NOISE TOOL &

PRODUCTION LOGGING ANALYSIS

CLIENT	**PETRONAS CARIGALI SDN. BHD.**
FIELD	BEKOK
WELL	BEB-04
RESERVOIR	J-18/19
LOGGED DATE	16th – 19th October 2015

	Approvals			
	Name	**Position**	**Signature**	**Date**
Prepared by	Norfasya Ibrahim	Log Analyst		
Reviewed by	Azzad Hafiz	Sr Log Analyst		
Approved by	Norintan Farina	SDS Gen. Manager		
Received by				

NOTES:

In making interpretations of logs, our employees will give the customer the benefit of their best judgments. But since all interpretations are options based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Table of Content

1.0 SURVEY GENERAL INFORMATION

Logging job was performed on 16th – 19th October 2015. The data acquired with Dimension Bid's Production Logging Tool suite including Noise Tool. Total four surveys were conducted for this well as follow:

Survey No	Conditions
1	Shut In Survey - Tubing– Shut In, Annulus (PCP) – Shut In - 16th October 2015 - Logging Interval : 0 – 2632.1187 m-MDDF (NTO) : 2640 – 2680 m-MDDF (PLT)
2	Shut In Survey - Tubing– Shut In, Annulus (PCP) – Injected - 17th October 2015 - Logging Interval : 0 – 2632.1187 m-MDDF
3	Shut In Survey - Tubing– Shut In, Annulus (PCP) – Bleed - 18th & 19th October 2015 - Logging Interval : 2288.19 - 2313.19 m MDDF 1045.00 - 1105.00 m MDDF } Suspected leak point 0 – 2313.19 m-MDDF

Table 1.0: Survey Conditions

1.1 Production Logging Survey Objective

The objective of this intervention was as follow:

NTO : To identify the source of leakage causing a pressure build-up in the A-Annulus

PLT : To determine the flow contribution at J18/J19 sand after perforate

1.2 **Logging Tool** (Noise & Production)

Dimension Bid PL-Noise tool suite consists of pressure, CCL, GR, temperature, in line spinner (ILS), fluid identification tool (Fluid Density Radioactive and Capacitance Water Holdup), continuous flowmeter (CFS) and Noise Tool were utilized to acquire the data. See attachment 4.2 for details of tool string configuration.

Company	PETRONAS CARIGALI SDN. BHD.
Field	BEKOK
Well No.	BEB-04
Target Zone	J-18/19

1.3 Sequence of Survey Events

Sequence of survey event as extracted from Field Engineer report.

TIME (Hrs)	OPERATION	.DB & .LAS FILE NAME
Condition 1, Well Shut in & Annulus (PCP) Shut In		
LOG DATE : 16th October 2015		
16/10/2015	**Day Shift**	
9:00	Board to platform from Bekok-A to Bekok-B via Setia Budi	
	Handover from Night Shift Crew.	
	Toolbox meeting with all crew.	
	Apply PTW and permit approved.	
	Handover from Night Shift Crew.	
	Continue to RIH with maximum speed 10m/min	
	Log up log down for 50m interval to flush the spinner	
	Perform correlation. Depth shift 3.4m	
	Perform logging interval 2640-2680 for 10/20/30m/min	SI_D10, SI_D20, SI_D30, SI_U10, SI_U20, SI_U30

	Perform station stop for 2642mMDDF & 2672mMDDF for 5minutes	SI_ST2642, SI_ST2672
12:30	Perform station stop for NTO starting from EOT 2632mMDDF every 10m for 1minutes	
	Perform station stop 2310 - 2280mMDDF for every 1m for 1minute	/BEKOKB/B4/PLTN TO/_dlog11
	Topup diesel	
	Perform housekeeping at worksite	
	Handover to Night Shift Crew.	
	Night Shift	
18:30	Handover from Day Shift	
	Continue PLT-NTO-SGS run	/BEKOKB/B4/PLTN TO/RIH001
	Perform NTO station stop every 10 meter	
5:00	Tool reach surface	
	close LMV and CV	
	Bleed pressure	
	Break QTS, laydown toolstring	
5:45	Perform physical check and service tools	
	Perform housekeeping at worksite	
6:00	Topup diesel	
6:30	Handover to Dayshift crew	

Condition 2, Well Shut in & Annulus (PCP) Injected		
LOG DATE : 17th October 2015		
9:00	Board to platform from Bekok-A to Bekok-B via Setia Budi	
	Handover from Night Shift Crew.	
	Toolbox meeting with all crew.	
	Apply PTW and permit approved.	
	Handover from Night Shift Crew.	
	Change o-ring for the tool prior to run	
	Function test tool prior 2nd condition. OK	
	Zeroing tool at maindeck.	
	Catch tool	
	Inform production guy to inject gas lift to create condition for next run. Inject gas lift 1500psi	
11:30	RIH with maximum speed 10m/min	/Bekok/B04/NTO2ND/RIH01
	Perform correlation. Depth shif 3.5m	
	Perform station stop for NTO starting from EOT 2632mMDDF every 10m for 1minutes	
	Perform station stop 2310 - 2280mMDDF for every 1m for 1minute	/Bekok/B04/NTO2ND/_dlog10
	Topup diesel	
	Perform housekeeping at worksite	
	Handover to Night Shift Crew.	

	Night Shift	
18:30	Board to BeB	
	Handover from Day Shift crew	
	Continue NTO logging for second pass	
	Perform Station Stop every 10 meter for 1 minute	
6:45	Tools reach surface	
	close CV and LMV	
	Bleed pressure inside lubricator	
	break off QTS, laydown toolstring	
7:00	Perform maintenance on tools	
	Perform housekeeping at work site	
	Topup diesel	
7:30	Handover to Day Shift crew	
Condition 3, Well Shut in & Annulus (PCP) Bleed Off		
LOG DATE : 18th & 19th October 2015		
18/10/2015	**Day Shift**	
9:00	Board to platform from Bekok-A to Bekok-B via Setia Budi	
	Handover from Night Shift Crew.	
	Toolbox meeting with all crew.	
	Apply PTW and permit approved.	
	Handover from Night Shift Crew.	

	Send data for NTO 2nd run to town	
	Waiting decision from town to run	
14:30	Received further instruction from town to proceed with 3rd condition	
	Prepare tool string prior run	
	Perform function test. OK	
	Inform production to stop gas lift injection	
18:00	RIH with maximum speed 10m/min	
	Topup diesel	
	Perform housekeeping at worksite	
18:30	Handover to Night Shift Crew.	
	Night Shift	
18:30	Board to platform	
	Handover from Day Shift crew	
	Toolbox meeting with all crew	
	Apply PTW and permit approved	
	Continue RIH	
	RIH with 10m/min to 2320mMDRKB. Start correlate depth, depth shift 5.4m	
4:00	Bleed PCP	
	Monitor THP and FPCP every 15 minutes	
5:00	Perform station stop every 1 meter for 1 minute from 2320 - 2280mMDRKB	/Bekok/b04/NTO3rd/_dlog12

	Log up 5m/min to 1050mMDRKB	/Bekok/b04/NTO3rd/RIH001
	Topup diesel	
	Housekeeping at worksite area	
6:30	Handover to Day Shift crew	
19/10/2015	**Day Shift**	
9:00	Board to platform from Bekok-A to Bekok-B via Setia Budi	
	Handover from Night Shift Crew.	
	Toolbox meeting with all crew.	
	Apply PTW and permit approved.	
	Handover from Night Shift Crew.	
	Continue to log up 5m/min	
	Record THP/FPCP vs Time	
11:30	Perform station stop every 1 metre for 1minute for interval 1095 - 1050mMDDF	/Bekok/b04/NTO3rd/_dlog12
	Continue to log up 5m/min to surface	
16:30	Tool reach surface.	
	Close LMV & CV. Bleep pressure. Disconnect tool and lay down.	
	Stop bleed off PCP.	
	Rig down PCE	
	Topup diesel	
	Perform housekeeping at worksite	

18:30	Handover to Night Shift Crew.	
	Night Shift	
18:30	Board to Bekok B	
	Handover from Day Shift crew	
	Toolbox meeting with all crew	
	Apply PTW and PTW approved	
21:00	Perform PPM on powerpack	
	Test run powerpack. OK	
0:00	Perform PPM on air compressor	
	Test run air compressor. OK	
3:00	Perform maintenance to downhole tools	
	Topup diesel	
6:30	Perform housekeeping at worksite	
7:30	Handover from Day Shift crew	

1.4 Logging Interval Summary

Noise Job logs – Shut In Surveys				
Direction	Depth from (mMDDF)	Depth to (mMDDF)	Log Speed (m/min)	Comment
Log down	0	2632.1187	10	Condition 1, All sensors worked perfectly
Log down	0	2632.1187	10	Condition 2, All sensors worked perfectly
Log up	2320	0	5	Condition 3, All sensors worked perfectly

PLT Job logs – Shut in Surveys				
Direction	Depth from (mMDDF)	Depth to (mMDDF)	Log Speed (m/min)	Comment
Log up	2680	2640	10	All sensors worked perfectly
Log down	2640	2680	10	All sensors worked perfectly
Log up	2680	2640	20	All sensors worked perfectly
Log down	2640	2680	20	All sensors worked perfectly
Log up	2680	2640	30	All sensors worked perfectly
Log down	2640	2680	30	All sensors worked perfectly

1.5 Depth Control/correlation

Depth correlation is done by tie in Well Schematic Accessories with Casing Collar Locator (PL-CCL) as well as Open Hole Gamma Ray (OHGR) with Gamma Ray reading from PL string (PL-GR). Both are perfectly matched.

2.0 SURVEY FINDING

2.1 General Overview

Production and Noise Logging (PL-NTO) was done for BEB-04 on 16th to 19th October 2015. The data acquired with Dimension Bid's Production Logging Tool suite including Noise Tool. In general, PL-NTO data were acquired good and interpretable.

Total four surveys were conducted as in **Table 1.0.**

2.1.1 Noise Tool Logging Overview (NTO)

Depth match was done using PL-CCL with well accessories from well schematic and both are perfectly matched. Total three surveys were conducted for NTO. For 1st and 2nd survey, the logging was done from surface to 2632.1187 m-MDDF with 10 m/min (log down). Then station stop was done at suspecting leak area (2310 – 2280 m-MDDF), the stop was done every 1m for 1 minute. From both 1st and 2nd condition, no noise and temp anomaly was detected.

Then, 3rd condition is proposed for further investigation. For this condition, there was two suggesting leak point depth, 2298.19 to 2303.19 m MDDF and 1055.00 to 1095.00 m MDDF. The logging was done from 2320 m-MDDF to 1050 m-MDDF with 5 m/min (log up). Then station stop was done at suspecting leak area (2310 – 1050 m-MDDF), the stop was done every 1m for 1 minute. From this survey, noise tool recording good acoustic anomaly in range 2301 to 2303 m-MDDF supported by temperature anomaly deflection suggesting leak point. Combination of Station Stops recorded highest Amplitude at depth in range 2301 to 2303 m-MDDF tally with POOH data.

Tubing pack-off was set after confirm the leak area, upper tubing stop set was at 2295 m-MDDF and lower tubing stop set was at 2305 m-MDDF. After pack-off, PCP was bleed. First reading after pack-off (1900hr, 20th October 15) was THP= 1000 PSI and PCP= 600 PSI. After a few hour bleed (0400hr, 21st October 15), PCP reading drop to 0 PSI with THP reading maintain 1000 PSI.

2.1.2 Production Logging Overview (PLT)

The logging was done between 2640 m-MDDF to 2680 m-MDDF with 3 different speeds, 10, 20, and 30 m/min for Shut In and Flowing Survey.

The cable speed was maintained at the required steady speeds necessary for performing satisfactory in-situ spinner calibrations for all survey conditions.

Open Hole Gamma Ray (OHGR) with Gamma Ray reading is tally with PL string (PL-GR) for the depth correlation.

From density data during shut in, average density of 0.97 to 1.0 g/cc was seen along the logging interval. During shut in, no significant crossflow was identified. Maximum pressure measured was 1828.66 Psia at 2678.73 m MDDF. Meanwhile maximum temperature was 219.57 degF at same depth.

After set tubing pack-off, well was flow but due to operational issue (need to retrieve tubing pack-off), flowing survey was replace by well test only.

2.2 Shut In Survey (Shut In Tubing & Annulus)

2.2.1 Qualitative Analysis for NTO

BEB-04 was already shut in for long time and the well was stabilized. After confirming the well stabilization, shut in pass was started at 1230 hours on 16th October 2015 and completed at 0630 hours on 17th October 2015. Casing Collar Locator (PL-CCL), respond is tally with well accessories from well schematic for the depth correlation and both are perfectly matched.

The logging was done from surface to 2632.1187 m-MDDF with 10 m/min (log down). Then station stop was done at suspecting leak area (2310 – 2280 m-MDDF), the stop was done every 1m for 1 minute. Production Casing Pressure (PCP) recorded during this job was 1100 psi and Tubing Head Pressure (THP) recorded was 1000 psi.

Generally, the tool gave acceptable data. Liquid level was detected at 1944.06 m-MDDF (GOC- Gas Oil Contact) and 1969.46 m-MDDF (WOC – Water Oil Contact). Above 1944.06 m-MDDF, average density detected was 0.07 g/cc, between 1944.06 m-MDDF and 1969.46 m-MDDF, average density 0.71 g/cc was seen and below 1969.46 m-MDDF, average density 0.97 g/cc was observed. Well Average BHP and BHT were summarized as **Table 2.2.1 (a).**

Small features seen on the Noise tool profile are most likely caused by the hardware configuration of the well e.g. TR-SCSSV & Gas Lift mandrels. Refer **Figure 2.2.1(a)**. This is normal behavior probably due to a gas buildup in the pocket and is unlikely to signify a leak. Each GLM showed up on the noise tool but the response did not indicate a leak, purely a change in acoustic environment which is to be expected. Small features also seen on the Noise tool profile (having high amplitude) at several depths probably due to wireline activity as it not supported by any temperature deflection. **Figure 2.2.1(b)**. However, these conditions give good baseline for the next condition.

Depth (m- MDDF)	Pressure (Psia)	Temperature (degF)
500	1124.91	128.26
1000	1157	153.12
1500	1182.96	171.69
2000	1234.98	187.66
2500	1636.86	209.28

Table 2.2.1(a): Well Average BHP and BHT

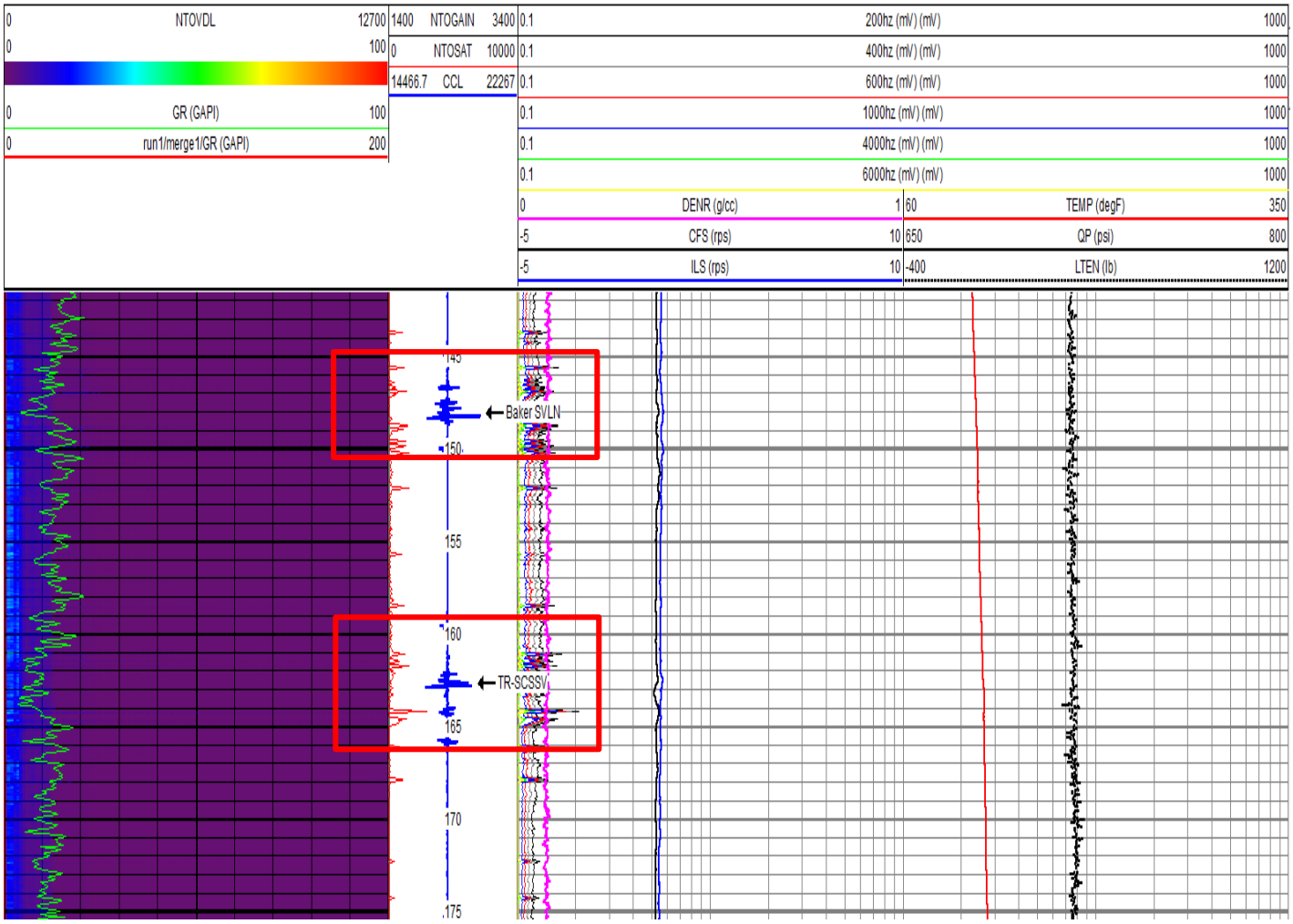
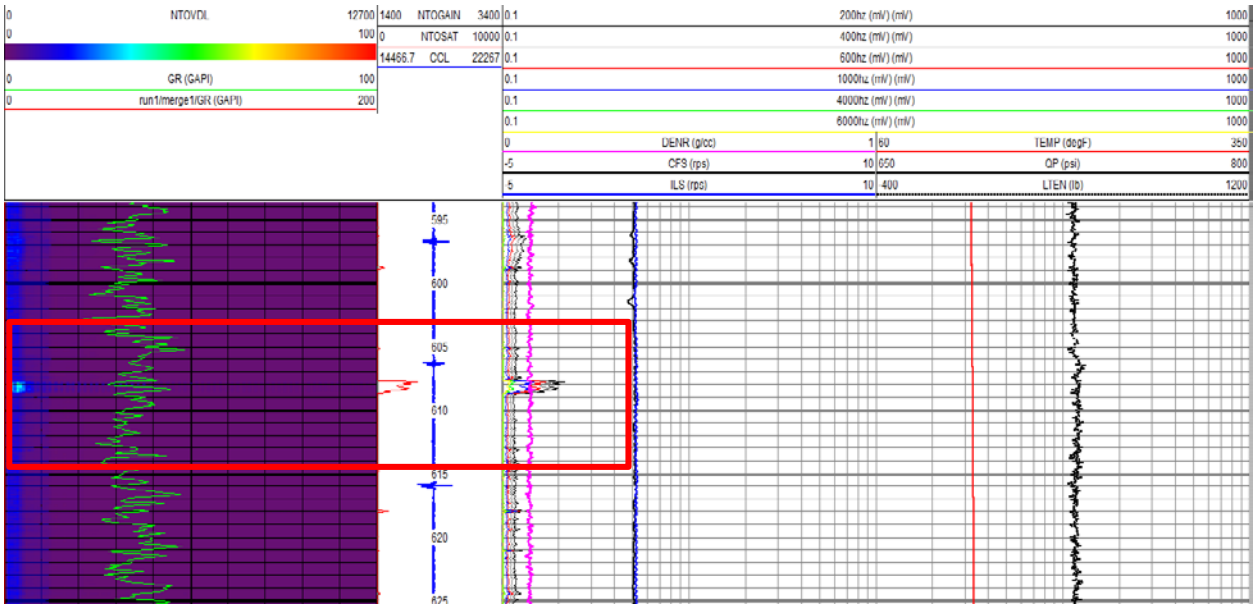


Figure 2.2.1(a): **Noise Tool Profile Caused By the Hardware Configuration**



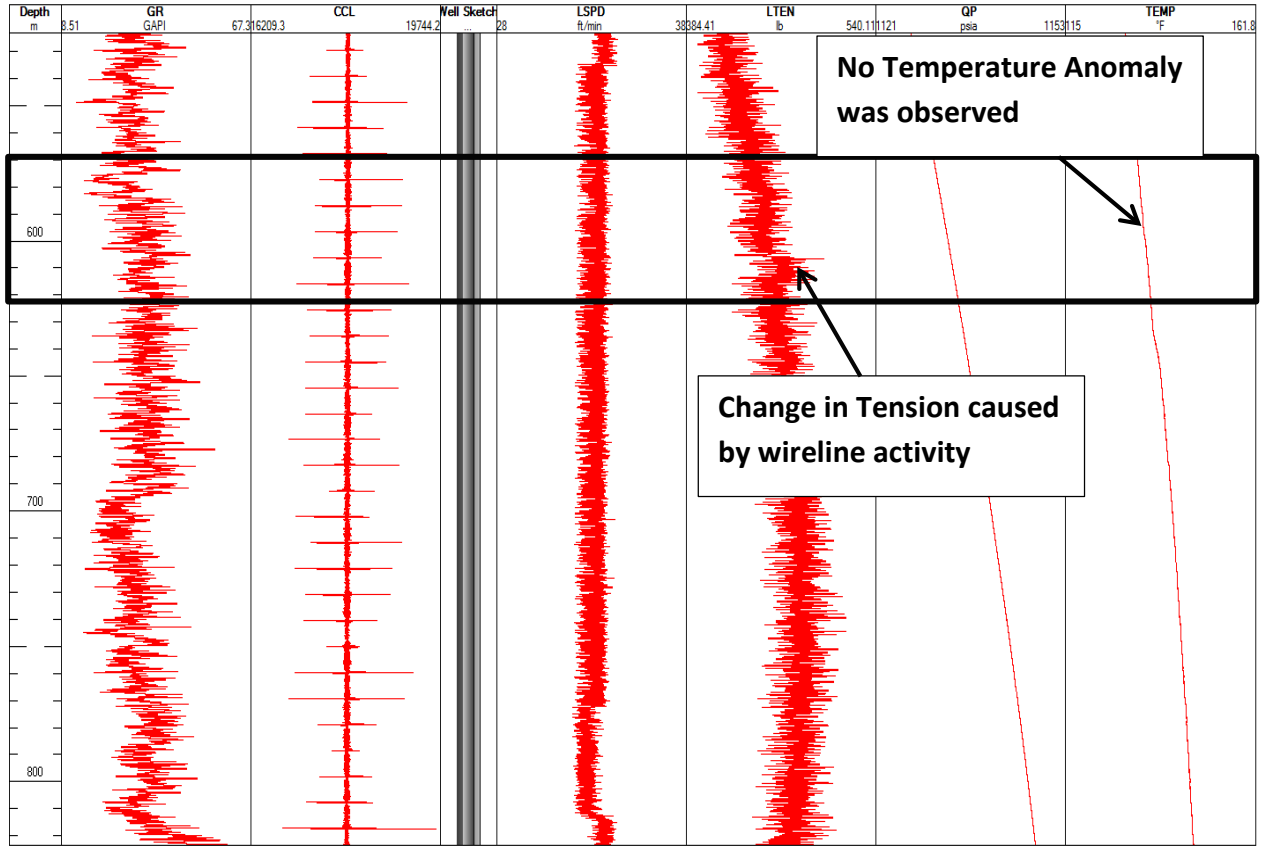


Figure 2.2.1(b): **Noise Tool Profile Caused By Wireline Activity**

2.2.2 Qualitative Analysis for PLT

BEB-04 was already shut in for long time and the well was stabilized. After confirming the well stabilization, shut in pass was started at 1230 hours on 16th October 2015 and completed at 0630 hours on 17th October 2015. Open Hole Gamma Ray (OHGR) with Gamma Ray reading is tally with PL string (PL-GR) for the depth correlation.

Generally, the tool gave acceptable data and the repetitions between tools were also very good. All log plots recorded during shut in survey are shown in **Figure 2.2.2(a).**

Maximum pressure measured was 1828.66 psia at 2678.73 m-MDDF. Meanwhile maximum temperature was 219.57 degF at same depth.

Both CFS and ILS plotted data show same character. There was no flow reading observed on both intervals. But, observed temperature changes at both perforation intervals suggesting reservoir activities at J-18/19. The logging program should contain logging station to remove the effects of possible unsteady line speed. Observed stabile line speeds from all station stop data. From **Figure 2.2.2 (b)**, there was no movement of both spinners during station stop indicating no fluid flow. This indication support spinner log reading where no flow was observed during shut in survey.

From pressure data, observed no changes in slope indicate one phase fluid along the logging interval. This statement was support by both fluid identifier tools (Fluid Density Radioactive (FDR) and Capacitance Water Hold-Up (CWH)). Average density 0.97 – 1.0 g/cc was observed.

Well Average BHP and BHT for each perforating intervals was summarized as **Table 2.2.2 (a).**

Sand	Depth (m- MDDF)	Pressure (Psia)	Temperature (degF)
J-18/19	2653	1799.13	218.68
J-18/19	2654	1800.24	218.72
J-18/19	2655	1801.37	218.74
J-18/19	2657	1803.44	218.78
J-18/19	2660	1806.89	218.88

Table 2.2.2(a): Well Average BHP and BHT for Each Perforating Intervals

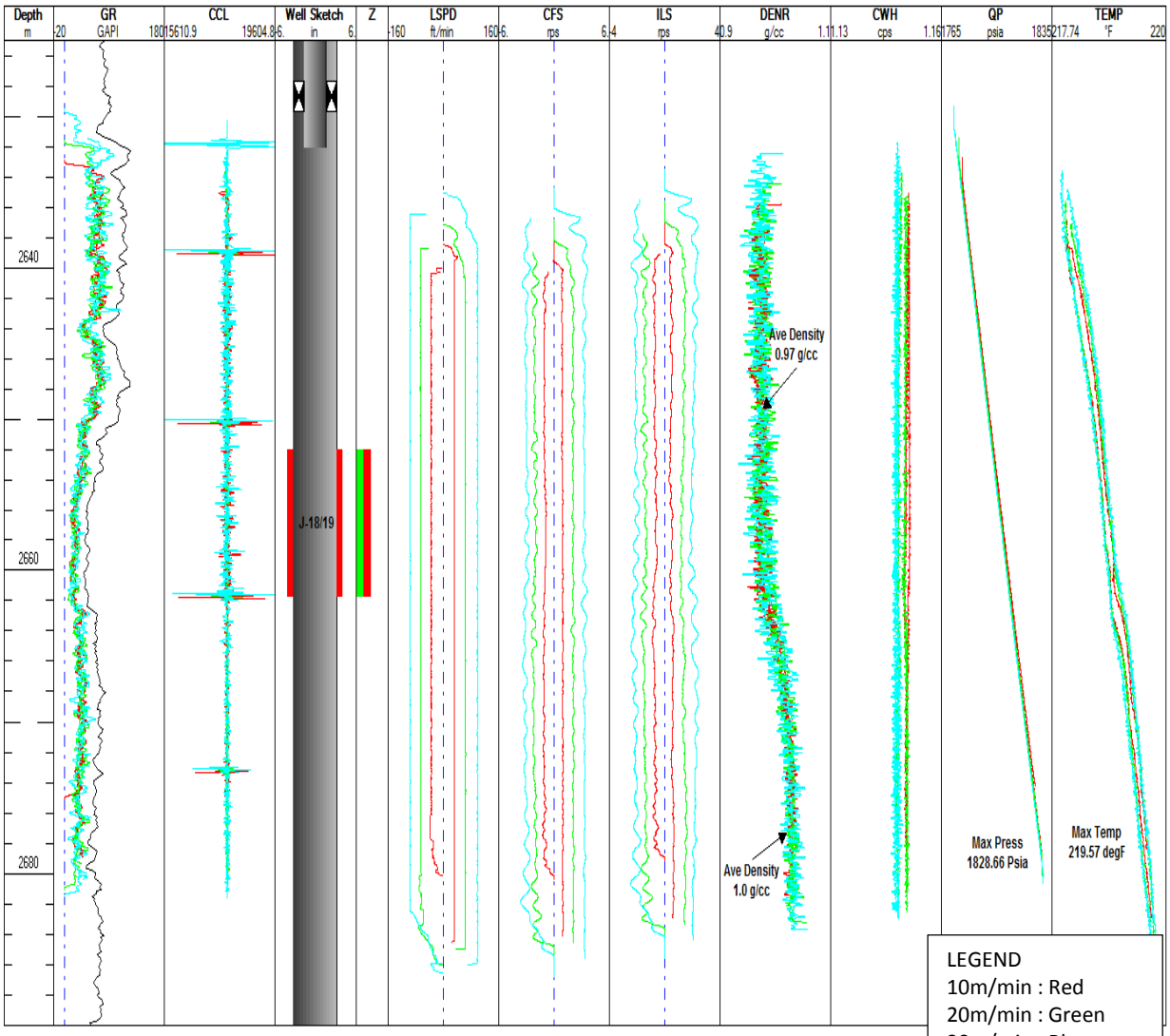


Figure 2.2.2 (a): All Log Plot for Shut In Survey

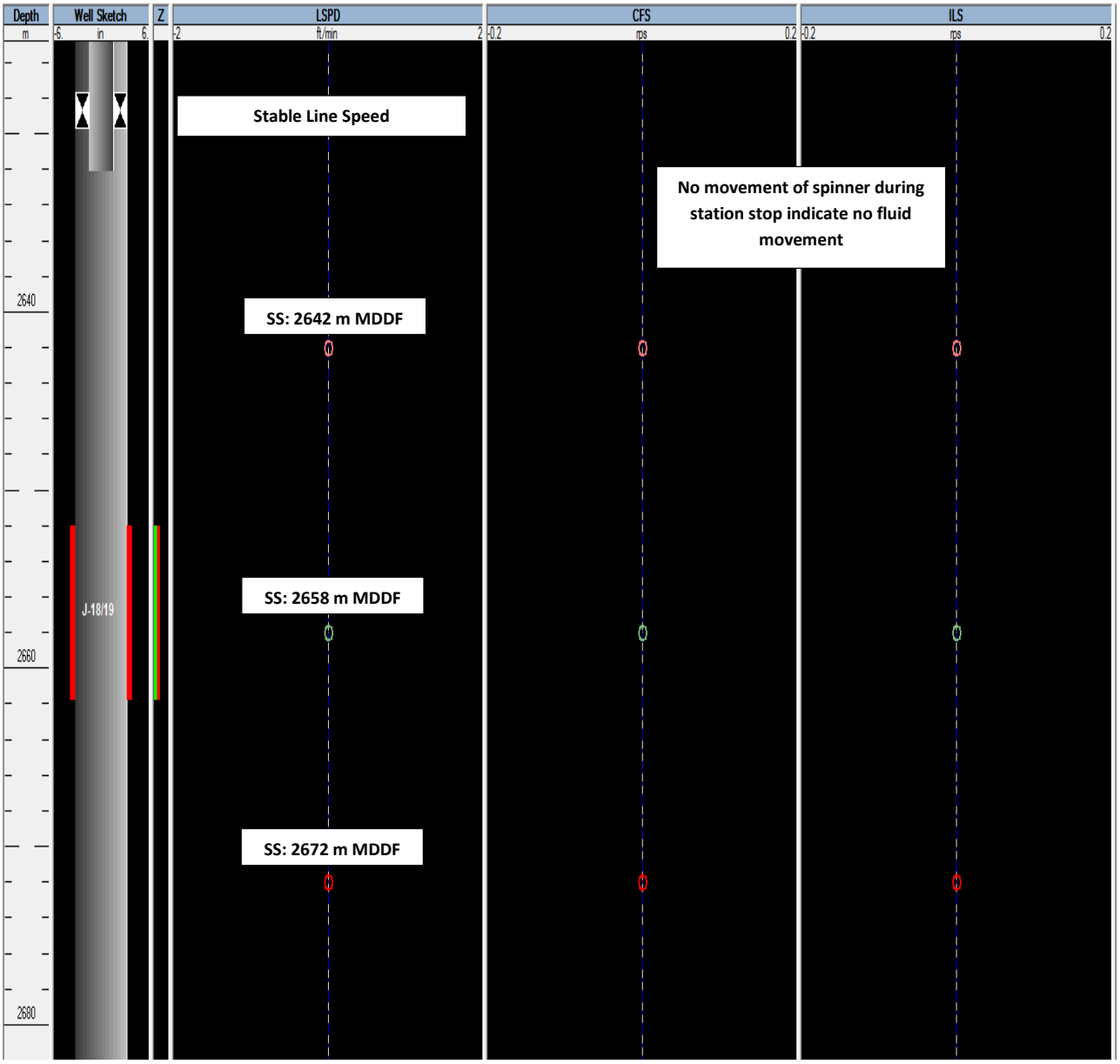


Figure 2.2.2 (b): Spinner Stationary Stop, Shut In Survey

2.3 Shut In Survey (Shut In Tubing & Inject Annulus)

2.3.1 Qualitative Analysis for NTO

Second condition was commenced after finish 1st condition. Shut in tubing and inject annulus to 1500 psia pass was started at 1130 hours on 17th October 2015 and completed at 0645 hours on 17th October 2015. Casing Collar Locator (PL-CCL), respond is tally with well accessories from well schematic for the depth correlation and both are perfectly matched.

The logging was done from surface to 2632.1187 m-MDDF with 10 m/min (log down). Then station stop was done at suspecting leak area (2310 – 2280 m-MDDF), the stop was done every 1m for 1 minute. Production Casing Pressure (PCP) recorded during this job was 1100 psi and Tubing Head Pressure (THP) recorded was 1100 psi.

Generally, the tool gave acceptable data. Liquid level was detected at 2583.56 m-MDDF (GOC- Gas Oil Contact) and 2624.41 m-MDDF (WOC – Water Oil Contact). Above 2583.56 m-MDDF, average density detected was 0.11 g/cc, between 2583.56 m-MDDF and 2624.41 m-MDDF, average density 0.70 g/cc was seen and below 2624.41 m-MDDF, average density 0.98 g/cc was observed. Well Average BHP and BHT were summarized as **Table 2.3.1 (a).**

Small features seen on the Noise tool profile are most likely caused by the hardware configuration of the well e.g. TR-SCSSV & Gas Lift mandrels. Refer **Figure 2.3.1(a)**. This is normal behavior probably due to a gas buildup in the pocket and is unlikely to signify a leak. Each GLM showed up on the noise tool but the response did not indicate a leak, purely a change in acoustic environment which is to be expected. Due to small/ no differential pressure (dp), no features was seen on the Noise tool profile at suspected leak area. Combination of Station Stops also not recorded any anomaly on Amplitude at suspected leak depth, **Figure 2.3.1(b).** However, small temperature deflection was observed at 2265.42 m-MDDF due to wireline activity. Refer **Figure 2.3.1(c)**.

Depth (m- MDDF)	Pressure (Psia)	Temperature (degF)
500	1558.57	128.68
1000	1618.71	153.77
1500	1654.49	172.26
2000	1692.81	187.27
2500	1739.71	205.69

Table 2.3.1(a): Well Average BHP and BHT

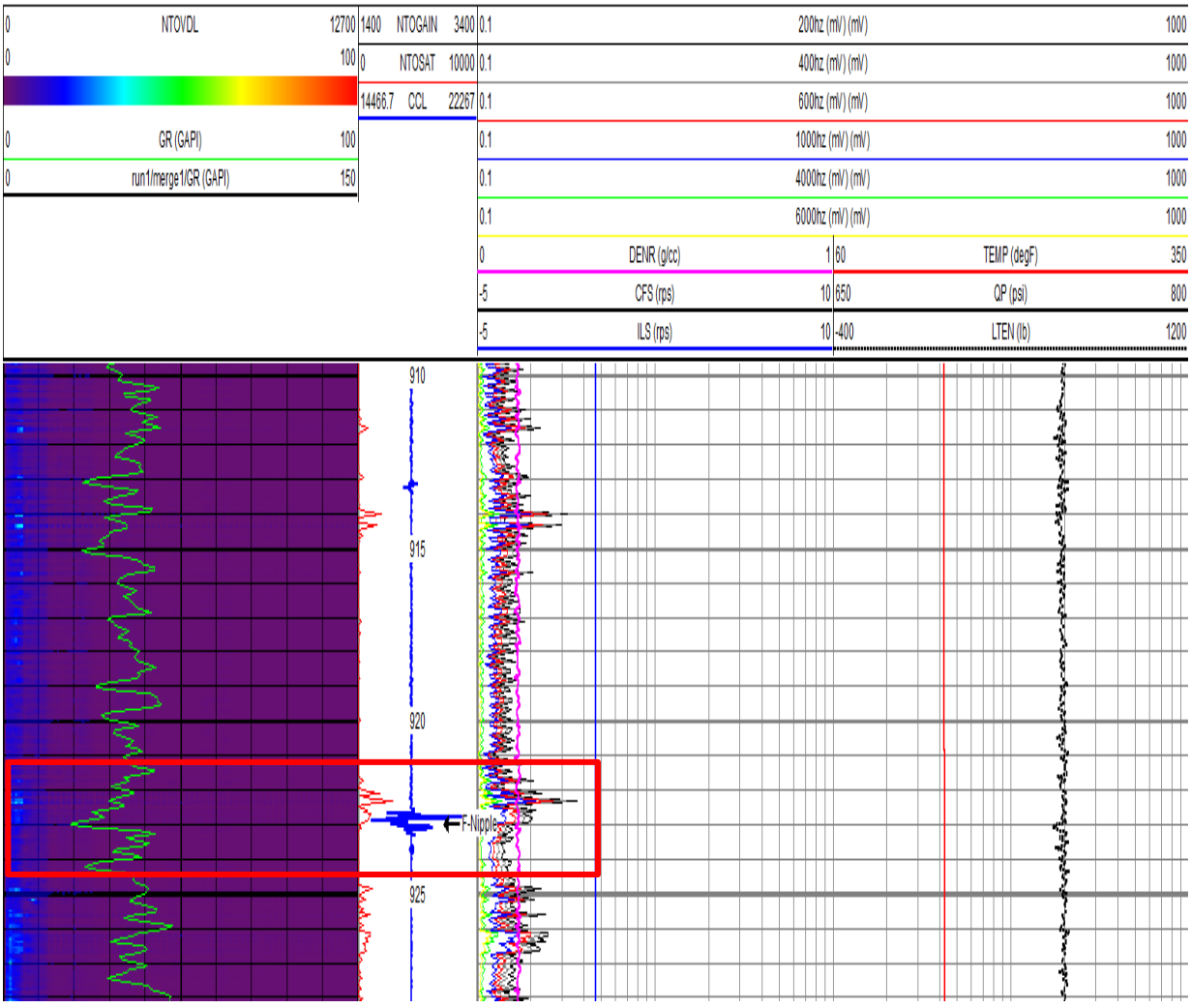


Figure 2.3.1(a): **Noise Tool Profile Caused By the Hardware Configuration**

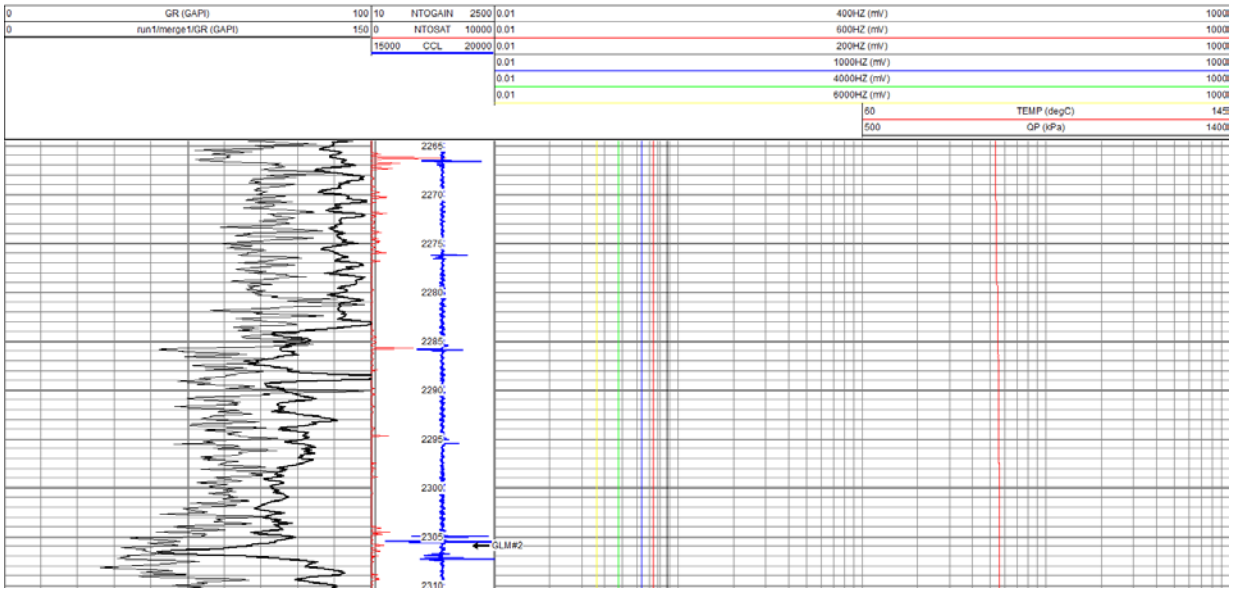


Figure 2.3.1(b): **Combination of Station Stops**

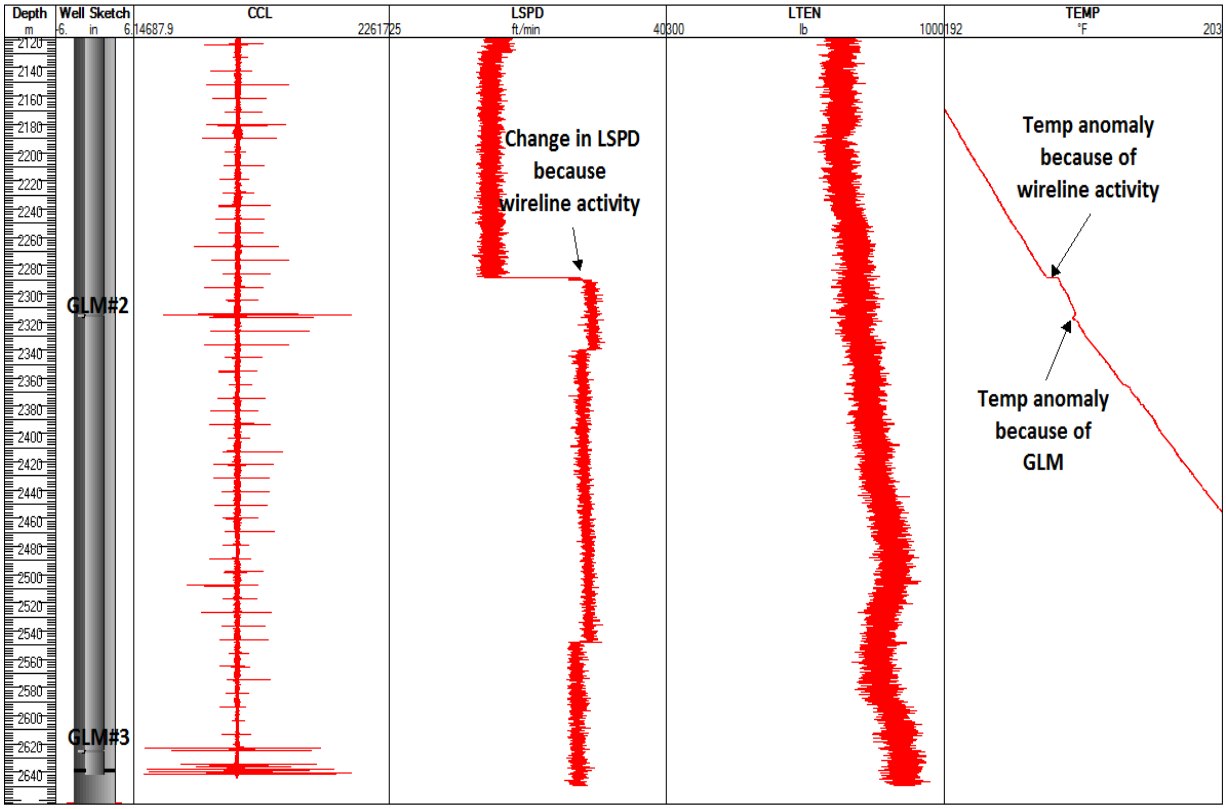


Figure 2.3.1(c): **Noise Tool Profile Caused By Wireline Activity**

2.4 Shut In Survey (Shut In Tubing & Bleed Annulus)

2.4.1 Qualitative Analysis for NTO

3rd condition is proposed for further investigation. Bleed annulus while shut in the tubing was done after confirm no leak detection on the 2nd condition. 3rd condition was start at 1800 hours on 18th October 2015 and completed at 1630 hours on 19th October 2015. Casing Collar Locator (PL-CCL), respond is tally with well accessories from well schematic for the depth correlation and both are perfectly matched.

For this condition, there was two suggesting leak point depth, 2298.19 to 2303.19 m MDDF and 1055.00 to 1095.00 m MDDF. The logging was done from 2320 m-MDDF to 1050 m-MDDF with 5 m/min (log up). Then station stop was done at suspecting leak area (2310 – 1050 m-MDDF), the stop was done every 1m for 1 minute. Production Casing Pressure (PCP) recorded during this job was 493 psi and Tubing Head Pressure (THP) recorded was 1100 psi. Well Average BHP and BHT were summarized as **Table 2.4.1 (a).**

From this survey, noise tool recording good acoustic anomaly in range 2301 to 2303 m-MDDF supported by temperature anomaly deflection suggesting leak point. Refer **Figure 2.4.1 (a).** Combination of Station Stops recorded highest Amplitude at depth in range 2301 to 2303 m-MDDF tally with POOH data, **Figure 2.4.1 (b).**

Tubing pack-off was set after confirm the leak area, upper tubing stop set was at 2295 m-MDDF and lower tubing stop set was at 2305 m-MDDF. After pack-off, PCP was bleed. First reading after pack-off (1900hr, 20th October 15) was THP= 1000 PSI and PCP= 600 PSI. After a few hour bleed (0400hr, 21st October 15), PCP reading drop to 0 PSI with THP reading maintain 1000 PSI.

Depth (m- MDDF)	Pressure (Psia)	Temperature (degF)
500	1550.39	129.10
1000	1602.07	153.35
1500	1637.68	171.85
2000	1650.80	187.45
2300	1674.64	198.36

Table 2.4.1(a): Well Average BHP and BHT

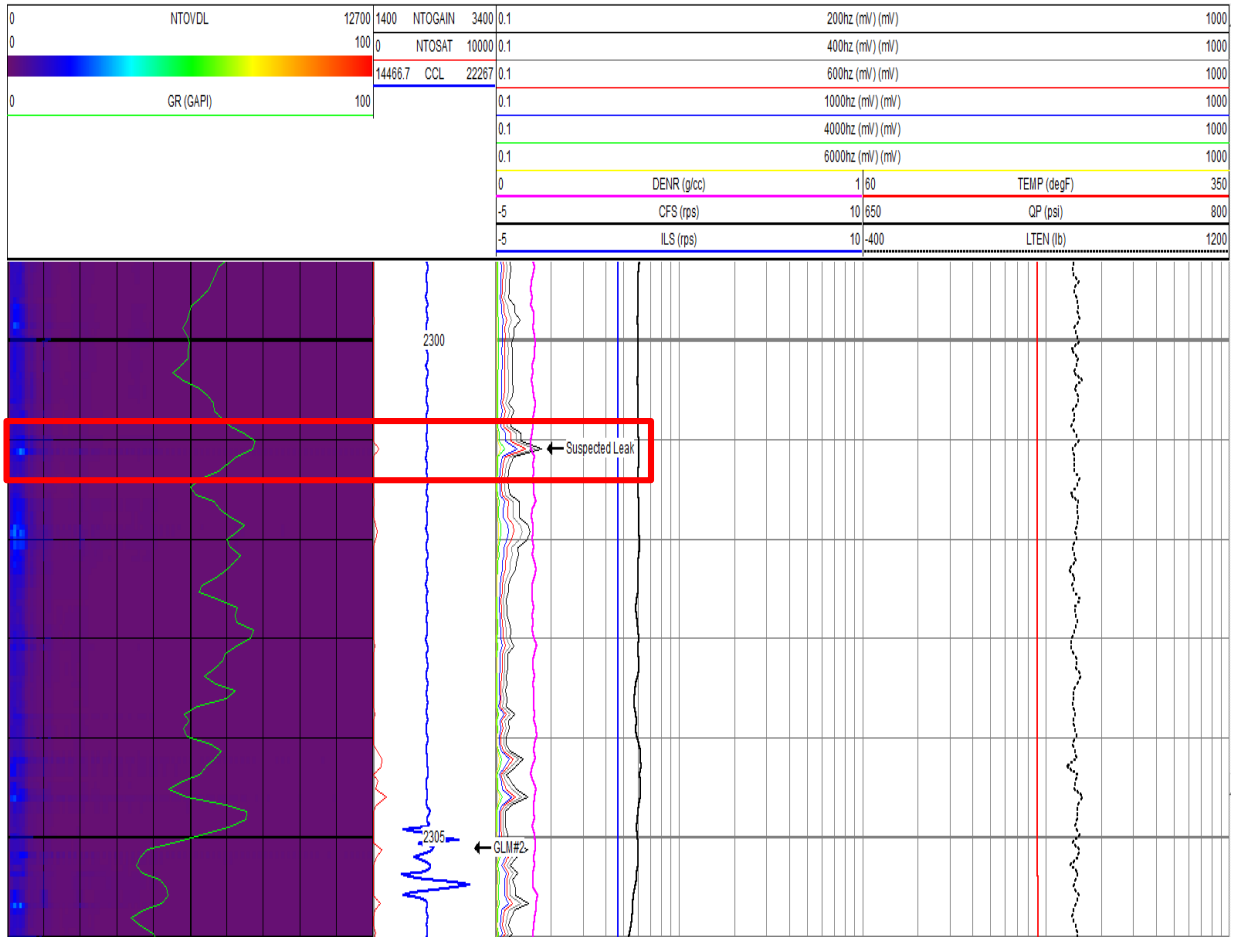


Figure 2.4.1(a): **Noise Tool Profile at Suspected Leak Point**

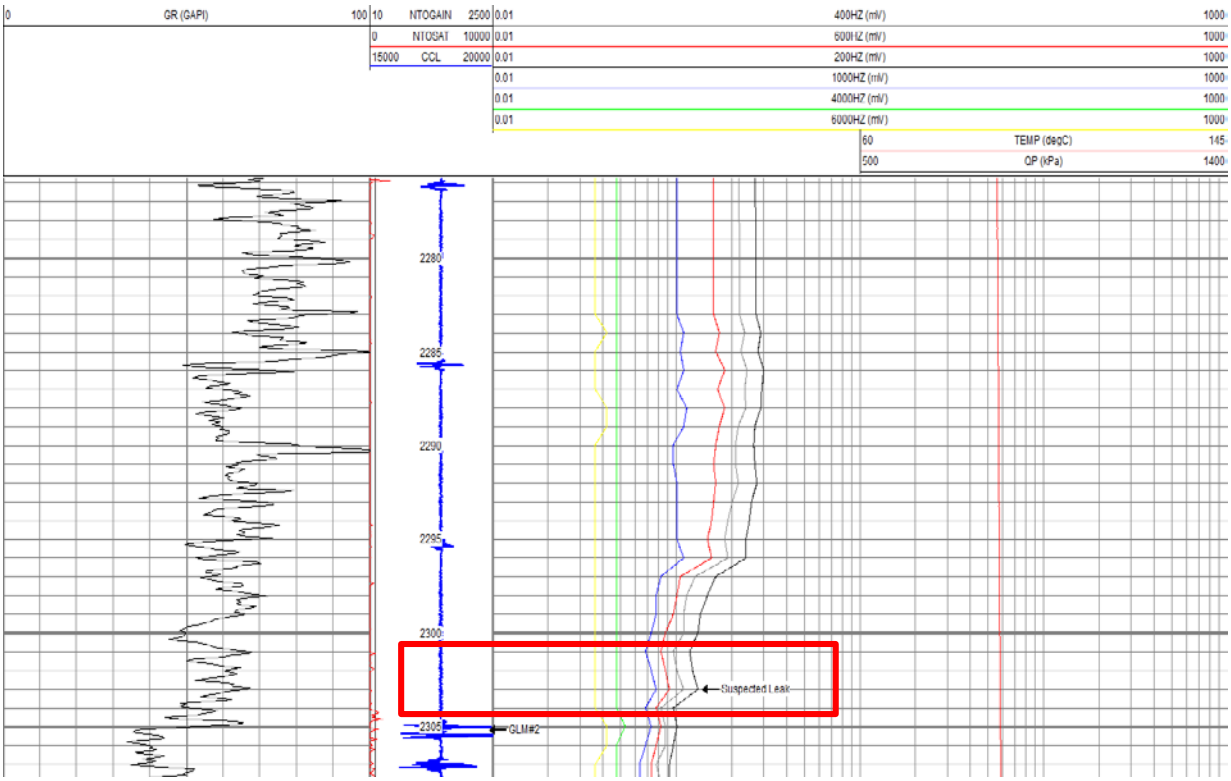


Figure 2.4.1(b): **Combination of Station Stops**

3.0 CONCLUSION(S)

NTO Survey 1

1. Several Noise Signature was observed in the predetermine well completion depth such as TR-SCSSV, F-Nipple and GLM.
2. Temperature Data
   - No clear anomaly of temperature signature was observes. It is recommended to see any temperature anomaly at the same depth of noise recorded in order to conclude as possible leak.
3. Gave good baseline for next conditions.

PLT Shut In Survey

1. Spinner Data
   - Observed no fluid flow based on spinner rotation
2. Density Data
   - Observed average density 0.97 – 1.0 (water dominated).
3. Gave good baseline for next conditions.
4. Station Stop Data
   - Observed stabile line speed from all station stop data.
   - From recorded station stop, no fluid movement along the logging interval, supported spinner observation.
5. Temperature Data Maximum pressure measured was 1828.66 psia at 2678.73 m-MDDF. Meanwhile maximum temperature was 219.57 degF at same depth.

NTO Survey 2

1 Several Noise Signature was observed in the predetermine well completion depth such as TR-SCSSV, F-Nipple and GLM.

2 Temperature Data

- No clear anomaly of temperature signature was observes. It is recommended to see any temperature anomaly at the same depth of noise recorded in order to conclude as possible leak.

3 There is no clear indication of other additional noise anomaly. 3rd condition was required which is bleed annulus and shut in tubing (Tubing - SI, PCP – Bleed Off) to detect leak depth.

NTO Survey 3

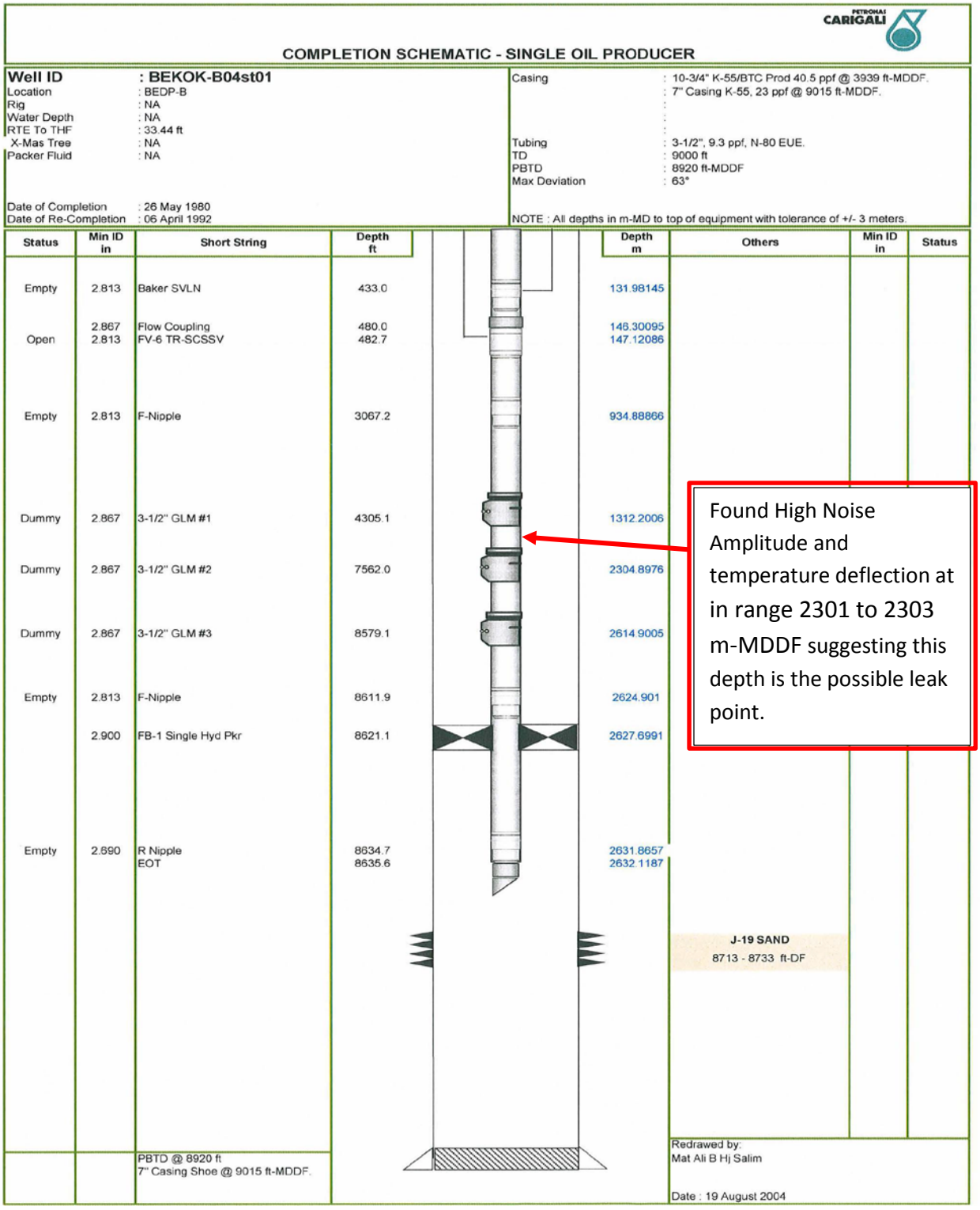
1 Observed noise anomaly at depth in range 2301 to 2303 m-MDDF and also supported by temperature anomaly deflection suggesting suspect leak point.

2 Combination of Station Stops recorded highest Amplitude at depth in range 2301 to 2303 m-MDDF tally with POOH data.

3 Tubing pack-off was set after confirm the leak area, upper tubing stop set was at 2295 m-MDDF and lower tubing stop set was at 2305 m-MDDF. After pack-off, PCP was bleed. First reading after pack-off (1900hr, 20th October 15) was THP= 1000 PSI and PCP= 600 PSI. After a few hour bleed (0400hr, 21st October 15), PCP reading drop to 0 PSI with THP reading maintain 1000 PSI.

4. ATTACHMENT(S)

4.1 Well Schematic



COMPLETION SCHEMATIC - SINGLE OIL PRODUCER

PETRONAS CARIGALI

Well ID	: BEKOK-B04st01
Location	: BEDP-B
Rig	: NA
Water Depth	: NA
RTE To THF	: 33.44 ft
X-Mas Tree	: NA
Packer Fluid	: NA
Date of Completion	: 26 May 1980
Date of Re-Completion	: 06 April 1992

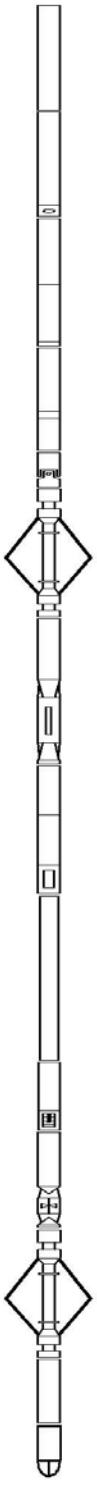
Casing	: 10-3/4" K-55/BTC Prod 40.5 ppf @ 3939 ft-MDDF.
	: 7" Casing K-55, 23 ppf @ 9015 ft-MDDF.
Tubing	: 3-1/2", 9.3 ppf, N-80 EUE.
TD	: 9000 ft
PBTD	: 8920 ft-MDDF
Max Deviation	: 63°

NOTE : All depths in m-MD to top of equipment with tolerance of +/- 3 meters.

Status	Min ID in	Short String	Depth ft	Depth m	Others	Min ID in	Status
Empty	2.813	Baker SVLN	433.0	131.98145			
	2.867	Flow Coupling	480.0	146.30095			
Open	2.813	FV-6 TR-SCSSV	482.7	147.12086			
Empty	2.813	F-Nipple	3067.2	934.88866			
Dummy	2.867	3-1/2" GLM #1	4305.1	1312.2006			
Dummy	2.867	3-1/2" GLM #2	7562.0	2304.8976			
Dummy	2.867	3-1/2" GLM #3	8579.1	2614.9005			
Empty	2.813	F-Nipple	8611.9	2624.901			
	2.900	FB-1 Single Hyd Pkr	8621.1	2627.6991			
Empty	2.590	R Nipple	8634.7	2631.8657			
		EOT	8635.6	2632.1187			
					J-19 SAND 8713 - 8733 ft-DF		
		PBTD @ 8920 ft 7" Casing Shoe @ 9015 ft-MDDF.			Redrawed by: Mat Ali B Hj Salim Date : 19 August 2004		

Found High Noise Amplitude and temperature deflection at in range 2301 to 2303 m-MDDF suggesting this depth is the possible leak point.

4.2 Tool String Configuration

Sensor	Offset (m)	Schematic	Description	Len (m)	OD (in)	Wt (lb)
			XTU-002 (10022391) Crossover Ultrawire Toolbus to Ultralink	0.48	1.69	6.50
			QPS-019 (10021569) Quartz Pressure Sensor	0.48	1.69	9.00
QTMP	5.77					
QP	5.77					
QTMP	5.77					
			PGR-020 (10022799) Production Gamma Ray	0.59	1.69	9.50
GR	5.26					
			CCL-015 (10012220) Casing Collar Locator	0.47	1.69	9.00
CCL	4.81					
			PKJ-013 (10020610) Production Knuckle Joint	0.17	1.69	3.50
			PRC-001 (000001) Production Roller Centraliser (3 Arm)	0.59	1.69	7.00
			CWH-013 (10009617) Capacitance Water Holdup	0.66	1.69	10.00
CWHC	3.45					
CWH	3.45					
			FDR-020 (10012106) Fluid Density Radioactive	0.59	1.69	10.00
FDRC	2.75					
DENR	2.75					
			NTO-009 (10025212) Noise Tool (Ultrawire)	0.75	1.38	8.10
NTO	2.21					
			PRT-016 (10013779) Platinum Resistance Thermometer	0.32	1.69	6.00
TEMP	1.62					
			ILS-022 (10021874) Inline Spinner	0.44	1.69	6.00
ILSRATE	1.24					
ILSDIR	1.24					
			PRC-001 (23456) Production Roller Centraliser (3 Arm)	0.59	1.69	7.00
			CFBE-05 (10020087) Caged Fullbore Electronics	0.29	1.69	2.50
CFSRATE	0.04		CFSM-01 (10018832) Continuous Flowmeter Spinner Mechanicals	0.26	1.69	1.00
CFSDIR	0.04					

Dataset: bebpltntosgssi.db: BEKOKB/B4/PLTNTO/ST290
Total Length: 6.66 m
Total Weight: 95.10 lb
O.D. 1.69 in

Tools	Functions
Quartz Pressure gauge, QPS	Measures changes in flowing and shut-in pressures, this information indicates the efficiency of the well and performance of the reservoir. In the absence of a dedicated density tool it can also be used to estimate density.
Casing Collar Locator, CCL	Responds to changes in metal volume such as at casing joints, completion items or perforations. It is mainly used for depth correlation though can be used to detect holes and perforations
Gamma Ray Tool, PGR	Measures natural gamma ray radiation levels in the wellbore. Used for depth correlation, lithology and radioactive scale identification, this is associated with water production.
Inline Spinner, ILS	Used as a backup flowmeter in conjunction with a CFS.
Fluid Density Radioactive, FDR	Measure the density of oil, water and gas . In addition, by measuring the overall density of the wellbore fluid the fraction or holdup of each phase can be calculated.
Platinum Resistance Thermometer, PRT	Responds to small temperature changes - indicating fluid movement inside and/or outside of the completion. Temperature changes can be used to qualitatively identify fluid type, volume and direction of flow.
Continuous Flowmeter Spinner, CFS	Measures well fluid velocity using a turbine (spinner) impeller, the higher the fluid velocity, the faster the spinner rotates. Knowing fluid velocity and tubing size, volumetric flowrate can be calculated.

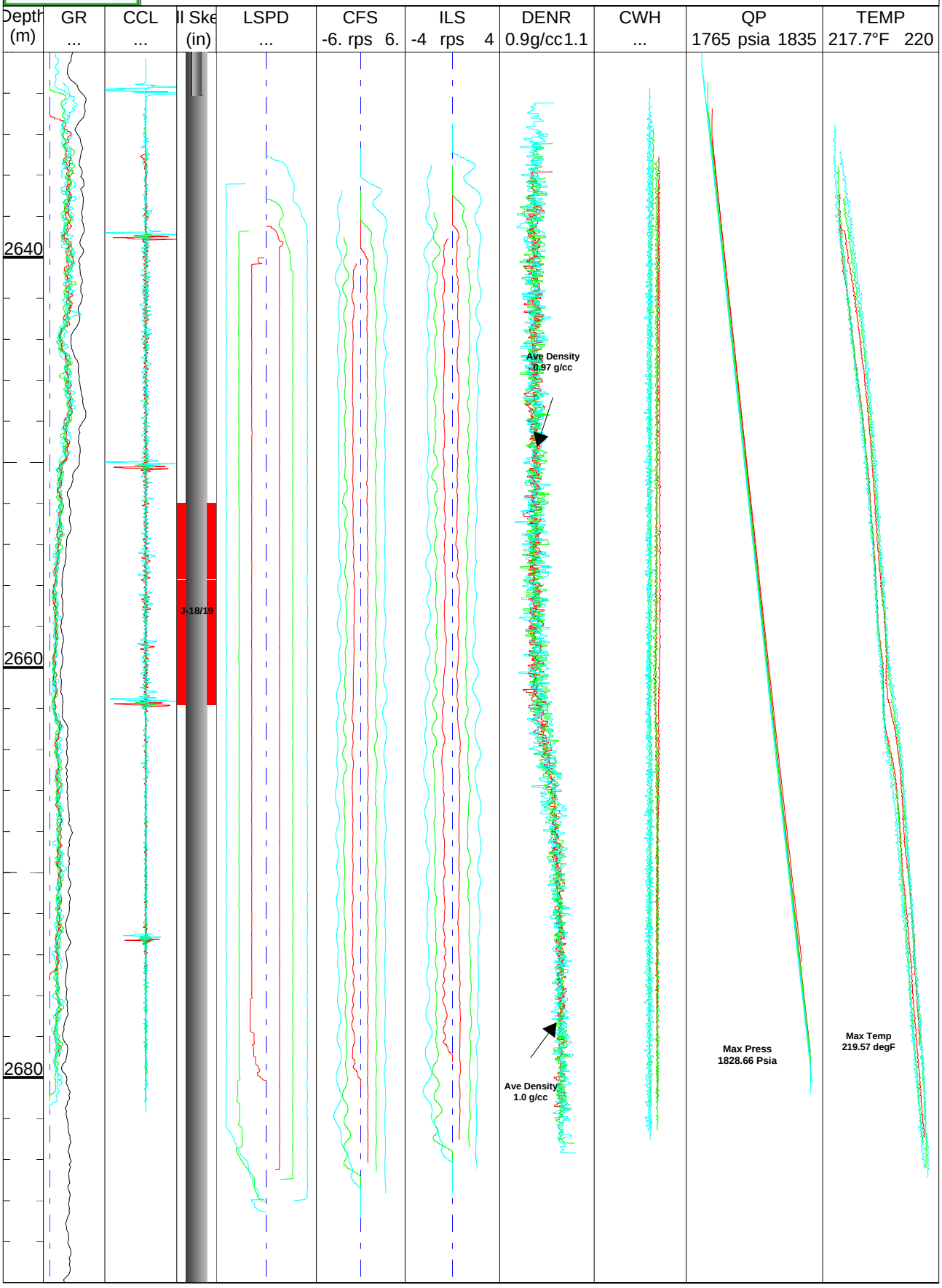
4.3 Detail Production Analysis – Shut In Survey PLT

ALL LOG PLOT

BEB04

Company: PCSB
Field: BEKOK
Well: BEB04

Test:
Date: 17/10/2015
Survey: SHUT IN



4.4 Log Plot for NTO Survey 1 (Shut In Tubing, Shut In Annulus (PCP))

4.5 Log Plot for NTO Survey 2 (Shut In Tubing, Injected Annulus (PCP))

4.6 Log Plot for NTO Survey 3 (Shut In Tubing, Bleed Annulus (PCP))