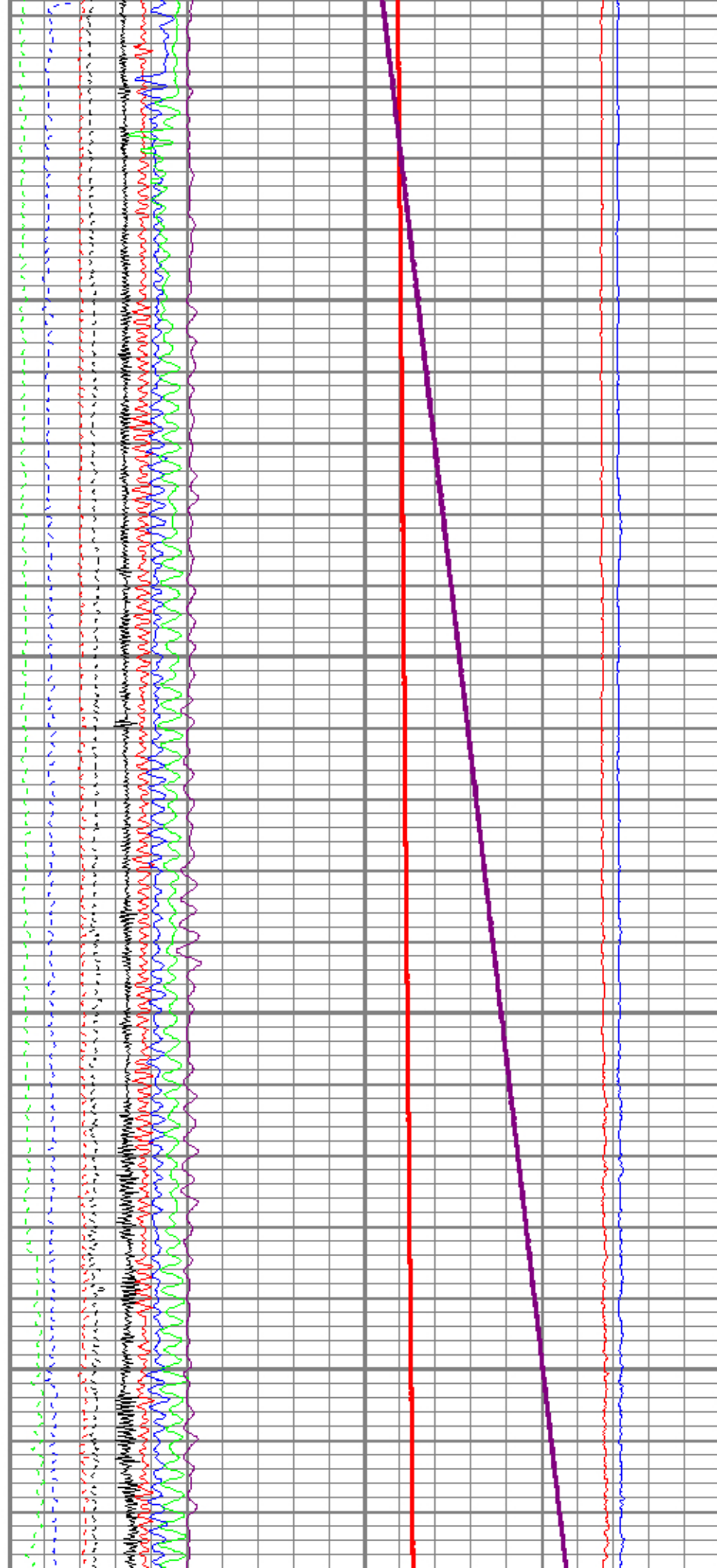
-10	CCL (mV)	1	-16	Spinner Dn 30 FPM (rps)	16	62	Temp Injecting (degF)	75
0	Gamma Ray (GAPI)	50	-16	Spinner Dn 60 FPM (rps)	16	1150	Pressure (psi)	1350
			-16	Spinner Dn 90 FPM (rps)	16	0	Caliper X Arm (in)	10
			-16	Spinner Dn 120 FPM (rps)	16	0	Caliper Y Arm (in)	10
			-16	Spinner Dn 150 FPM (rps)	16			
			-16	Spinner Up 30 FPM (rps)	16			
			-16	Spinner Up 60 FPM (rps)	16			
			-16	Spinner Up 90 FPM (rps)	16			
			-16	Spinner Up 120 FPM (rps)	16			

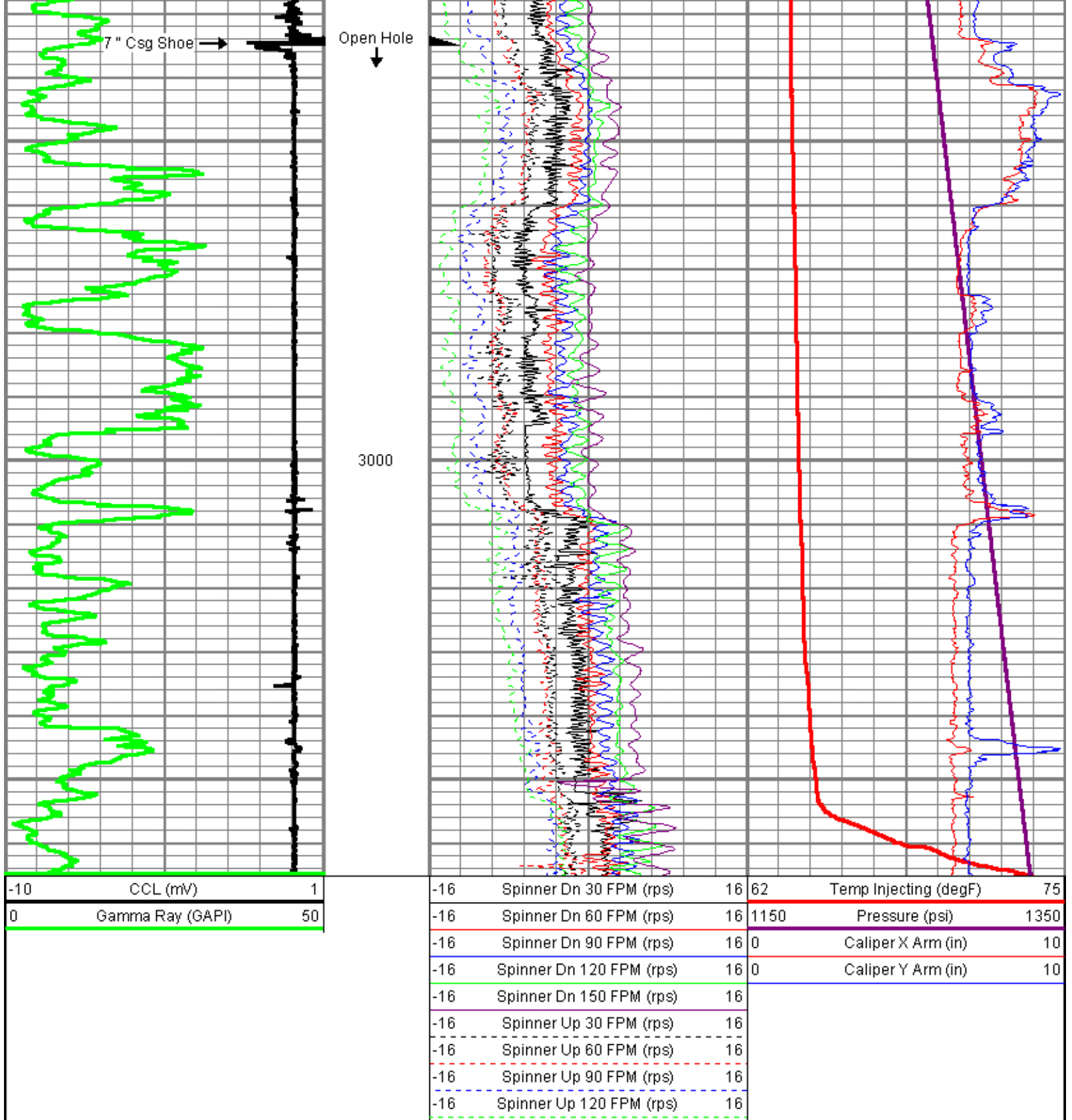




2800

2900



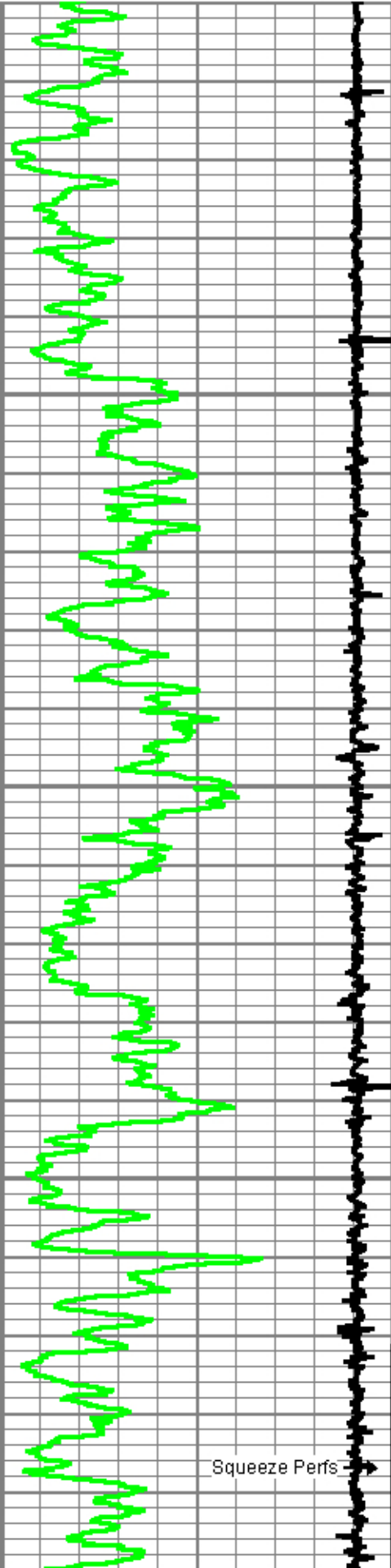


Flowing Vs. Shut-in Temperatures

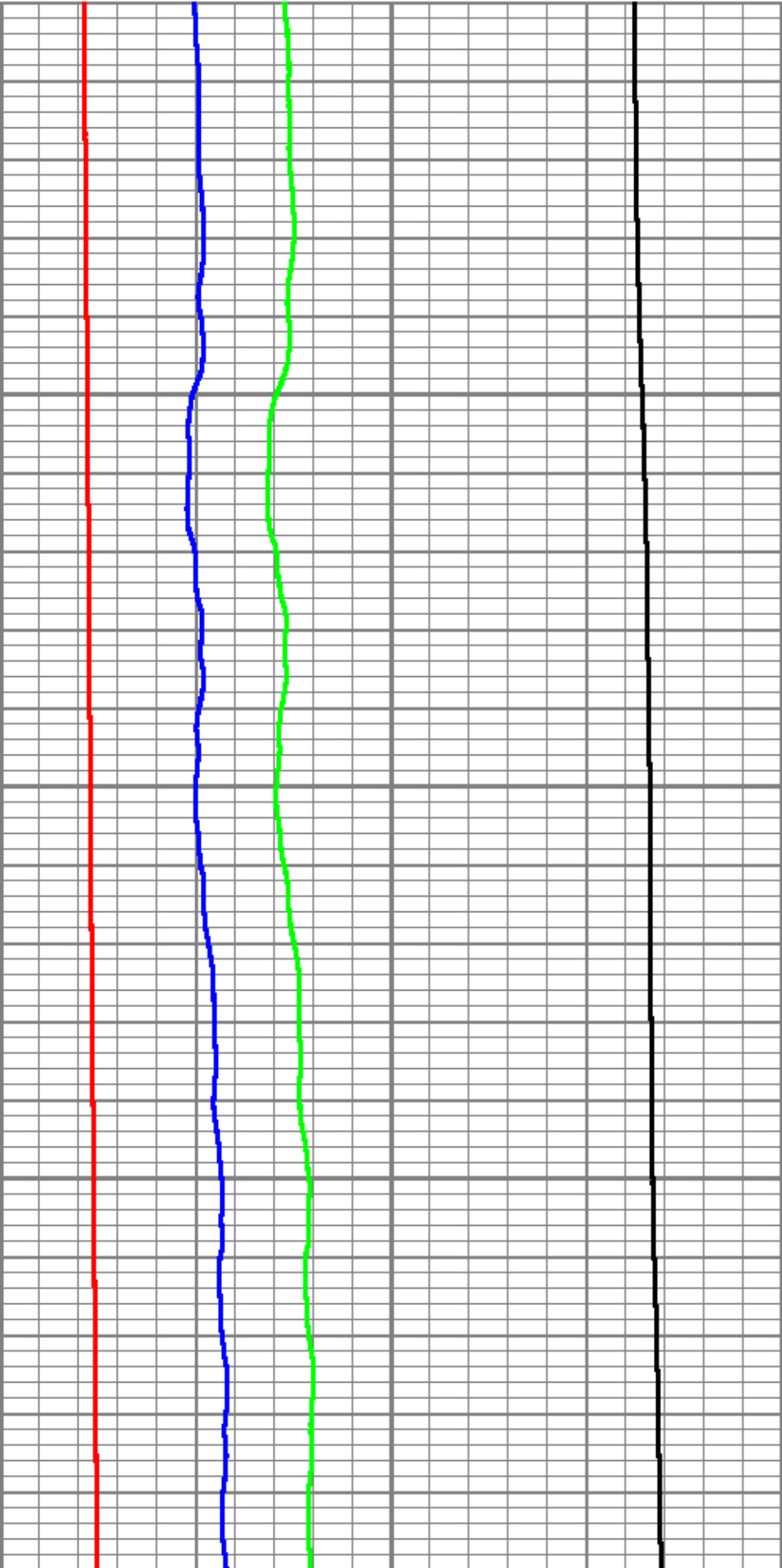
Database File: marales sholes b002.db
 Dataset Pathname: merge2
 Presentation Format: pl_fvst
 Dataset Creation: Fri Dec 02 21:50:36 2016
 Charted by: Depth in Feet scaled 1:240

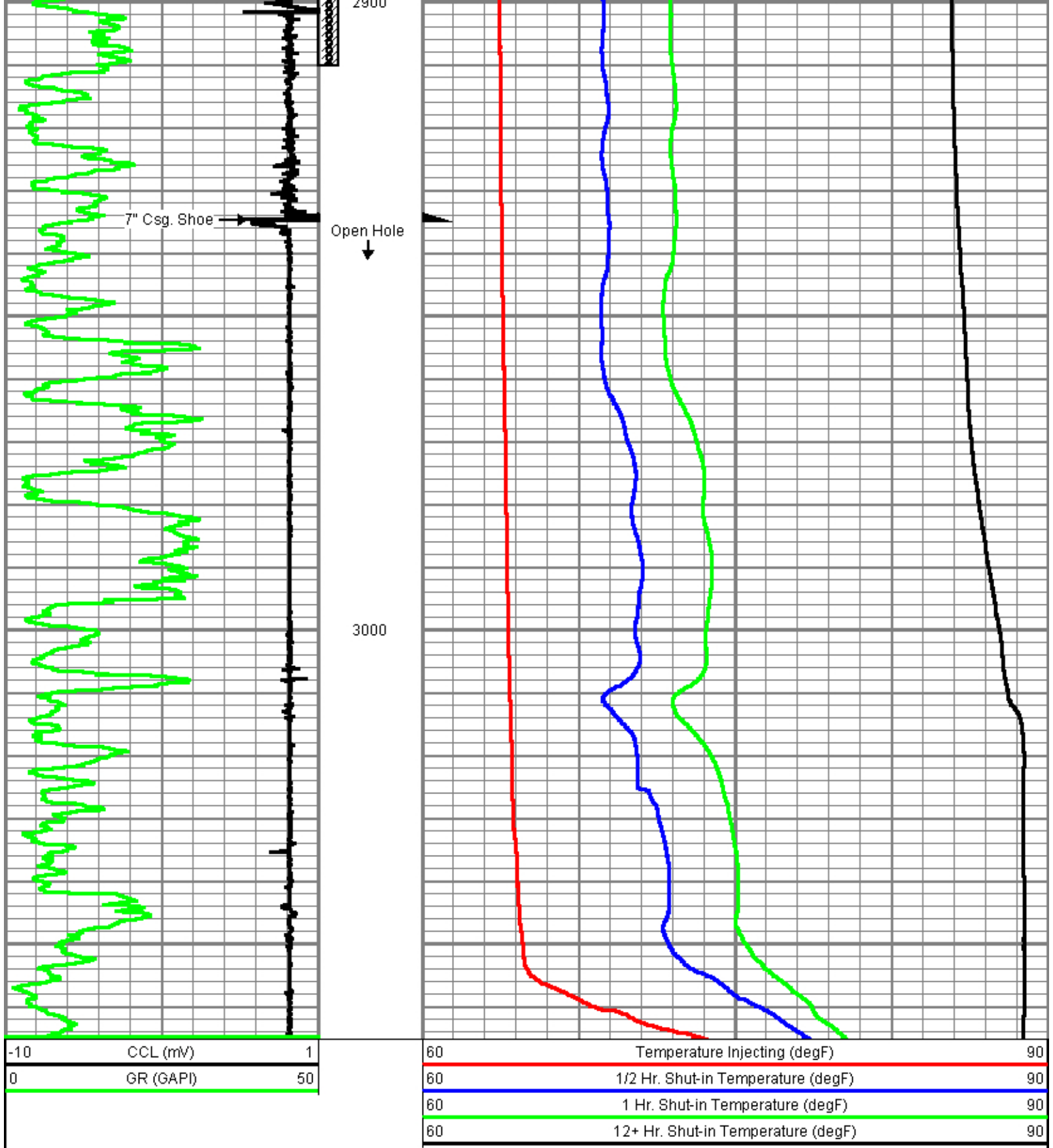
-10	CCL (mV)	1
0	GR (GAPI)	50

60	Temperature Injecting (degF)	90
60	1/2 Hr. Shut-in Temperature (degF)	90
60	1 Hr. Shut-in Temperature (degF)	90
60	12+ Hr. Shut-in Temperature (degF)	90



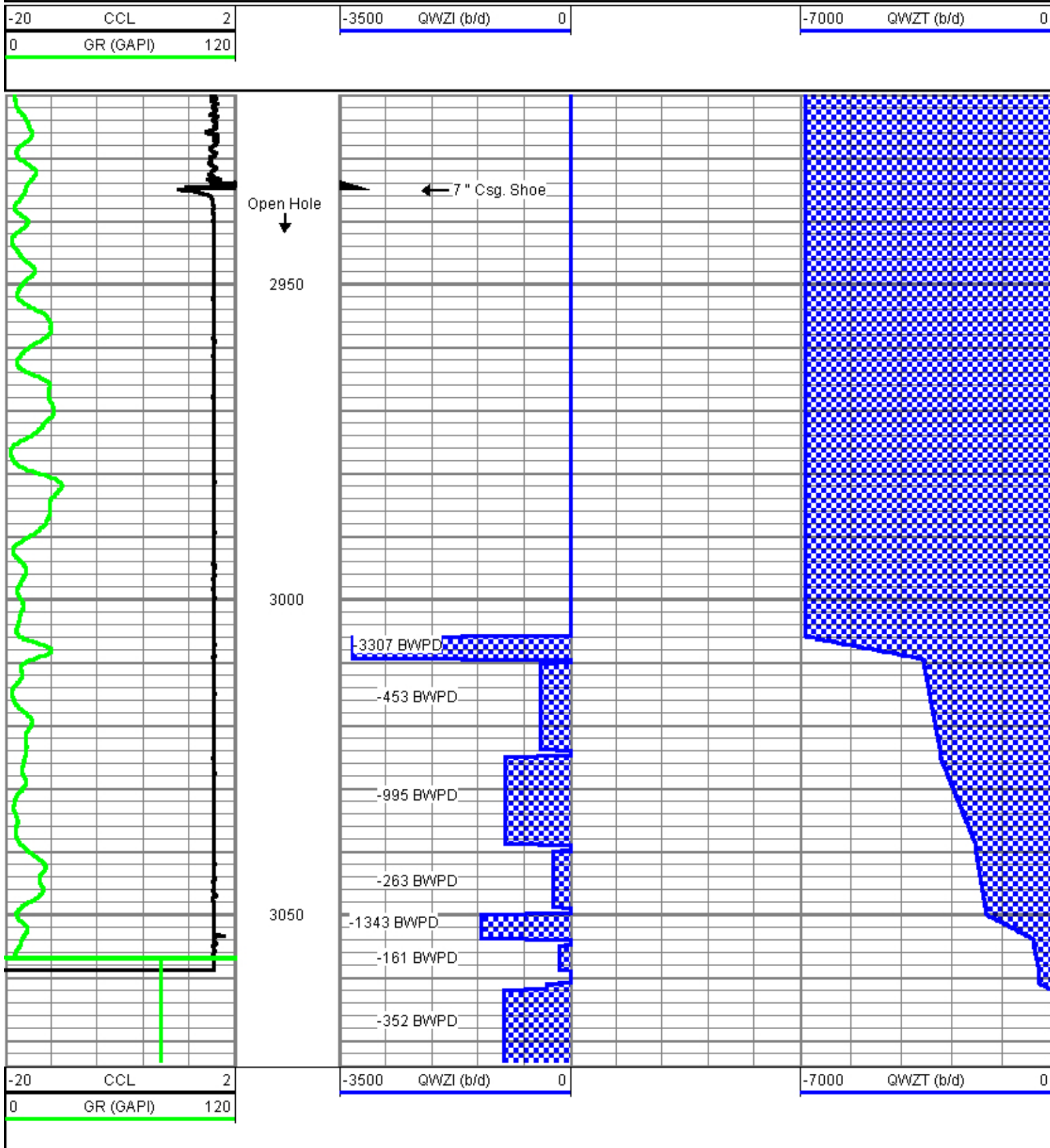
2700
2800
2900





Q Interval & Q Total

Database File: marales sholes b002.db
Dataset Pathname: f1
Presentation Format: pl_qint



Company OWL
 Well Maralo Sholes B #2
 Field Yates & Seven Rivers
 County Lea

