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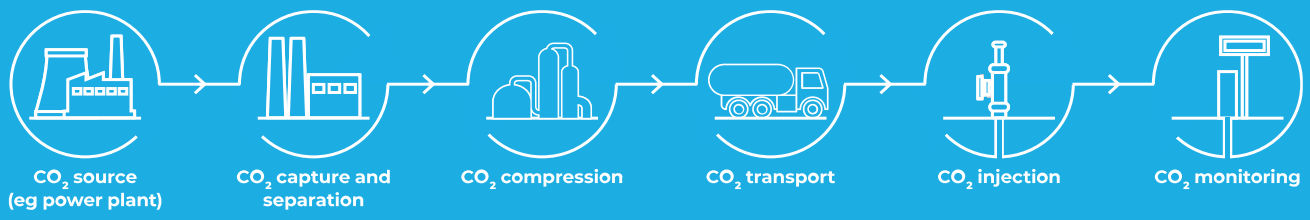


Surat Basin Carbon Capture and Storage Project

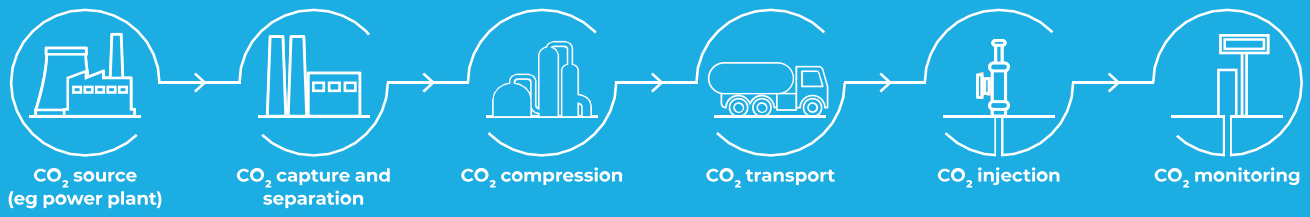
APPENDIX 8A: WELL COMPLETION REPORTS

8A. Well Completion Reports

The Surat Basin Carbon Capture and Storage (CCS) Project (the Project) EIS relies on drilling and completion of a number of wells and bores, undertaken as part of the exploration and appraisal activities of EPQ10.
The Well Completion Reports that form part of Appendix 8A are for:

- West Moonie-1 Injection Well (CR121956); and
- West Moonie-2 Monitoring Well (CR128563).

Note that the various appendices listed in each of the well completion reports are not included due to file size and type.



EPQ10 - West Moonie-1 Well Completion Report

Document properties

Date, Version	December 2020, Final
Program, Area	EPQ10
Prepared by	Rob Heath and Nick Hall
Reviewed by	
Comment/s	

CTSCo Carbon Transport and Storage Company

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1. West Moonie-1 Well Card

Location Details			
Latitude	-27° 49' 48.91835" S	**Seismic Reference**	
Longitude	149° 57' 29.14018" E	**Rig**	Rig-101
UTM Easting	200,364.85m E	**Permanent Datum**	Australian Height Datum
UTM Northing	6,917,885.29m N	**Rig RT to Datum**	247.2m
UTM Zone	56	**Water Depth**	
Geodetic Datum	NAD83, GDA94	**Planned TD**	2550.0m MDRT (2550.0 m TVDSS)
Geodetic Ellipsoid	Geodetic Reference System 1980	**Driller's TD**	2713.5m MDRT
Permit	EPQ10	**Logger's TD**	2714.7m MDRT (Extrp)
Current Status	Cased and Suspended	**Max Deviation**	2.93° at 1914.75m

Block Interests	
Joint Venture Partner	**Interest %**
Carbon Transport and Storage Company	100

Participating Interests	
Joint Venture Partner	**Interest %**
Carbon Transport and Storage Company	100

Primary Dates	
Date Rig on Contract	03-Aug-2020 06:00
Date Rig on Location	03-Aug-2020 06:00
Date Rig Released	14-Sep-2020 19:00
Date Rig Off Contract	14-Sep-2020 19:00

Well Section Dates	
Spud Date / Kick Off Date	**Date TD Reached**
11-Aug-2020 01:15	07-Sep-2020 12:00

Hole Summary		
Hole Size (in)	**Depth MDRT (m)**	**Depth TVDRT (m)**
14.000	16.0	16.0
12.250	1622.0	1621.5
8.500	2713.5	2712.8

Casing Summary		
Casing String	**MDRT (m)**	**TVDRT (m)**
Conductor	15.7	15.7
Surface Casing	1616.6	1616.1
Production Casing	2697.1	2696.5

Well Completion Details

Completion Details:
The well has been cased and suspended for further work pending the interpretation of analytical data gathered during the drilling of the well.

Formation Tops

Formation Name	Predicted Depth MD (m)	Predicted Depth TVD (m)	Predicted Depth TVDSS (m)	Actual Depth MD (m)	Actual Depth TVD (m)	Actual Depth TVDSS (m)	Difference TVD (m)
Recent-Quaternary	4.2	4.2	+243.0	4.2	4.2	+243.0	0.0
Griman Creek Formation	16.0	16.0	+231.2	31.0	31.0	+216.2	15.0 Low
Surat Siltstone	376.2	376.2	-129.0	328.7	328.7	-81.5	47.5 High
Wallumbilla Formation	474.2	474.2	-227.0	446.4	446.4	-199.2	27.8 High
Coreena Member	474.2	474.2	-227.0	446.4	446.4	-199.2	28.8 High
Doncaster Member	680.2	680.2	-433.0	659.4	659.4	-412.2	20.8 High
Bungil Formation	818.2	818.2	-571.0	732.2	732.2	-485.0	86.0 High
Mooga Sandstone	1006.2	1006.2	-759.0	929.0	929.0	-681.8	77.2 High
Orallo Formation	1224.2	1224.2	-977.0	1053.7	1053.7	-806.5	170.5 High
Gubberamunda Sandstone	1331.2	1331.2	-1084.0	1160.1	1160.0	-912.8	171.2 High
Pilliga Sandstone	NP	NP	NP	1407.8	1407.6	-1160.4	NP
Westbourne Formation	1587.2	1587.2	-1340.0	1431.0	1430.8	-1183.6	156.4 High
Springbok Sandstone	1682.2	1682.2	-1435.0	1528.5	1528.3	-1281.1	153.9 High
Walloon Sub Group	1769.2	1769.2	-1522.0	1630.9	1630.4	-1383.2	138.8 High
Juandah Coal Measures	1769.2	1769.2	-1522.0	1630.9	1630.4	-1383.2	138.8 High
Tangalooma Sandstone	1871.2	1871.2	-1624.0	1759.6	1759.1	-1511.9	112.2 High
Taroom Coal Measures	1919.2	1919.2	-1672.0	1811.6	1811.0	-1563.8	108.2 High
Eurombah Formation	1965.2	1965.2	-1718.0	1865.9	1865.2	-1618.0	100.0 High
Hutton Sandstone	1984.2	1984.2	-1737.0	1885.8	1885.1	-1637.9	99.1 High
Lower Hutton Sandstone	2111.2	2111.2	-1864.0	2034.0	2033.2	-1786.0	78.0 High
Evergreen Formation	2197.2	2197.2	-1950.0	2105.2	2104.5	-1857.3	92.7 High
Boxvale Sandstone Member	2262.2	2262.2	-2015.0	2153.1	2152.3	-1905.1	109.9 High
Precipice Sandstone	2344.2	2344.2	-2097.0	2262.6	2262.0	-2014.8	82.2 High
Lower Precipice Sandstone	2371.2	2371.2	-2124.0	2275.2	2274.6	-2027.4	96.6 High
Moolayember Formation	2456.2	2456.2	-2209.0	2340.4	2339.9	-2092.7	116.4 High

Wireline Logging Summary

Suite: 1 **Hole Size:** 12 ¼ in
Date Mud Check: 15 Aug 2020 **Date/Time Circ. Stopped:** 16-Aug-2020 03:00 **Circ. Time:** 1.50

Run#	Tool String	Logged Interval (m)	BHT/Time Since Last Circ.	Comments
1	PPC-GPIT-SSCAN-HRLA-PEX-SP-GR	1611.0 - 14.3	56.200 / 15.37	Recorded log while RIH at reduced speed of 3600ft/hr.

Suite: 2 **Hole Size:** 8 ½ in
Date Mud Check: 08 Sep 2020 **Date/Time Circ. Stopped:** 07-Sep-2020 21:25 **Circ. Time:** 1.00

Run#	Tool String	Logged Interval (m)	BHT/Time Since Last Circ.	Comments
1	FMI-SSCAN-PPC-TLD-HGNS-HNGS	2704.0 - 1500.0	80.360 / 38.70	Recorded log while RIH at reduced speed of 3600ft/hr. SP tool dropped to enable Communication with FMI tool.
2	CMR	N/A	N/A	RIH unable to pass ledged/washed out hole section at 1795mMDRT. POH to reconfigure tools. Change out lower bowspring for PPC.
2a	CMR-PPC	N/A	N/A	Re-configured Run-2 toolstring attempting to mitigate interpreted tool stand ups on hole ledges.

Suite: 2 **Hole Size:** 8 ½ in

Date Mud Check: 11 Sep 2020 **Date/Time Circ. Stopped:** 11-Sep-2020 09:15 **Circ. Time:** 3.00

Run#	Tool String	Logged Interval (m)	BHT/Time Since Last Circ.	Comments
3	MDT	N/A	N/A	Water pump on Schlumberger unit failed while rigging up. Once repaired, rigged up and RIH with MDT. Tool stood up at 1807mRT. Four attempts to pass bridge failed. Remainder of logging programme abandoned.

Coring Summary

Note: Drillers depths for cores are consistently 1.2m shallow to Loggers depth

Date	Core #	Start Depth (m)	End Depth (m)	Cut (m)	Recovery (m)	Recovery %	Comments
24 Aug 2020	1	2234.0	2252.0	18.00	17.7	98.39	Wireline retrievable 18m core inner barrel. First attempt at core retrieval failed after wireline parted at the rope socket. Attempted to fish with coring overshot and was successful on second attempt.
25 Aug 2020	2	2252.0	2270.0	18.00	18.1	100.56	Wireline retrievable 18m core inner barrel.
25 Aug 2020	3	2270.0	2288.0	18.00	18.1	100.78	Wireline retrievable 18m core inner barrel.
25 Aug 2020	4	2288.0	2301.0	13.00	13.1	100.38	Wireline retrievable 18m core inner barrel. On retrieval to surface noted 9m lower inner barrel and contents left in hole and only the 9m upper inner barrel recovered. All core cut was left in hole. Pulled out of hole to recover lower barrel and establish cause of failure to retrieve core.
27 Aug 2020	5	2302.0	2317.7	15.70	15.7	100.00	
27 Aug 2020	6	2317.7	2333.6	15.90	15.8	99.06	Pressure spike and loss indicative of inner barrel unseating. Retrieved core.
27 Aug 2020	7	2333.6	2351.1	17.50	17.6	100.63	

27 Aug 2020	8	2351.1	2369.1	18.00	17.9	99.50	On retrieving inner core barrel, recovered upper 9m barrel, however during surface handling operations the lower barrel was lost down hole. Coring string pulled from the borehole to recover lower inner barrel. Barrel and core recovered.
29 Aug 2020	9	2369.1	2371.2	2.10	1.8	86.67	Cut Core-9 from 2369.1 to 2371.2 pressure spike and subsequent pressure drop indicated unseated ICB
29 Aug 2020	10	2371.2	2376.2	5.00	2.8	55.20	Cut Core-10 from 2371.2 to 2376.2 pressure spike and subsequent pressure drop indicated unseated ICB. Both upper and lower ICB were retrieved empty. After running in for Core-11 and cutting 0.17m pressure spike and then pressure drop indicated unseated ICB. On POH retrieved 2.76m of Core-10 and 0.17m Core-11. Lost core assigned to top of Core-10.
30 Aug 2020	11	2376.2	2376.4	0.17	0.2	100.00	Cut 0.17m before a pressure spike and subsequent pressure loss indicated ICB unseated. Retrieved core. Recovered a total of 2.93m of which 2.76m was assigned to Core-10 recovery and 0.17m to Core-11 recovery.
31 Aug 2020	12	2424.0	2432.1	8.08	5.4	66.83	Cut 8.08m before a pressure spike and subsequent pressure loss indicated ICB unseated. Retrieved core on wireline. At surface the uppermost threads on the IBC had backed off and finally gave way as the barrel came through the rotary table and were lost down hole. POH to recover ICB.
03 Sep 2020	13	2550.0	2553.6	3.58	3.6	100.00	Core barrel jammed off.
03 Sep 2020	14	2553.6	2562.7	9.15	9.2	100.00	
03 Sep 2020	15	2562.7	2571.5	8.72	8.7	99.89	
04 Sep 2020	16	2571.5	2579.8	8.35	8.4	100.00	
04 Sep 2020	17	2579.8	2587.6	7.75	7.8	100.00	
05 Sep 2020	18	2587.6	2596.5	8.91	8.9	99.89	Collected preserved sample: Claystone, 2589.58mRT to 2589.82mRT
05 Sep 2020	19	2596.5	2605.5	9.00	9.0	100.00	
05 Sep 2020	20	2605.5	2614.5	9.00	9.0	100.00	
05 Sep 2020	21	2614.5	2623.5	9.00	9.0	100.00	Collected preserved core sample: Sandstone, 2621.25mRT to 2625.37mRT
06 Sep 2020	22	2623.5	2632.5	9.00	9.0	100.00	
06 Sep 2020	23	2632.5	2641.5	9.00	9.0	100.00	
06 Sep 2020	24	2641.5	2650.5	9.00	9.0	100.00	

06 Sep 2020	25	2650.5	2659.5	9.00	9.0	100.00	
06 Sep 2020	26	2659.5	2668.5	9.00	9.0	100.00	Preserved core section 2661.66 to 2661.90mRT Sandstone
06 Sep 2020	27	2668.5	2677.5	9.00	9.0	100.00	
06 Sep 2020	28	2677.5	2686.5	9.00	9.0	100.00	
07 Sep 2020	29	2686.5	2695.5	9.00	9.0	100.00	
07 Sep 2020	30	2695.5	2704.5	9.00	9.0	100.00	
07 Sep 2020	31	2704.5	2713.5	9.05	9.1	100.00	

1.1 Well Summary

West Moonie-1 is the first well drilled in the southern Surat Basin to evaluate the potential of the Precipice Sandstone for demonstration-scale sequestration of an approved Greenhouse Gas Stream. Of particular importance to the effectiveness of the Precipice Sandstone as a CO_2 storage reservoir within this part of the southern Surat Basin was the quality (porosity and permeability) of the Precipice Sandstone, the nature of the underlying and overlying sealing formations (Moolayember Formation and Evergreen Formation), and the quality of the Precipice Sandstone groundwater.

West Moonie-1 is located in south eastern Queensland in EPQ10 to the east of the axis of the Mimosa Syncline of the Surat Basin, approximately 356 km by road southwest of Brisbane and 50 km west of the township of Moonie.

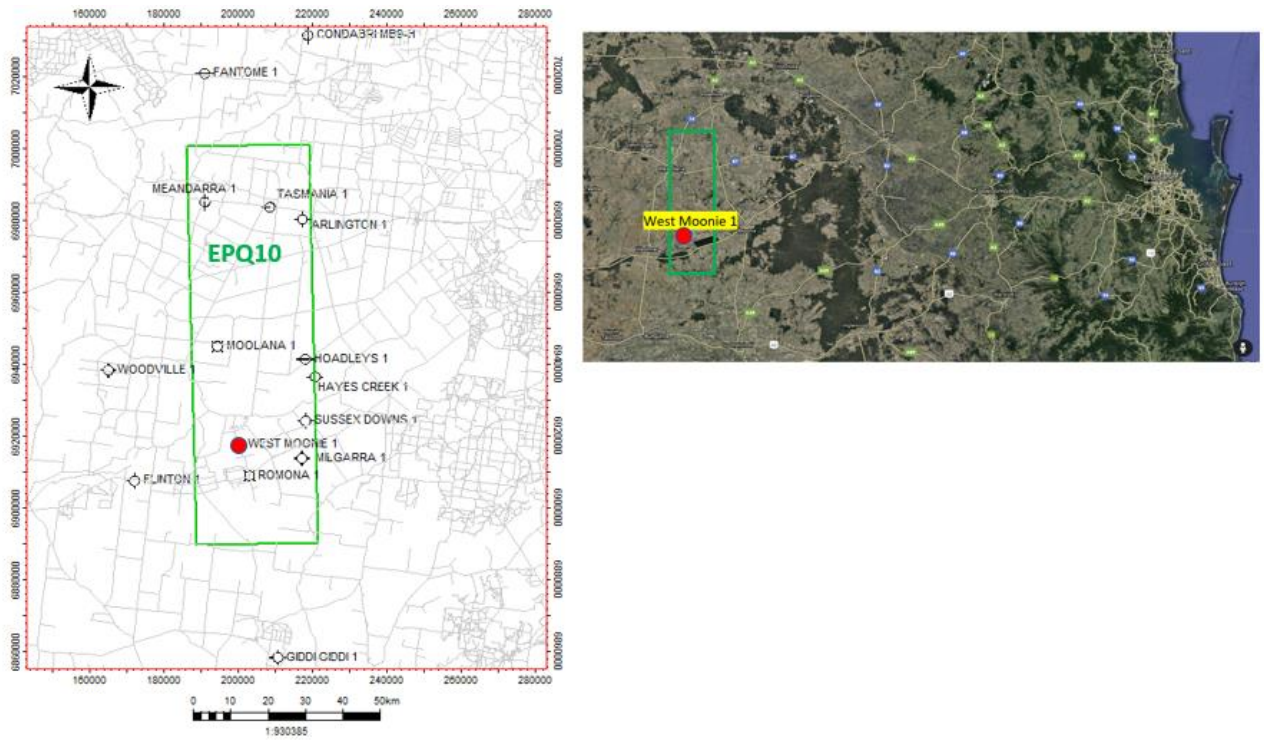

Figure 1-1 West Moonie-1 Location Map

The closest wells to West Moonie-1 are Milgarra-1 (1982) 14.7km to the east, Sussex Downs-1 (1966) 16.9km to the northeast and Flinton-1 (1963) located 32.1km to the west.

West Moonie-1 was spudded at 01:15 hrs on the 11th August 2020 when drilling with a 12 ¼" bit commenced from a pre-set 14" surface conduct set at 16mRT.

Rig functions were monitored by Baker Hughes from surface to total depth and ditch gas was monitored for total gas and C1 to C5 alkane components from 285mRT to total depth. Cuttings samples were collected, photographed, described and composited over 10m intervals from 16m to 2379mRT and 3m composited intervals from 2379m to total depth except over cored intervals where 10m composited samples were caught due to the reduce volume of cuttings available.

12 ¼" surface hole was drilled vertically using an Ulterra PDC bit in a packed bottom hole assembly and was drilled through the predicted Surat Basin stratigraphic sequence.

The maximum inclination was 2.42 degrees at section TD in the Springbok Sandstone at 1622mRT. A single wireline run (PEX-HRLA-SSCAN-PPC-GPIT-SP-GR) was completed to acquire petrophysical data over the top-hole sequence.

Initial interpretation of the surface hole wireline log data indicated the stratigraphic formation tops were within 20m or so of the pre-drill, predicted intersections. This was later revised after total depth was reached and wireline log data for the entire well and correlation to offset wells was re-evaluated.

A string of 9 5/8" casing was set and cemented to surface with the casing shoe at 1616.71mRT. This ensured the Gubberamunda Sandstone, which has been reported to yield water flows in offset wells, to be safely cased off.

A BOP was installed and an 8 ½" hole was drilled using an Ulterra PDC bit, in a packed bottom hole assembly to the near the base of the Evergreen Formation. Reservoir group then began 3 ½" coring utilising wireline retrieval of 18m core lengths. Coring continued through the Precipice Sandstone and into the upper part of the Moolayember Formation. Cores 1 to 11 inclusive were cut from 2234mRT to 2376.37mRT through this interval and resulted in 97% average recovery. On retrieval of several cores it was noted that the inner core barrel had backed off crossovers resulting the inner barrel being lost down hole or just being retained by a few threads. On the occasions where the inner barrel was lost down hole the coring assembly was pulled out of the hole where the inner core barrel and cut core were recovered before coring could continue.

A drilling insert was installed in the coring assembly and the 8 ½" hole was continued from 2376.37mRT to 2424mRT where Core-12 was cut from 2424.0mRT to 2432.0mRT with 67% recovery. This core also sampled the Moolayember Formation.

A drilling insert was again installed in the coring assembly and 8 ½" hole was drilled to 2550mRT. Continuous coring with wireline retrieval was then resumed. Cores 13 to 31 inclusive were cut from 2550.0mRT to 2713.5mRT, total depth for the well, resulting in 100% recovery. A single 9m inner core barrel was utilised to mitigate the risk of the inner barrel backing off at the crossover during wireline retrieval operations.

Cores 13 to 31 also sampled the Moolayember Formation. Total depth was reached at 12:00 hrs 7th September 2020. No significant hydrocarbon indications were encountered while drilling and coring the Surat Basin sequence. Very minor gas peaks up to 1.23% total gas were recorded through the thin coals in the Walloon Sub Group. Likewise, minor gas peaks less than 1% total gas were also recorded during coring operations through the lower part of the Moolayember Formation. The coring bottom hole assembly was pulled out of the hole and wireline operations were commenced.

An extensive wireline logging programme was planned to acquire comprehensive petrophysical data as well as velocity data for refinement of the seismic velocity model for the area. Extensive formation pressure data, injectivity data and formation mobility data was also planned.

The first wireline logging run (Run-1) comprising FMI-SSCAN-PPC-TLD-HGNS-HNGS acquired data from 2704mRT to 1500mRT to overlap data acquired over the surface hole section. The maximum deviation for the 8-1/2" section recorded on the open hole logging tool, was 2.93 degrees at 1933mRT. Run-2 comprising the CMR tools stood up on what appeared to be a ledge in a washed-out section of hole in the Walloon Sub Groupand could not pass below 1795mRT. The tool was pulled from the hole and reconfigured, replacing the lower bowspring that centred the tool with a modified PPC tool that could be powered up to centre the toolstring once through the interpreted washed out hole section. The Run-2a (CMR-PPC) also stood up at the same depth, indicating a bridged off hole rather than the tool standing up on a washout ledge. Wireline logging operations were then suspended, and a wiper trip run to clean out the hole obstruction.

After the wiper trip, Run-3 of the wireline programme comprising MDT tools was then attempted. This toolstring also stood up but slightly lower in the hole at 1807mRT. Having just completed a wiper trip, it was considered that there was little prospect of running the tools to bottom on wireline and further logging attempts were abandoned.

A mixed string (L80 and 13CR80) of 7" production casing was run in hole to a shoe depth of 2697.10mRT. It was cemented in place with a CO_2-resistant 14.5ppg tail slurry and 12.5ppg Poz mixture lead slurry extending 300m back

inside the 9-5/8" casing to 1317mRT. The chrome section of casing was placed across any potential future injection zones.

A wellhead was installed and pressure tested successfully to 5,000psi. The well was suspended for future testing with a tubing hanger and 3" BPV installed in the hanger thread profile.

West Moonie-1 Exploration Well was completed safely without injury or environmental incident and the rig was released at 19:00 hrs 14th September 2020.

Interpretation of Run-1 petrophysical data indicated that significant revision of the stratigraphic formation tops at this location is required. During drilling and coring operations, the section from the Westbourne Formation to total depth was interpreted, primarily on the basis of drill cuttings, to be thickening substantially compared to the pre-drill expectation with formation boundaries being intersected progressively deeper than expected. Run-1 petrophysical data, however, indicated that the stratigraphic sequence was intersected significantly shallower than predicted. The Cretaceous sequence was up to 170m shallower than predicted and the Jurassic sequence was in the order of 100m shallower than predicted.

This revised interpretation suggests the well was drilled deeper than required to meet the primary objectives for the well. It also confirmed the primary objective of recovering core from the lower Evergreen Formation to within the Moolayember Formation was met. Although the predicted stratigraphic sequence was penetrated, formation tops were intersected high to prognosis throughout the well and a revision of the seismic velocity model for the area will be required.

While detailed analyses of the recovered core and other petrophysical data acquired at West Moonie-1 is still in progress, initial interpretation indicates the Precipice Sandstone reservoir properties are well developed with good to excellent porosity and permeability within the Precipice Sandstone with the sequence from Evergreen Formation to Moolayember Formation having the required characteristics for demonstration-scale greenhouse gas sequestration.

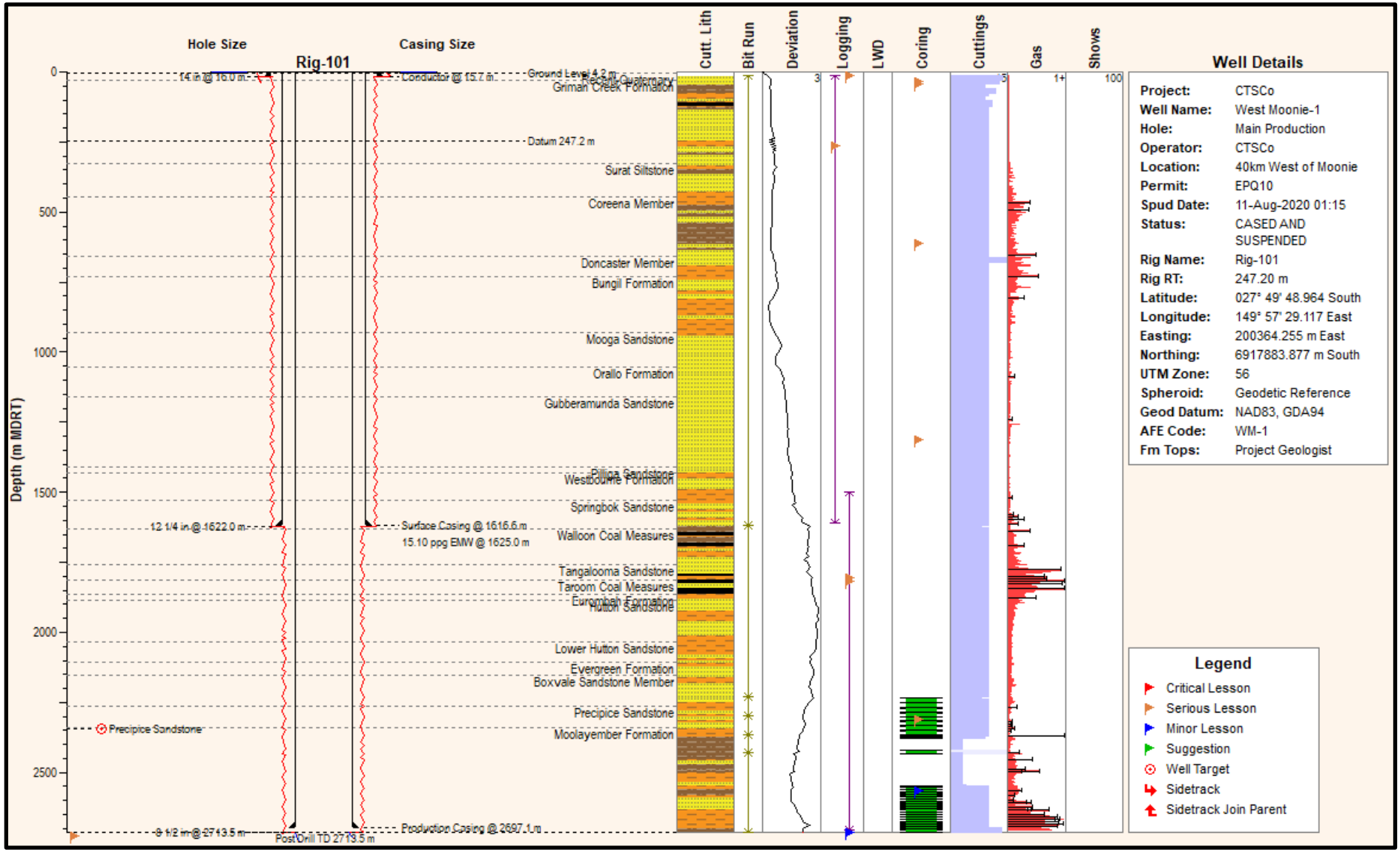

Figure 1-2 West Moonie-1 Summary Well Sketch

1.1.1 Log Interpretation

Interval (mRT)	Formation	Gross interval (m)	Net Reservoir (m)	Phit Av %	Swt Av %	Vcl Av %
1885.78 – 2105.16	Hutton Sst	219.38	75.74	14	100	23
2105.16 – 2153.11	Upper Evergreen Fm	47.95	4.52	12	93	11
2153.11 – 2262.57	Lower Evergreen	109.46	11.23	14	97	20
2262.57 – 2275.15	Upper Precipice Sst	12.58	7.16	13	100	21
2275.15 – 2340.41	Lower Precipice Sst	65.26	58.53	15	100	9
2340.41 – 2713.00	Moolayember Fm	372.59	40.94	12	97	28

Cut-offs for Pay Summary: Vcl < 50%; PHIE >10%

2. Drilling Operations

2.1 Primary Contractors and Service Providers

Table 2-1 Primary Contractors

Service	Provider
Drilling Rig	Easternwell EWG 101
Rig Camp	Easternwell EWG 101
Rig Transport	Easternwell, Neil Mansell Transport
Well Engineering, Project Management and Site Supervision	InGauge Energy
Wireline logging (Open Hole)	Schlumberger
Mud Engineering & Mud material Supply	COHO
Cementing	Halliburton
Casing Accessories	Halliburton
Drilling tools, stabilisers, etc.	Tasman Oil Tools
Drill bits	Ulterra
Mud Logging	Baker Hughes
Coring	Reservoir Group
Surface Core Handling	Stratum Reservoir
Tubular Make Up (TRS)	DrillQuip
Lease preparation / Cellar / Conductor	Kerwicks/Nebgar
Wellhead	Cactus Wellheads
Casing Supply	MITO
Waste Disposal (Drilling Fluids)	COHO
Rig and Camp Waste Disposal (Solids / Sewerage)	Cleanaway
Potable Water Supply	Superior Services
Transport / Logistics	Pentagon Freight / Roma Transport
Water Cartage and Pre-Well Logistics	SDH

2.2 Detailed Reports

- EWS Rig 101 rig specifications are included in Appendix 1.
- Daily Drilling Reports are included in Appendix 2.
- Casing and Cementing Reports are included as Appendix 3.
- Drilling Mud Report is included as Appendix 4.
- Tubular Running Service Report is included as Appendix 5.
- Daily Geological Reports are included as Appendix 6.
- Mulogging Service Report is included as Appendix 7.
- Cuttings Descriptions Reports are included in Appendix 8.
- Core Chip Descriptions are included in Appendix 9.
- Core Analysis is included as Appendix 10.
- Core Photographs are included as Appendix 11.
- The Sedimentology Report is included as Appendix 12.
- The Petrology Report is included as Appendix 13.
- The Palynology Report is included as Appendix 14.
- Wireline Logging Reports are included in Appendix 15.
- The Petrophysical Interpretation is included as Appendix 16.
- Mud Gas Isotope Analysis is included as Appendix 17.
- The Geomecahnics Report is included as Appendix 18.
- The surveyors Well Location Survey Report is included as Appendix 19.
- The Mudlog is included as Enclosure 1.
- The Composite Well Log is included as Enclosure 2

2.3 Mobilisation/Rig Move

The Easternwell Rig 101 carrier was mobilised 200km from the town of Surat, Queensland to the wellpad on 5th August 2020.

The first loads began arriving on 1st August 2020, with a total of 29 rig loads and 9 camp loads transported by Neil Mansell Transport. The full specifications of Rig 101 and camp can be found in Appendix 1.

The full drilling crew were mobilised to site from Toowoomba, and an Icebreaker was conducted by InGauge Energy on the 10th August 2020 at the rig site with both sets of crews. A 3rd Party audit was completed on site of the CTSCo Safety Management Plan.

2.3.1 Conductor

The 14” conductor pipe was pre-installed together with the cellar during lease preparations by Kerwicks in July 2020. The 14” conductor was run to 16mRT and grouted in place. The cellar was pre constructed by Nebgar engineering in Roma and installed on site by Kerwicks. The cellar and conductor were repositioned after the initial installation to accommodate enlarged sumps on location and resurveyed in their new position prior to spud.

2.4 Surface Hole

After undergoing rig pre-acceptance, West Moonie-1 was spudded on 01:15 on 11th August 2020. The drilling fluid programmed for this section was a 3-4% KCl / Xanthum Gum mud system at ~8.6ppg-8.8ppg

A 12-¼” U616S-BDEU Ulterra PDC bit with a TFA of 0.750in2 was picked up and drilled with a packed BHA assembly utilising 12-1/4” near bit and string stabilisers with 8-1/4” drill collars to section TD at 1622mRT.

The surface hole was drilled with a packed BHA with mud returns through a riser and flowline. Returns were then pumped from the cellar to a lined sump. Cuttings from the shakers were slurrified and pumped across to the sump.

The mud was run through an Easternwell centrifuge to remove fine and ultrafine solids to aide in the conditioning of the mud system and capture any solids that the shakers could not collect.

High yield sweeps of between 5 and 10bbls were pumped every 60m to aide in hole cleaning and cuttings removal.

Section TD was called at 1622mRT (93.5 m into the Springbok Sandstone) and was reached at 18:00 on 15th August 2020. A 10 bbl Hi-Vis sweep was circulated on bottom, returning only marginally increased volume of cuttings. A flow check was completed and the BHA began to be pulled out of hole. Approximately 20+ bph dynamic seepage losses occurred while circulating and negligible losses were recorded while static.

While pulling out of hole with the BHA, tight hole was encountered with 15-25klbs overpull at 1555m, 1507m-1498m, 1492m-1485m and 1481m-1476m. Up to 30klbs overpull was required at 1475m. Pull out of hole operations continued from 1475m to 1207m. Additional tight hole was encountered from 1457m to 1258mRT, requiring 10-25klbs overpull. At bit depth of 1207mRT decision was made to run back in hole to well TD and further clean up the section prior to wireline logging operations

At well TD, the well was circulated clean with 20bbls of 12ppb LCM sweep (Quickseal F&M), and 20bbls of high-yield sweep was circulated, with dynamic losses reducing from 24bph to ~2bph. The high yield sweep returned appreciable volumes of mechanically removed filter cake and wellbore debris initially, before cleaning up.

After circulating the open hole clean, the rig continued pulling out of hole with the BHA, with further areas of tight hole encountered at 1590m-1580m, 1564m, 1555m and 1523m, working through with 12-18klbs. The 4" DP was pulled out of hole on elevators from 1113m to 209mRT with a maximum overpull of 5-10klbs seen. No further tight hole was experienced while pulling out of hole to surface.

The bit and BHA were pulled out of hole and the bit dull graded at 1-1-ER-N-X-I-WT-TD.

2.4.1 12-1/4 Open Hole Logging

Schlumberger rigged up to log the 12-1/4” open hole with a Gamma Ray, X-Y Calliper, SP, PEF, Density-Neutron, MSFL-SLL-DLL, Dipole Sonic and GPIT tool string. The string was approximately 40.25m in length.

The 12-1/4” logging tools were run in hole at 17:05 on 16th August 2020 and back out of hole at 23:40 on the same day. No hang ups or tight spots were experienced while running in and out of hole.

The logging job was supervised by the Wellsite Geologist and the corresponding logs were sent back to the CTSCo Project Geologist for review.

2.4.2 Surface Casing and Cementing

After completion of the open hole logging, a wiper trip was completed with the 12-1/4” BHA prior to the casing run.

During the wiper trip, a bridge was encountered at 1611.5mRT that took 25klbs / 160GPM / 25 RPM without further progress. The bridge was worked through with 80RPM/500GPM from 1611.5m to 1615mRT.The BHA was reamed into the well from 1615m to 1622mRT. A 20bbl high yield pill was circulated into the well with significant cuttings recorded at surface. Dynamic losses of ~12bph were recorded and a Quickseal LCM pill was pumped, lowering losses to <4bph. The 12-1/4” BHA was the retrieved from the well on 4" DP from 1615m to 1470m, working tight hole with 20-25klbs overpull at depths 1560m - 1557m, 1540m, 1532m. The remainder of the trip back to surface was completed without issue.

The slip table was removed, riser drained, and flow line and riser removed. The conductor stump was cut down and removed from the cellar. A 32” Cactus landing base was installed in the cellar prior to running 9-⅝” 36# K55 BTC casing. A 2 joint shoe track was run and baker-locked across the shoe track and a further 2 joints above the float collar (see casing tally in Appendix 3).

The 9-⅝" 36# K55 surface casing was RIH by DrillQuip using a Volant casing running tool and weCAAT wireless torque sub to record torque values. Halliburton Bow spring centralisers were installed two per joint across the 9-5/8" shoe track joints with stop collars and one every three joints back to surface above this, placed across the couplings.

The casing was filled and circulated through the volant tool while running in hole to periodically condition the mud. The casing was washed down from 1601mRT to 1622mRT. The casing was then picked up and the wash joint was removed. The casing head running tool and landing joint were installed and the casing was landed out at 1616.71mRT.

The well was circulated with 1.5 x hole volumes through the landing joint.

Halliburton were rigged in to perform the cement job, making up the double plug BTC cement head, wiper plugs and surface lines. The lines were flushed, and pressure tested successfully to 3,000psi before the bottom plug was released. 42.1bbls of Mud Flush Spacer was pumped.

The cement volumes were calculated based on 50% open hole excess on a gauge hole size of 12.5" for both the lead and tail cement. The top of the 15ppg tail cement was programmed to be 300m above the Gubberamunda Sandstone.

Halliburton mixed and pumped 268.5bbls of 12.5ppg lead cement and 144.1 bbls of tail slurry at 15ppg. Lost returns were observed for +/-20bbls while cement was still inside the casing. The top plug was released and displaced a total of 394bbls, 300bbls being rig supplied drilling fluid and 94 being fresh water. The pump pressure rose to +/-2784psi and the cement kick outs shut down the pump approximately 10bbls before the end of calculated displacement. The pressure was bumped up once again and bled down 80psi over 9 mins and observed at a final pressure of 2742psi. Cement was in place at 05:53 on 19th August 2020.

Approximately 114.6bbls of cement returns were recorded at surface, with the initial returns a mixture of both mud and cement. Returns were checked with a pressurised mud balance to confirm a density of 12.5ppg. Cement returns were sent across to the cellar and then transferred across to the sump. Refer to the Halliburton Cementing End of Well Report for details in Appendix 3.

The cement head and surface lines were rigged down while preparing the casing hanger slips for the landing base in the cellar. The elevators were latched, and the slips set with 12klbs string weight into 32" landing base with Cactus Wellhead technician on hand. The casing running tool and landing joint were removed from the wellhead and laid out. The DrillQuip CRT was then rigged down. The 2-1/16" 5M casing head side outlets were installed and tested against a 1-1/2" VR plug to 5,000psi for 15 minutes successfully.

2.4.3 Nipple Up BOPs

The 11" 5K BOPE comprising of 5K mud cross, 5K double gate and 3K annular were rigged up onto the Cactus CTF-Q 11" 5M casing head connection. The accumulator lines, flow nipple, flowline, possum belly nipple, kill and choke lines were all installed. The 11" Nominal x 4-1/2" IF CW Test Plug/Retrieving Tool was RIH and the test plug was set in place.

The BOPE connections were pressure tested to 250psi low / 3000psi high for 5 and 10 minutes, respectively.

The test plug was removed and wear bushing RIH and set in the "A" section.

2.5 Production Hole

An Ulterra 8-½" U516S-BCEU PDC bit was picked up and RIH.

Prior to tagging cement, emergency drills were conducted with the crew, covering BOP and muster drills.

The top of hard cement was tagged approximately 58.9m above the shoe track at 1534mRT with 15klbs (10bbls volume equivalent).

The top plug and cement were drilled out in 3.5 hours. The casing was then pressure tested to 2,800psi successfully for 10 minutes with a drop of <1% across the period.

The bottom plug, shoe track and float shoe were drilled out to 1616.3m in approximately 4 hours. The BHA tagged TD at 1622mRT and drilled another 3m of new hole to 1625mRT. The mud was circulated to 9.1ppg even density in and out prior to the FIT.

The driller picked up from 1625m to 1616m and laid out a single joint. The FIT was conducted successfully per program with 9.1ppg fluid to 1660psi of surface pressure, giving an equivalent mud weight of 15.1ppg.

The driller continued to drill 8-1/2" hole with a packed BHA assembly using an 8-1/2" Near Bit Stabiliser, 8-3/8" Stabiliser and 6-3/4" Drill Collars.

8-1/2" hole was drilled to 2232mRT. During drilling, a burst hydraulic hose on the TDS caused 2 hours of NPT.

The Geologist called core point at 2232mRT. The BHA was pulled out of hole, experiencing some tight hole from TD back to 1932mRT. The BHA was run back into bottom. A 20bbls high yield sweep was circulated through the wellbore with only a negligible increase in cuttings returned to surface. The well was displaced to a fresh 4% KCL premix mud system and the BHA was pulled out of hole. Some tight hole was experienced at 1649mRT, with no further tight hole back to surface.

2.5.1 Coring

Once back at surface the 8-1/2" packed BHA was laid out and the coring BHA was prepared at surface to be RIH.

The BOP Variable bore rams were changed out to 5-1/2" pipe rams and function tested. The VBRs were then pressure tested successfully to 350psi and 5000psi for 5 and 10 minutes each. The wear bushing was reinstalled back into the wellhead in preparation for the coring.

The 3-1/2" coring BHA consisted of an 8-1/2" Reservoir Group wireline insert PDC bit, 18m core barrels, 8-7/16" stabilisers, 6-1/2" Drill collars and 5-1/2" drill pipe.

The coring BHA was run in hole stopping occasionally to break circulation and condition the mud system. The coring BHA tagged up at TD at 2232.91mRT. New hole was drilled to 2234mRT and the open hole was circulated with 382bbls of mud prior to coring.

The EWE E-line unit was rigged up and the e-line and overshot were run in hole, latching and retrieving the drill bit insert.

Both inner core barrels were made up to 18m in length and then pumped down hole with positive indications that the inner barrel landed out. Coring was initiated from 2234mRT to 2252mRT. The overshot was run in hole, latching onto the inner core barrels before being pulled back to surface. At around ~1300mRT weight was lost on the wireline unit and the core barrel was suspected of being dropped. On retrieval of the e-line to surface the Reservoir Group wireline rope socket was found to have parted. An overshot was rigged up at surface on e-line and run in, latching onto the fish at the first attempt and retrieving it back to surface with the core barrels. On inspection of the rope socket at surface, Reservoir Group had used an incorrect 5/15" wedge on 7/32" wireline, resulting in the rope socket slipping and then parting downhole. Core #1 was laid out and measured at 17.71m (98.38% recovery).

The inner core barrels were pumped back to TD and coring recommenced from 2252m to 2270mRT. Core #2 was retrieved on e-line with a recovery rate of 18.1m (100.55%). Core #3 was cut and recovered without incident Retrieving 18.11m, (100.61% recovery).

During Core #4, a pressure spike then 40psi drop was observed during the coring, providing indication that the core had pinched off early after 13m of the 18m barrel was cut. Wireline was run to bottom and the core barrel was latched and retrieved back to surface. No core was observed inside the top inner core barrel and the threaded crossover, spacer sub and inner core sleeves were missing. The coring BHA was tripped back out of hole to retrieve the core and components left inside the core string.

Once the coring BHA was retrieved the inner core barrel was pulled out of the string and Core #4 was retrieved with 13.16m recovered from a 13m coring length with a 101.2% recovery.

Cores 5, 6 and 7 were cut successfully with minimal issues and good recovery % recorded.

Core #8 was cut, retrieving approximately 17.8m of cut core to surface on wireline. After retrieving 8.28m of the core, a Reservoir Group assistant hand inadvertently removed the clamp suspending the 2nd inner core barrel at surface, releasing the core barrel downhole, inside the coring BHA.

The coring BHA was pulled out of hole back to surface. Once at surface the remainder of Core # 8 was retrieved internally from the coring BHA. The overall recovery for Core #8 was 18m cut, 17.91m retrieved = 99.5% recovery.

With the BHA at surface the core bit was swapped out for a new bit. The old bit was scored 1/1/ER/C/N/X/I/WT/DTF.

The coring BHA was run back in hole. An additional 7.25 hours of NPT was experienced due to an issue with a top drive PCB causing an intermittent fault.

Once on bottom, Core #9 was cut from 2369.1m to 2371. 2mRT before a 75psi pressure drop was seen.as the inner core barrel pinched on the core and unseated. Core #9 cut 2.1m and retrieved 1.82m with an 86.66% recovery

No core was recovered on core #10 after cutting 5.1m of core. The core sample had not been caught by the catcher. Core #11 was run back in and an attempt was made to try and swallow up core #10. The barrel was pulled back to surface after 0.17mRT of new core was cut. The core barrel contained 2.93m of partially recovered core #10, 2.34m of core #10 sample not recovered.

The core drill bit insert was RIH on wireline and the coring BHA drilled to from 2376mRT to 2424mRT.

Core # 12 was cored from 2424mRT to 2432.08mRT, observing a 62psi pressure drop as the ICB unseated. The core was pulled back to surface on wireline. Core #12 cut 8m and retrieved 5.4m (76.5% recovery.)

During the retrieval of core #12 the ICB threads parted at top and bottom of the saver connection, releasing and dropping it back into coring string. The inner and outer core barrel components were pulled back to surface to swap out.

The core equipment was swapped on surface and the coring BHA with insert drill bit was run back in hole at 01:00 on 1st September 2020. Once back at 2432mRT the coring BHA drilled ahead to 2550mRT to the new prognosed depth of the top of Precipice. Once the coring BHA was on bottom drilling commenced, reaching 2550mRT on the 3rd September 2020 at 06:30.

The insert drill bit insert was retrieved on wireline and a single 9m inner core barrel was pumped and seated in the coring BHA. Core #13 was retrieved early after a pressure drop of 40psi was seen, with the Reservoir Group Lead Engineer concerned that a component may have backed out. Core #13 was retrieved on wireline back to surface intact without any backed-out components. Core #13 cut 3.58m and retrieved 3.58m (100% recovery).

All further coring from Core Barrel 14 onwards was without incident and executed successfully until reaching TD at 2713mRT. Once at 2713mRT, the Wellsite Geologist called Total Depth in the Moolayember Formation.

The coring BHA was pulled back to surface and laid out.

With coring completed, the 5-1/2” pipe rams were change out to 2⅞" x 5" variable pipe rams and the Cactus wear bushing was retrieved back to surface with no signs of wear. The BOP equipment was retested successfully with the rams and associated equipment being tested to 3,000psi.

Table 2-2: Core Summary Table

Core #	Length Cored	Recovered Length	Recovery
	m	m	%
1	18	17.71	98.39
2	18	18.1	100.56
3	18	18.14	100.78
4	13	13	100.00
5	15.7	15.7	100.00
6	15.9	15.7	98.74
7	17.5	17.61	100.63
8	18	17.91	99.50
9	2.1	1.82	86.67
10	5	2.76	55.20
11	0.17	0.17	100.00
12	8.08	5.4	66.83
13	3.58	3.58	100.00
14	9.15	9.15	100.00
15	8.72	8.71	99.89
16	8.35	8.35	100.00
17	7.75	7.75	100.00
18	8.91	8.77	98.43
19	9	9.3	103.33
20	9	8.77	97.44
21	9	8.94	99.33
22	9	8.97	99.67
23	9	9.15	101.67
24	9	8.81	97.89
25	9	9.05	100.56
26	9	9.07	100.78
27	9	9.08	100.89
28	9	9	100.00
29	9	9.2	102.22
30	9	9	100.00
31	9	9	100.00

2.5.2 8-1/2” Open Hole Logging

The logging equipment was rigged up at surface in preparation for the logging runs at 04:00 on 9th September 2020. The rig experienced approximately 3.25 hours of NPT due to Schlumberger crew on rest time and a further 2.75hrs fault finding a bandwidth issue with the logging tool string while making it up on the floor. Schlumberger removed the SP tool from the string due to a bandwidth fault and the logging tool began to function correctly.

Run #1 was run in hole with the following tools - GR, XY Calliper, PEF, Density Neutron, MSFL-SLL-DLL, Bipol Sonic, FMI. Once in hole, the calliper arm was recorded as not opening at 2705mRT. The string was picked up a few meters and the calliper arm reopened successfully. The logging string was run to TD and logged back to surface. The logging string reached surface at 18:00 on 9th September 2020.

Logging run #2 was rigged up with the CMR Tool. The string was run in hole and hung at 1795mRT but could not be run through the obstruction. The string was pulled out of hole to surface to allow a wiper trip to be completed prior to running any further logs.

The wiper trip 8-1/2" BHA was made up with SPL516 Ulterra 8½" PDC (re-run) and run in hole, tagging up at 1791mRT. The 8-1/2" hole section was washed and reamed. The BHA was run in hole, washing, and reaming any tight spots as required.

While connection at 2268mRT, the string became stuck and could not be worked through. A 7bbl High Yield sweep was pumped, with a large volume of cutting returned to surface. The string was freed up with an additional 50klbs of overpull.

The string was worked down to TD at 2713mRT, washing and reaming through any tight spots as encountered. Two 20bbls high yield sweeps were pumped in tandem, with a large volume of cuttings returned to surface on the first sweep, and finer cuttings on the second sweep.

The BHA was pulled back to surface and laid out in preparation for wireline Run #3.

Wireline Run #3 was made up with the MDT tool without the dual packers. The dual packer was removed to mitigate the tool getting stuck in hole. Removal of the dual packer reduced the string OD from 7" to 5.28".

The MDT tool string was run in hole but hung up at 1807mRT. Four attempts were made to work the tool through the obstruction before the logging run was cancelled and pulled out of hole.

All further logging runs were cancelled including Run #4 with the checkshots and seismic Vibroseis™.

2.5.3 Production Casing and Cementing

The rig floor was dressed in preparation for casing running to handle the 7" BTC casing. The bail arms, elevators, slips and blocks were swapped out. The 7" 26# L80 BTC casing was run in hole with a two joint BTC shoe track.

The shoe was made up with standard L80 Carbon steel casing. Above the shoe, ~600m of 13Chrome80 casing would be placed across future potential CO_2 injection zone. Above the injection zone, the string would crossover back to the standard L80 carbon steel casing.

The shoe and collar were run in hole and tested successfully to confirm flow. A further 4 joints of BTC casing was run in hole. The shoe track and 2 joints above it were baker locked in place.

The casing handling equipment was changed out to the DrillQuip premium casing handling equipment. Changing out to non-marking slips, DrillQuip bail arms and elevators to suit 7" 26ppf 13Cr L80 JFE casing.

The DrillQuip Valant casing running tool dressed for 7in casing, and weCAAT wireless torque sub were rigged up and the 7in 26ppf 13Chrome80 JFE Bear was run in hole. Maximum, Minimum and Optimal torques were set in accordance with the MITO data sheet.

The casing was filled on every joint and circulated every 10 joints through the volant tool, while running in hole. The casing was washed down at 2010mRT, 2180mRT and 2440mRT. The casing was run to 2702mRT and then picked up and the wash joint was removed. The landing joint was installed, and the casing was landed out at 2697.1mRT

The well was circulated with 630bbls of mud, pumped at between 6-8bpm prior to the cement job to help remove settled solids and break down any mud gelation prior to cementing.

The rig pump was lined up and pumped 43bbls of 9.00ppg Tuned Spacer mixed in the rig pits. The 7" BTC cement head was rigged up onto the landing joint. The surface lines were flushed to the cellar, and pressure tested to 500psi for 5 mins and 4,600psi for 10 minutes.

Halliburton mixed and pumped 52.5bbls of 12.5ppg 65/35 GP/Poz Blend lead cement slurry and 83 bbls of 14.5ppg CO_2 resistant tail slurry at 14.5ppg.

The top plug was released, and the displacement fluid was pumped with 8.5ppg brine. Total losses of mud returns were observed at 165bbls into displacement and returns regained after 186bbls pumped, with all cement still inside the casing.

Prior to bumping the plug, the displacement rate was staged down from 5 to 2bpm, 30 bbl. prior to bumping. The plug was bumped with 334.5bbls pumped. The casing was pressured up to 4,500psi for 10 minutes. Pressure was bled off and 5bbls return volume was observed back into the cement displacement tub, confirming floats held. The cement head and surface lines were rigged down, and all remaining cementing equipment demobilised from location.

2.5.4 Secure Well

The cement head was laid down and the BOPs were lifted to install the wellhead "B" and "C" section.

The "C" section was been installed on the "B" section, off the rig critical path and tested to 5,000psi prior to landing the "A" section in Mid-August.

The packoff assembly was installed and pull tested to 40klbs.

The wellhead "B" section was nippled up onto the "A" section 11" 5M flange but could not be seated and tightened up. The packoff assembly was found to be incorrectly seated. The packoff assembly running tool was made up and the assembly was pulled, re-seated and the pull test was repeated to 40klbs. The "B" section was re-landed onto the "A" section 11" 5M flange successfully and tightened per the Cactus procedures. The "B" section was pressure tested to confirm integrity, testing the 7" mandrel packoff void and casing head and tubing head connection void to 5000psi over 15mins.

The Tubing hanger and 3" BPV were installed inside the "B" section and all valves were left closed.

The rig was released from the well at 19:00 on 14th September 2020.

2.6 Daily Report Summary

Report Date	Report #	Midnight Depth (m)	24-hour Summary
11 Aug 2020	1	353.7	Completed hazard hunt and washed in hole with 8¼" DC and HWDP to tag at 16mRT. Spudded 12¼" Surface Hole and drilled with reduced parameters to 41mRT. Pulled out of the hole to 10.67m and replaced HWDP with 8¼" DC, 2 x 12¼" string stabs, crossovers and 6¾" DC. Drilled 12¼" surface hole with packed rotary assembly from 41mRT to 353.7mRT.
12 Aug 2020	2	391.7	Drilled 12¼" surface hole from 353.7m to 373.7mRT using packed rotary assy. Identified and troubleshot TDS motor problem. Pulled out of the hole to 10mRT. Removed and changed out TDS main hydraulic rotation pump. Ran in the hole and washed to bottom; no fill. Drilled ahead from 373.7m to 391.7mRT.
13 Aug 2020	3	920.0	Drilled 12¼" Surface Hole from 391.7m to 650mRT. Rig repair: Electrical issue resolved with iron roughneck. Drilled 12¼" Surface Hole from 650m to 795mRT. Circulated well and assessed hole cleaning, conducted rig service. Drilled 12¼" Surface Hole from 795m to 920mRT.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
14 Aug 2020	4	1255.0	Drilled 12¼" Surface Hole from 920m to 1121mRT. Circulated sweep through wellbore and changed swab on mud pump 2. Drilled 12¼" Surface Hole from 1121m to 1255mRT. Circulated well and pulled out of the hole with DP on elevators from 1255m to 365m; worked tight hole with 25klbs max overpull at 1067m, 1050m, 1040m, 1018m. Circulated bottoms up. Ran in the hole with DP on elevators from 365m to 1235m and broke circulation every +/-300m. Ran in the hole to 1245mRT.
15 Aug 2020	5	1622.0	Ran in the hole from 1235m to 1255mRT; no fill. Drilled 12¼" Surface hole from 1255mRT to sectional TD at 1622mRT as per geological criteria. Pull out of the hole with 4" DP on elevators to 1207mRT; worked tight hole (10-30klbs overpull) as required. Circulated bottoms up and observed soft filter cake debris at shakers. Ran in the hole to 1370mRT.
16 Aug 2020	6	1622.0	Run in the hole from 1370m to 1600mRT and washed to bottom with 350GPM; no fill. Pumped 20 bbls x 12ppb LCM sweep and cured ~24bph dynamic losses down to ~2bph. Pumped 20bbls Hi yield sweep to clear appreciable volume of mechanically removed filter cake & wellbore debris. Circulated well clean. Stroked 30bbls of viscous/LCM pill across Gubberamunda Sandstone. Pulled out of the hole 4" DP from 1622m to 209m on elevators & worked tight sections clean with 12-18klbs max overpull. Laid out 12¼" BHA and bit (1-1-ER-N-X-I-WT-TD). PJSM and rigged up Schlumberger to conduct wireline logs with PEX-PPC-HRLA-SSCA. Performed E-logging as per program and WSG directions. Laid out logging tools and rigged down wireline sheaves.
17 Aug 2020	7	1622.0	Slipped and cut drill line. Picked up 12 1/4" Wiper Trip BHA, RIH to 407m. Repaired HPU hydraulic hose. Continued to RIH to 1260m. Replaced damaged IR hydraulic hose. Continued to RIH to 1611.5m. Reamed to TD 1622m. Circulated hole clean and swept well bore with Hi Vis/LCM pill; added LCM directly to active to treat dynamic seepage losses. Spotted Hi Vis / LCM pill on bottom. POOH to 182m, observed and wiped clean minimal tight hole spots.
18 Aug 2020	8	1622.0	Laid out BHA. Rigged down riser. Cut conductor. Installed casing base plate. Rigged up CRT. Dressed rig floor to run 9 5/8" casing. Picked up, made up shoe track and checked same. Continued to run in the hole with 9 5/8" casing to 1610mRT. Washed string to 1622mRT. Laid out wash joint. picked up, made up and landed out casing at 1616.71mRT. Commenced circulating 1.5-hole volume.
19 Aug 2020	9	1622.0	Completed circulating hole. Rigged up surface lines and cemented 9 5/8" casing with Halliburton. Set Cactus C21P base into 32" plate slips. Released and laid out landing joint and casing head running tool. Laid out CRT. Installed wellhead valves. Nippled up BOPE and pressure tested. Picked up 8.5" BHA. Slipped drill line.
20 Aug 2020	10	1740.0	Completed slip of drill line. Continued to run in the hole to 1472mRT. Held BOP and muster drill's, tested ESD's. Washed downed to TOC tag depth 1534mRT. Drilled top plug and cement to 1589mRT. Conducted dummy FIT. Pressure tested casing 2800psi for 10 mins. Drilled bottom plug, cement and shoe track. Drilled new formation to 1625mRT. Circulated and condition mud. Performed FIT to 15.1ppg EMW. Drilled ahead 8 1/2" hole to 1739mRT.
21 Aug 2020	11	2161.0	Continued to drill 8 1/2" hole from 1739m to 1751mRT. Serviced rig. Continued to drill 8 1/2" hole from 1751m to 1789mRT. Rig repair TDS hydraulic hose replaced. Continued to drill 8 1/2" hole from 1789m to 2161mRT.
22 Aug 2020	12	2232.0	Continued to drill 8 1/2" hole from 2161m to 2232mRT core point. Circulated and conditioned hole. POOH from 2232m to 1890mRT, working tight hole as required. Ran in the hole from 1890m to 2215mRT. Washed down from 2215m to bottom at 2232mRT. Pumped 20bbl sweep, circulated and cleaned hole. Displaced 80bbls drilling fluids to new 4%KCL premix drilling fluid. Flow check. Pulled out of the hole from 2232m to 1610mRT. Displaced 140bbls drilling fluids to new 4%KCL premix drilling fluid. Flow checked. Pulled out of the hole from 1610m to 1060mRT. Displaced 140bbls drilling fluids to new 4%KCL premix drilling fluid. Flow checked. Pulled out of the hole from 1060m to 500mRT. Displaced 140bbls drilling fluids to new 4%KCL premix drilling fluid. Pulled out of the hole from 1060m to 224mRT. Flow checked. Pulled out of the hole with BHA #3 from 224m to 140mRT.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
23 Aug 2020	13	2232.0	Completed pulling out of the hole with BHA #3 from 140m to surface. Changed out saver sub, elevators and grabber box guide. Recovered wear bushing. Prepared, changed out 2 7/8" - 5" VBR's to 5½" fixed PR's and pressure tested same. Ran in the hole set wear bushing. Picked up coring BHA #1, Ran in the hole to 217mRT. Slipped and cut drill line. Continued to run in the hole from 217m to 1612mRT. Circulated bottoms up at shoe. Continued to run in the hole from 1612m to 1858mRT.
24 Aug 2020	14	2261.0	Continued to run in the hole from 1858m to 2203mRT. Washed down from 2203m to 2232.9mRT. Established SCR's. Drilled 8 1/2" hole from 2232.9m to 2234mRT. Circulated hole clean. Prepared and commenced coring operations. Cut core #1 from 2234m to 2252mRT. Attempted to recover core #1. Wire line failure, core barrels dropped to bottom from 1300m+/-. Recovered wire line. Changed out wire rope socket, re-ran retrieved overshot assembly. Redressed wire rope socket and overshot assembly. RIH retrieved and laid out core #1. Installed inner core barrels, seated same. Commenced to cut core #2 from 2252m to 2262mRT.
25 Aug 2020	15	2301.0	Completed cutting and recovery of core #2 (100% recovery). Completed cutting core #3. Attempted core recovery, at 600mRT observed loss weight loss on wireline. Pulled out of the hole observed overshot open. Changed out overshot, ran in the hole latched and recovered ICB. Laid out core #3 (100% recovery). Completed cutting core #4 prematurely at 2301mRT, due to irregular SPP behaviour. Attempted recovery. Observed no core recovery & missing crossovers and core barrel shoe and inner core split tubes. Flow checked. Pulled out of the hole from 2088m to 1611mRT, flow checked. Pulled out of the hole from 1611m to 560mRT.
26 Aug 2020	16	2302.0	Continued to pull out of the hole to surface with Core-4. Recovered core # 4. Serviced rig. Made up BHA #5 ran in the hole to 207mRT. Continue to Run in the hole to 1613mRT. Slipped drill line. Continued to run in the hole to 2281m. Wash down from 2281m to 2301mRT. Drilled from 2301m to 2302mRT. Circulated bottoms up. Rigged up wire line and recovered drilling rod assembly. Picked up and making up core head C3 RR1 BHA #5.
27 Aug 2020	17	2369.1	Continued to pump and seat inner core barrel core #5. Recommenced continuous coring operations, cutting and retrieving cores from 2302m to 2369mRT. Whilst recovering lower inner core barrel of core #8, RG assistant inadvertently released inner core barrel clamp.
28 Aug 2020	18	2369.1	Rigged down wire line equipment. Flow checked well. Pulled out of the hole to 2336mRT. Worked tight hole from 2336m to 2298mRT. Continued to pull out of the hole from 2298m to 1767mRT. Serviced rig. Rig repair- draw works fault. Continued to pull out of the hole from 1767m to 205m. Flow checked well. Continued to pull out of the hole with BHA #5 from 205m to 20mRT. Recovered dropped inner core barrel, laid out same. Broke off bit 3CRR1. Made up bit 4C, BHA #6, ran in the hole to 20mRT. Installed drill rod assembly established baseline circulating data. Pulled and laid out drill rod assembly. Made up ICB, seated same. Established baseline circulating data. Continued to make up BHA #6 and run in the hole from 20m to 1127mRT.
29 Aug 2020	19	2376.2	Continue to run in the hole with BHA #6 from 1127m to 1583mRT casing shoe. Slip drill line. Rig service. Continue to run in the hole with BHA #6 from 1583m to 1657mRT. Rig repair. Worked string to 1657 to 1689mRT. Continue to run in the hole from 1689m to 1798mRT. Rig Repair: pull out of the hole from 1789m to 1622mRT. Troubleshoot draw-works fault. Continued to RIH from 1622m to 2234mRT. Tagged up at 2334mRT.Wash and reamed from 2233m to 2369mRT. Commence to cut core #9 and continued continuous coring operations.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
30 Aug 2020	20	2424.0	Continued coring operations. Cut and retrieved core #9 from 2371.1m to 2376.2mRT and core #10 from 2376.2m to 2376.4mRT. Rigged up wire line, run and seated drill rod assembly. Unable to release from drill rod assembly. Pulled out of the hole with drill rod assembly, rigged down wire line equipment. Made up TDS, circulated hole. Laid out single to 2357mRT. Modified and inspected drill rod assembly. Rigged up wire line equipment. Ran in the hole with drill rod assembly, seated and released same. Washed and reamed from 2357m to 2376.4mRT. Drilled 8 ½" hole from 2376.4m to 2424mRT, flow checked at 2392mRT. Pumped and commenced to circulate hole clean.
31 Aug 2020	21	2432.0	Complete circulating hole clean. Flow Check well. Rig up wire line equipment and recover drill rod assembly. Run in the hole and seat coring assembly. Cut core #12 from 2424m to 2432mRT. Observed pressure drop, pinch off. Rigged up wire line. During retrieval of ICB at surface threaded connection parted, releasing ICB to bottom. Circulated well. Pulled out of the hole from 2414m laid out BHA#6.
01 Sep 2020	22	2447.0	Completed laying out BHA. Picked up and started running in the hole with BHA #7 to 198mRT. Slip and cut drill line. Serviced rig. Continued to run in the hole from 198m to 585mRT. Rig Repair. Continued to run in the hole from 585m to 2273mRT. Washed and reamed from 2273m to 2280mRT. Continued to run in the hole from 2280m to 2298mRT. Washed and reamed from 2298m to 2346mRT. Continued to run in the hole from 2346m to 2413mRT. Washed and reamed to bottom at 2432mRT. Drilled ahead 8 ½" hole from 2432m to 2447mRT.
02 Sep 2020	23	2530.0	Continued to drill ahead 8 ½" hole from 2447m to 2530mRT.
03 Sep 2020	24	2571.5	Continuing to drill 8 ½" hole at 2550mRT. Rigged up wire line equipment, retrieved and laid out drill rod assembly. Picked up, ran and confirmed coring assembly seated. Commenced continuous coring operations. Cut and retrieved 3.5" core from 2550m to 2571.45mRT.
04 Sep 2020	25	2593.1	Continued continuous coring operations. Cored and recovered cores #15, #16, #17, cored #18 from 2587.55m to 2593.12mRT.
05 Sep 2020	26	2632.5	Continued continuous coring operations. Cored and recovered cores #18, #19, #20, #21. Cored #22 from 2623.46m to 2632.46mRT and commenced core recovery.
06 Sep 2020	27	2685.5	Continued continuous coring operations. Cored and recovered cores #22, #23, #24, #25, #26, #27. Commenced coring #28 from 2677.46m to 2685.50mRT.
07 Sep 2020	28	2713.5	Continued continuous coring operations cut and retrieved core samples #28, #29, #30 and #31 to section and well bore total depth of 2713.50mRT. Attempted to insert and release drill rod assembly on wire line. Pull out of the hole with drill rod assembly. Rigged down wire line equipment. Circulated to balance mud. Flow checked. Pulled out of the hole with core string on elevators to 2424mRT.
08 Sep 2020	29	2713.5	Continued to pull out of the hole to 1606mRT. Slipped drill line. Serviced rig. Continued to pull out of the hole to 1109mRT. Rig Repair: Replaced hydraulic hose on HPH drillstring at 1109mRT, monitoring well on trip tank system. Continued to pull out of the hole with BHA to surface. Changed out 5 ½" pipe rams for 2 7/8" to 5" variable pipe rams. Pressure tested BOPE.
09 Sep 2020	30	2713.5	Completed pressure test of BOPE. Conducted rig maintenance whilst waiting on wireline logging. Preparing to commence wire logging operations. Completed Log run #1. Commenced Log run #2 unable to pass 1795mRT. Pulled out of the hole, tools at surface at 23:45hrs. Reconfiguration of tool string.
10 Sep 2020	31	2713.5	Continue reconfiguration of log run #2 tool string to rerun same. Rerun Log run #2A attempt unsuccessful. Pull out of the hole. Lay out Log run #2A tools. Rigged down wireline equipment. Dressed floor and changed handling gear for wiper trip. Made up BHA #8, Bit #6RR 8½" rotary assembly to 224mRT. Continued to run in the hole to 1791m tagged 10K/lbs same at 1808m, 1837m, 2257m washing and reaming, then washing and wiping. At 2269mRT tagged 5klbs made up TDS and observed string to be stuck. Worked string attempting to free with flow but no rotary.
11 Sep 2020	32	2713.5	Worked stuck pipe at 2269mRT, until free. Continued to run in the hole washing and reaming from 2269m to 2435mRT. Ran in the hole from 2435m to 2687mRT. Washed and reamed to bottom at 2713.46mRT. Circulated hole clean swept 2 x 20bbl high yield pills. Flow checked and POOH. Waited on Schlumberger spare parts for failed wire line unit water pump pulley.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
12 Sep 2020	33	2713.5	Continued waiting on SLB hotshot. Repaired wire line unit. Rigged up and attempted to run log #3 MDT's, hung up at 1807mRT. Aborted logging program. Pulled out of the hole and laid out SLB tools. Rigged down logging equipment. Prepared & commenced to run in the hole with 7" 26ppf L80 BTC/13Cr JFE mixed casing string as per casing tally and centralisation program to 598mRT.
13 Sep 2020	34	2713.5	Continued to run in the hole with 7 " BTC/JFE mixed casing string as per casing and centralisers tally from 598m and landed out at 2697.1mRT. Circulated prior to cementing. Cemented 7" casing as per program. Rigged down surface cement equipment. Recovered and laid out landing joint and hanger running tool. Laid out casing running tool and bails. Washed pack off seal area, run, landed and pressure tested and overpulled 40klbs pack off. Flushed BOPE with fresh water.
14 Sep 2020	35	2713.5	Cemented 7" casing as per program with CIP by 00:33hrs. Bumped plug. Pressure tested 7" casing to 4500psi x 10mins; good test. Floats held. Good returns observed throughout majority of the job. Laid landing joint and rigged up and ran packoff assembly. Packoff tested good with 5000psi x 15 mins pressure test and 40klbs pull test witnessed by NOCR. Rigged down from casing and cementing operations and attempted to installed wellhead with Cactus. Unable to install as flange between 'A' and 'B' sections impeded by packoff protruding ~20mm too high. Redressed rig floor. Made up packer retrieval assembly, retrieved packoff and re-dressed and re-ran packoff. Retested pack off to 5000psi for 15 mins and 40klbs pull test; ok. Installed Cactus Wellhead and pressure tested same to 5000psi for 15 mins. Laid out packoff running assembly and released rig to move from West Moonie-1 at 19:00hrs.

2.7 Time Depth Curve – West Moonie-1

The West Moonie-1 drilling scope took 33.90 days from spud to rig release. A total of 161 hours of Non-Productive Time (NPT) were incurred as detailed below. Approximately 105.75 hours were attributed to issues during the coring campaign.

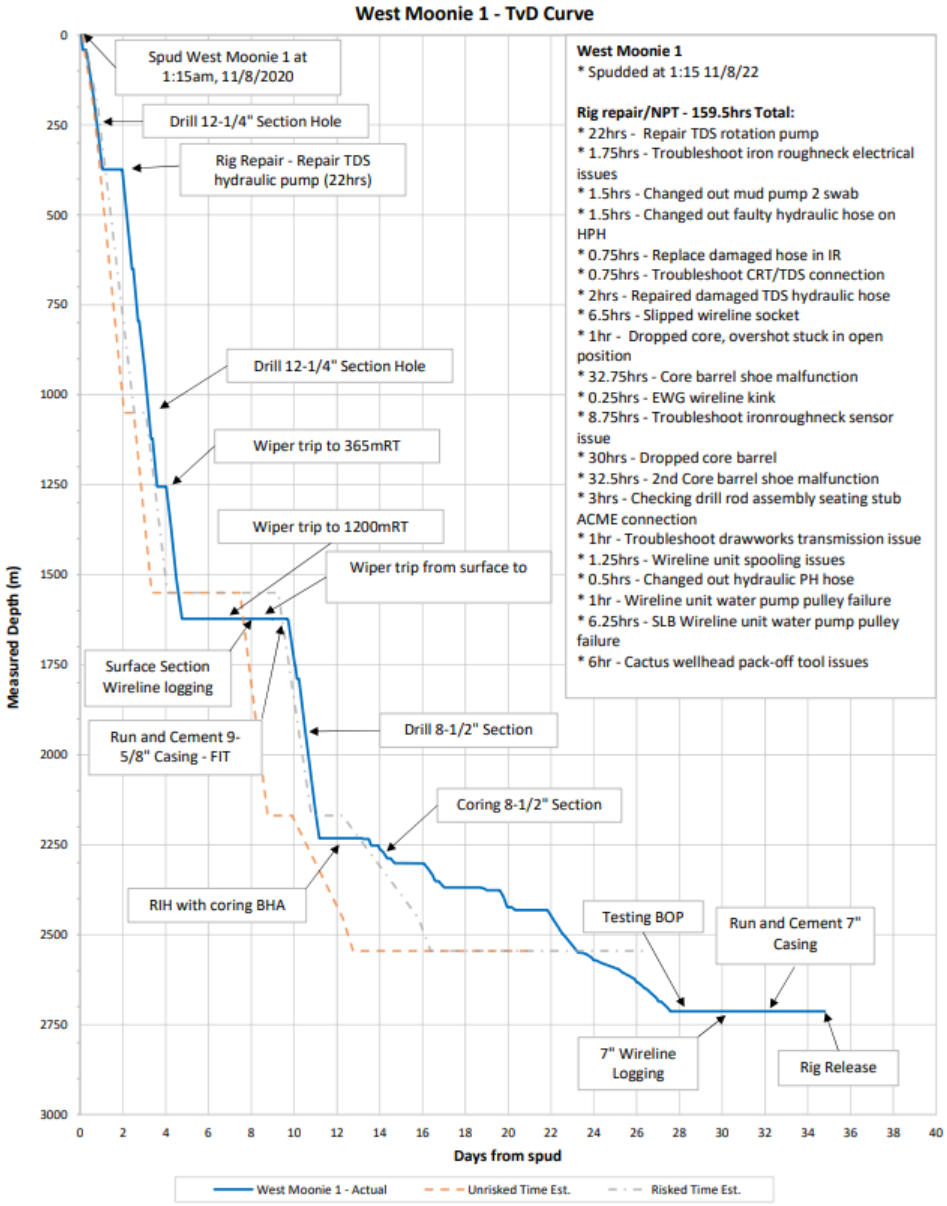

Figure 2-1 West Moonie-1 Time Depth Curve

2.7.1 Time Breakdown

The time breakdown for the project is as follows:

Table 2-3 Time Breakdown

Item	Total Time (Hrs)	Total Time (Days)	Percentage
Coring	182.0	7.58	21.82
Drilling	147.8	6.16	17.72
Tripping	133.8	5.57	16.04
NPT	118.0	4.92	14.15
Run Casing and cement	59.8	2.49	7.16
Rig Repair	41.8	1.74	5.01
Wireline logs	40.8	1.70	4.89
Circulate and Condition	20.5	0.85	2.46
Rig Service	5.0	0.21	0.60
Safety	3.3	0.14	0.39
Reaming	14.8	0.61	1.77
Other	26.0	1.08	3.12
Rig up / Down BOP	16.0	0.67	1.92
Test BOPE	16.8	0.70	2.01
Replace Drill line	5.0	0.21	0.60
Surface Testing	1.5	0.06	0.18
RU/TD/MU	1.3	0.05	0.15
Well Control	0.3	0.01	0.03
Total	834.0	34.75	

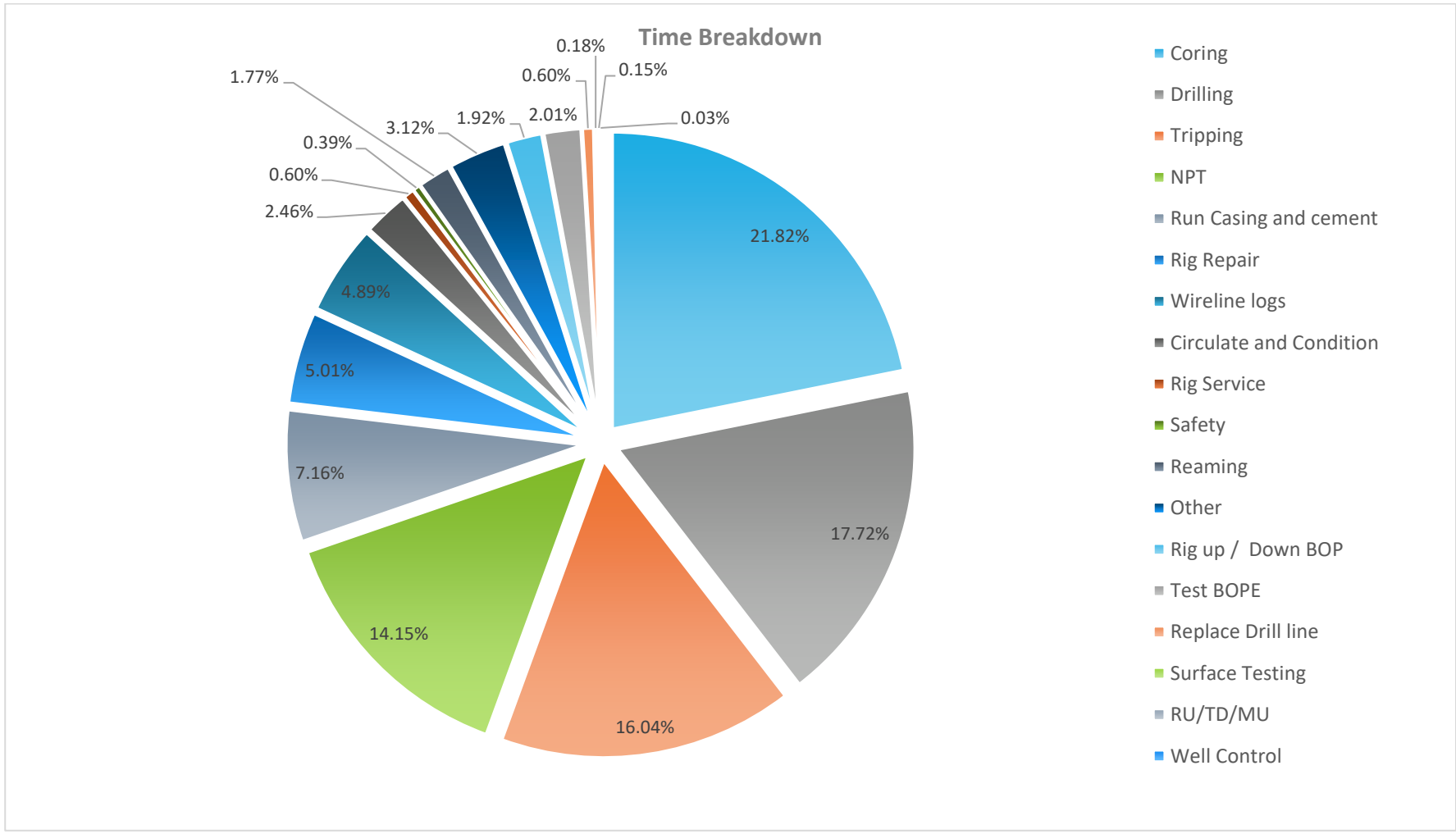

Figure 2-2 West Moonie-1 Time Breakdown

2.7.2 NPT Breakdown

The NPT breakdown is as follows:

Table 2-4 NPT Breakdown

Item	Hours
Core barrel shoe malfunction	32.75
2nd Core barrel shoe malfunction	32.5
Dropped core barrel	29.75
Repair TDS rotation pump	22
Troubleshoot iron roughneck sensor issue	8.75
SLB Wireline unit water pump pulley failure	7.25
Slipped wireline socket	6.5
Cactus wellhead pack-off tool issues	6
Troubleshoot iron roughneck electrical issues	1.75
Changed out mud pump 2 swab	1.5
Changed out faulty hydraulic hose on HPH	1.5
Replace damaged hose in IR	0.75
Troubleshoot CRT/TDS connection	0.75
Repaired damaged TDS hydraulic hose	2
Dropped core, overshot stuck in open position	1
Checking drill rod assembly connection	3
Wireline unit spooling issues	1.25
Changed out hydraulic PH hose	0.5
EWG wireline kink	0.25
Rig repair/NPT Total:	**159.5**

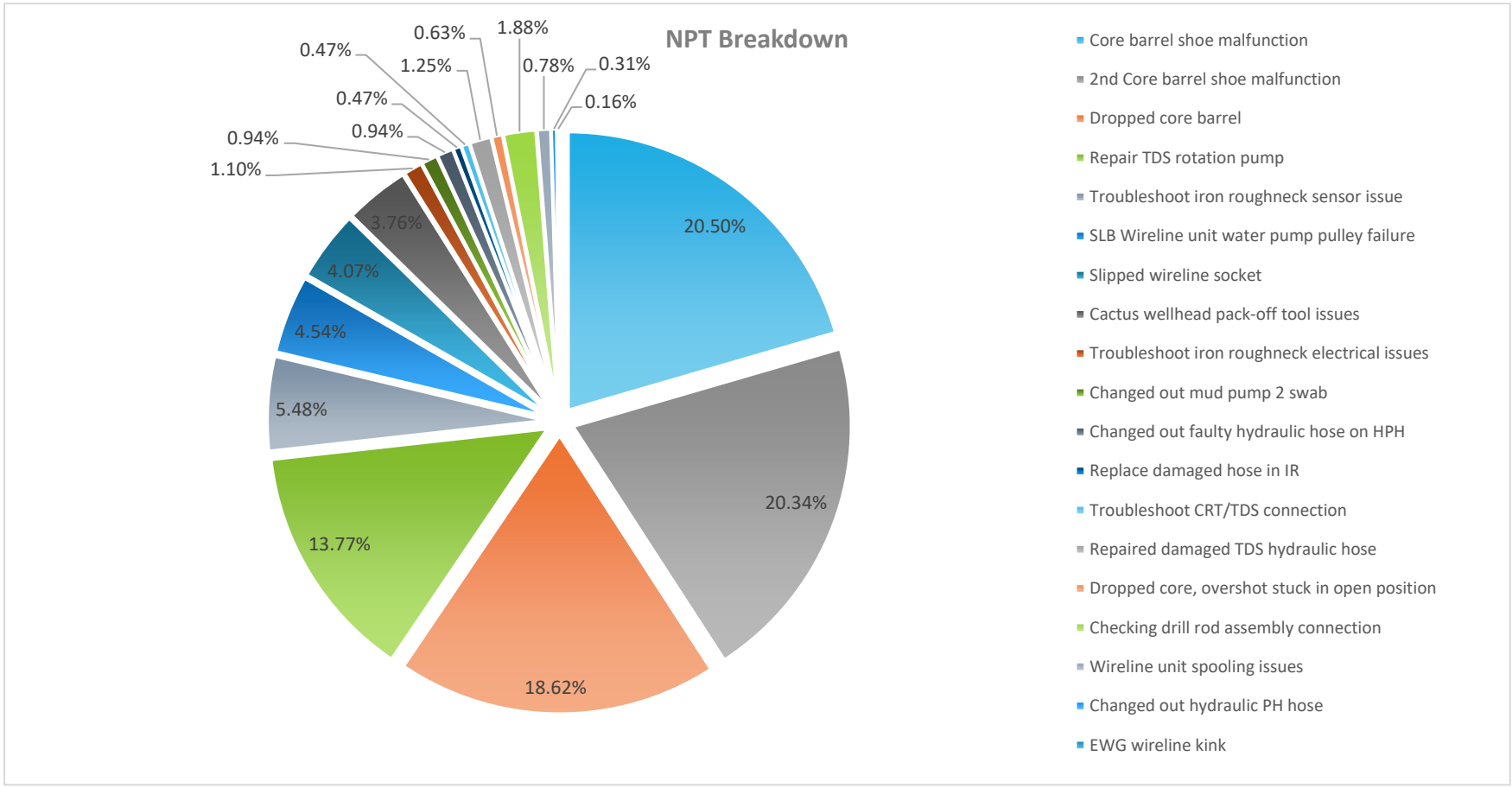

Figure 2-3 West Moonie-1 NPT Breakdown

2.8 Bit Run Data

Bit run data for both drilling and coring is presented below. Coring bits are named with the prefix 'DC' and 'RS'.

Table 2-5 Bit Run History – Part 1

Number	1	2	3C	3CRR1
Size, in.	12 1/4"	8 1/2"	8 1/2"	8½" x 3½"
Type	Ulterra SPL616	Ulterra SPL516	DC 613 QD	DC 613 QL
Serial No.	46017	52788	1412	1412
TFA	0.750	0.63	Coring 0.663, Drilling 0.884	Coring 0.663, Drilling 0.884
W.O.B., Klbs.	5-20	10/28	2/10	2.2/7
R.P.M.	120	80/110	40/110	47/110
Depth Out, m	1622	2232	2301	2369
Depth In, m	16	1622	2232	2301
Meterage	1606	610	69	68
Hours on btm	60.90	32.8	7.2	9.25
ROP (m/hr)	26.37	18.6	9.58	7.35
Condition	1,1,ER,N,X,I,WT,TD	1,1,No,A,X,I,CT,CP	1,1,No,A,X,I,No,DTF	1/1/ER/C,N/X/I/WT/DTF

Table 2-6 Bit Run History – Part 2

Number	4C (insert)	4C	5C (insert)	5C	6RR
Size, in.	8½" x 3½"	8½" x 3½"	8½" x 3½"	8½" x 3½"	8 1/2"
Type	DC 613 QL	DC 613 QL	RS 713 QDT	RS 713 QDT	Ulterra SPL516
Serial No.	1380	1380	1369	1369	52788
TFA	Drilling 0.884	Coring 0.663	Drilling 0.994	Coing 0.773	0.63
W.O.B., Klbs.	2.2/9.8	0.5/6.2	2/13.5	2.9/21.1	N/A
R.P.M.	60/89	35/72	40/82	32/82	90
Depth Out, m	2424	2432	2550	2713.46	2713.46
Depth In, m	2376	2369	2432	2432	2713.46
Meterage	48	15	118	163.46	N/A
Hours on btm	8.25	3.8	30.87	42	N/A
ROP (m/hr)	5.8	3.8	3.8	4.08	N/A
Condition	1,1,N0,A,X,I,No, CP	1,1,CT,C,X,I,DT,DTF	2,2,DL,C,X,I,DT,CT, CP	1,1,DL,C,X,I,,CT,TD	1,1,CT,G,X,I,No,LOG

Table 2-7 Drilling and Coring Parameters

Date	Avg. ROP (m/hr)	Avg. RPM	Avg. WOB (klbs)	Avg. TQ (kft-lbs)
12/08/2020	42.2	116	9.6	3.16
13/08/2020	51.3	118	11.9	4.88
14/08/2020	49.4	118	8.9	4.56
15/08/2020	37.4	110	11.8	4.93
20/08/2020	32	79	25.18	6.15
21/08/2020	34	85	20.5	6.18
22/08/2020	30	89	23.4	6.55
24/08/2020	10	65	6.7	4.19
25/08/2020	11.3	55	10.8	3.51
26/08/2020	10	47	1.27	2.21
27/08/2020	7.5	68	8	2.93
29/08/2020	4.4	64	6	3.12
30/08/2020	6.5	76	10.1	5.17
31/08/2020	4	64	1.69	3.57
01/09/2020	4.4	69	8.27	2.91
02/09/2020	4.2	60	10.1	3.06
03/09/2020	3.8	59	9.48	3.25
04/09/2020	1.5	61	13.9	3.38
05/09/2020	3.8	68	9.1	3.27
06/09/2020	7.6	68	6.75	3.44
07/09/2020	3.6	45	7.15	4.97

2.9 Well Integrity

2.9.1 Surface Casing and Cement

The surface casing run by the rig was 9-⅝" 36ppf K55 BTC. It was cemented back to surface and successfully pressured tested to 2,800psi prior to drilling out. It was estimated that 114.6bbls of cement returns came back to surface. No losses were experienced while the cement was pumped around the annulus. The theoretical top of premium tail cement is at 1016mRT. However actual top of tail cement including the excess is at ~950mRT.

The surface casing was tested prior to the drill out of the shoe track and FIT with a successful pressure test to 2,800psi for 10 minutes.

2.9.2 Production Casing

Corrosion Resistant Alloy (CRA) material was used across a 596m section of the production casing allowing for future CO_2 injection into the Precipice Sandstone. The production casing intervals installed were as follows:

- 7", 26ppf, L80, BTC from surface to 2030.86m (to top of 13Cr80)
- 7", 26ppf, 13Cr80, JFE Bear interval from 2030.86m - 2627.23m (across Precipice and Hutton)
- 7", 26ppf, L80, BTC from 2627.23m to 2673.52m (to top 13Cr80)
- 7", 26ppf, L80, BTC, 2 joint shoe track - 2673.52 to 2697.10m

The 7" 26ppf 13Cr80 casing was made up using a Tubular Running Service provided by Drill Quip. The premium JFE Bear Threads were torqued to the manufacturer's specification. The casing running charts from Drill Quip are included in the end of well data pack. Casing centralisers were run over every 2nd coupling giving a calculated standoff of >80%.

Once on depth, the casing was cemented back to 300m inside the surface casing shoe to 1316mRT and the casing was successfully pressure tested to 4,500 psi for 10 minutes. The pressure chart for this test is included in the Casing and Cementing Report (Appendix 3).

2.9.3 Production Casing Cement

The production casing was cemented with 52.5 bbls of 12.5ppg 65/35 GP/Poz Blend Lead cement slurry and 83 bbls of 14.5ppg CorossaCem Tail cement slurry at 14.5ppg. The CorossaCem provides long-term corrosion resistance. This blend also has fluid loss additive and liquid latex to provide additional resistance towards CO_2 corrosion. Microbond additive was mixed in the cement to provide superior bonding properties to the casing and formation. The Microband provides a post set crystalline growth expansion of the cement sheath. The cement job was conducted with 20 bbls of mud losses, which occurred while the cement was still being pumped down the production casing. Full returns were recorded once cement was in the annulus with no record of losses.

The casing was pressure tested to 4,500 psi for 10 minutes after bumping the plug. The cement pressure chart in Appendix 3 indicates a pressure build as expected for the designed cement job.

Centralisers were run giving a calculated standoff >80% across the cemented section. A 9.00ppg tuned spacer was pumped with lab tested rheological properties to ensure displacement of mud ahead, verified in pre job displacement modelling by Halliburton. The spacer was tested for compatibility with the mud system and pumped before the cement to aide in removal of remnant drilling mud and filter cake. Top and bottom plugs were run to provide separation between cement and fluids ahead and behind.

An offline CBL of the cemented 7” casing will be completed prior to the completion of the well to confirm the cement sheath integrity.

2.9.4 Wellhead Pressure Testing

The wellhead provided by Cactus Group was rated and tested to 5,000 psi.

Table 2-8 Wellhead Pressure Testing

#	Test	Pressure	Time (s)
1	Casing Head Connection Void Test	5000	1300
2	Tubing Head Adapter and Tubing Head Void Test	5000	1500
3	Casing Head Companion Flange against VR Plug	5000	1500
4	Casing Head Annulus Against VR Plug	5000	800
5	11" x 7" Mandrel Packoff Void	5000	1800
6	Casing Head, Tubing Head Connection	5000	1050

Refer section 2.9.4 for the wellhead diagram.

2.10 HSE Overview

The following HSE Statistics were recorded for the duration of the drilling campaign. There were no accidents or incidents, and no recorded first aid cases.

Using the daily rig POB, there was approximately 14,004-man hours recorded during the drilling phase of the project.

Table 2-9 Safety Statistics

West Moonie-1 - HSE Statistics											
Month	**HAZOB**	**Inductions**	**JHA**	**Job Start**	**PTW**	**SOP**	**Step 7**	**STJ**	**TBM**	**VOC**	**Total**
August	194	47	7	458	35	108	156	113	189	0	1307
September	110	12	2	260	12	60	92	58	85	1	**692**
Total:	**304**	**59**	**9**	**718**	**47**	**168**	**248**	**171**	**274**	**1**	**1999**

2.11 Downhole Diagram

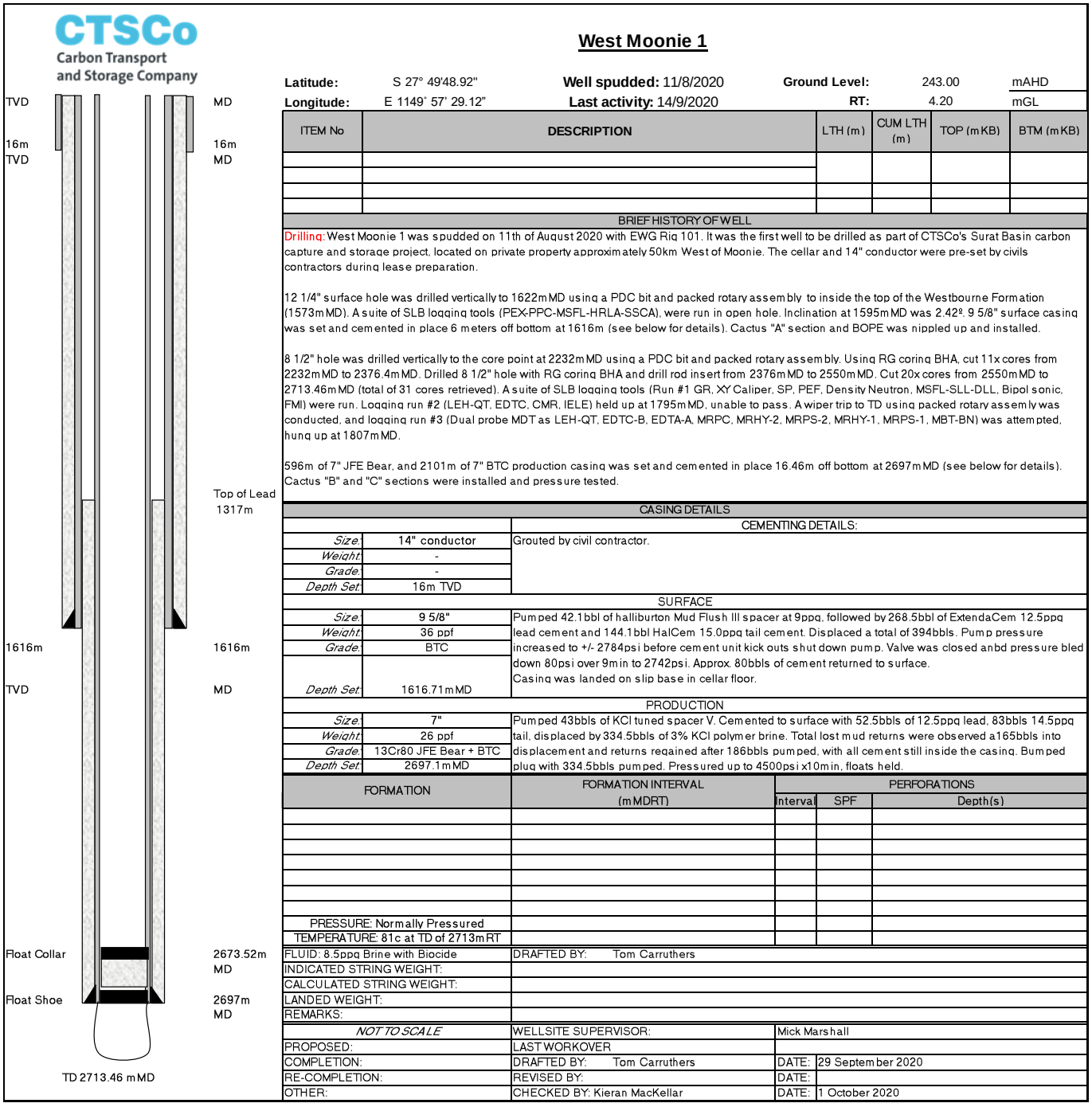

Figure 2-4 Downhole Diagram

2.12 Post Drilling Wellhead Diagram

Refer to Cactus IP1149 R2 for a full list of wellhead components. The well was suspended with the “C” section installed and Tubing Hanger with 3” BPV.

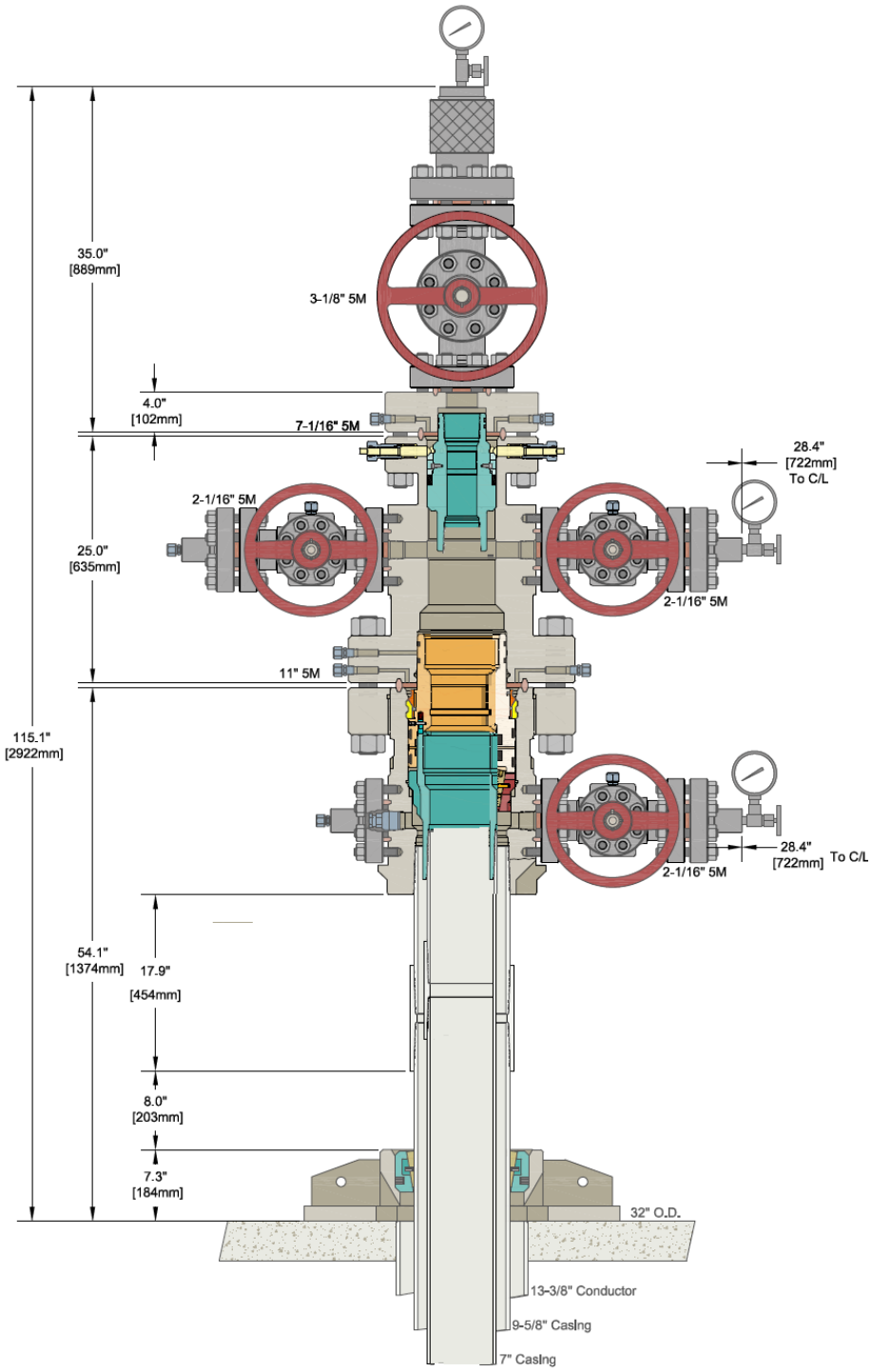

Figure 2-5 Wellhead Diagram

3. Well Evaluation Operations

3.1 Wellsite Geology

Wellsite geological services were provided by Australian International Petro-Consultants Pty Ltd and Mark Lawrence provided the onsite geological supervision for CTSCo. Drilling progress was monitored onsite and geological sampling was overseen from spud to release of the wireline logging crew at total depth. Daily Geological Reports are included as Appendix 6. All drill cuttings samples were collected by the Mudlogging crew with occasional assistance from the rig crew predominantly during the initial drilling phase where the Mudlogging crew were engaged in commissioning the mudlogging unit after its delayed arrival on site.

All geological samples collected were described and photographed digitally on site.

3.2 Mudlogging

Mudlogging services were programmed from spud to total depth and comprised monitoring rig functions with a direct WITS data feed from the drilling contractors installed sensors (no independent sensors were installed); and independent ditch gas monitoring for total gas and chromatographic components of the alkane series C1 through C5.

The Mudlogging crew lagged and collected drill cuttings samples as directed by the wellsite geologist as drilling progressed. Some support by the rig crew was required at the commencement of drilling as the Mudlogging crew were engaged in unit commissioning duties due to the late arrival of the mudlogging unit on site.

A set of IsoTech IsoTube® gas samples were collected from a sampling manifold installed adjacent to the gas chromatographic in the mudlogging unit. The depth and concentrations of gas within the isoTube is summarised in Table 3-1. Delays in equipment mobilisation resulted in ditch gas being monitored from 285mRT rather than spud. Drilling data from spud to 285mRT were extracted from the drilling contractor's database and copied to the mudlogging service company's database and utilised in preparation of the mudlog for the well which is included as Enclosure 1. There were no failures of mudlogging equipment recorded for the duration of the period on contract.

Laboratory results are included as Appendix 17.

Table 3-1 IsoTube® Sample Summary

No	Date	Depth (m)	Time (hrs)	TG (%)
1	13.08.2020	647	1010	0.1633
2	13.08.2020	700	1350	0.1690
3	13.08.2020	800	1819	0.0190
4	13.08.2020	900	2306	0.0414
5	14.08.2020	1000	0320	0.0241
6	14.08.2020	1100	0710	0.0430
7	14.08.2020	1200	1230	0.0160
8	15.08.2020	1300	0317	0.0224
9	15.08.2020	1400	0752	0.0138
10	15.08.2020	1500	1218	0.0238
11	15.08.2020	1600	1705	0.1100
12	20.08.2020	1700	2237	0.1420
13	21.08.2020	1800	0620	0.2638
14	21.08.2020	1900	1120	0.1002
15	21.08.2020	2000	1608	0.0610
16	21.08.2020	2100	2129	0.0379
17	22.08.2020	2200	0256	0.6040
18	27.08.2020	2300	0234	0.0136
19	30.08.2020	2400	2051	0.0217
20	02.09.2020	2500	1412	0.1645
21	05.09.2020	2600	0800	0.1371
22	07.09.2020	2700	1131	0.5233

3.3 Ditch Cutting Samples

Generally composited over 10m intervals from 16mRT to 2397mRT and were composited over 3m intervals from 2397mRT to to total depth, except over cored intervals where sampling reverted to 10m composited intervals due to the reduced volume of available cuttings material. A detailed summary of all drill cuttings collected is presented in Table 3-2 below.

A set of washed and dried samples were packaged in foil pouches and delivered to CTSCo for onward delivery to the Queensland Department of Natural Resources, Mines and Energy. A set of washed and dried samples were packaged in Samplex Trays and are held by CTSCo.

Cuttings sample descriptions are included as Appendix 8 and samples collected are summarised in the Table 3-2 below. Three cuttings samples were selected for palynological analysis by MG Palaeo (Palynology report included as Appendix 14). These are summarised in Table 3-3.

Table 3-2 Detail Sample Summary

Depth Range (mMDRT)	Sample Intervals	Sample Data
14 – 28	14m*	Washed & Dried
28 - 41	13m*	Washed & Dried
41- 45	04m*	Washed & Dried
45 – 54	09m*	Washed & Dried
54 – 63	09m*	Washed & Dried
63 – 75	12m*	Washed & Dried
75 – 85	10m*	Washed & Dried
85 - 94	09m*	Washed & Dried
94 – 103	09m*	Washed & Dried
103 – 114	11m*	Washed & Dried
114 – 125	11m*	Washed & Dried
125 – 665	10 m*	Washed & Dried
665 – 680	15 m	Washed & Dried
680 -1620	10 m	Washed & Dried (12 ¼'' section TD1622m)
1620 - 2230	10 m	Washed & Dried
2230 - 2232	2m	Washed & Dried
2232 - 2240	8 m**	**Coring**-Not enough representative sample to process
2240 - 2370	10 m**	**Coring**-Not enough representative sample to process
2370 – 2379	9 m	Washed & Dried
2379 – 2424	3 m	Washed & Dried
2424 – 2432	8m**	**Coring**-Not enough representative sample to process
2432 – 2546	3m	Washed & Dried
2546 - 2550	4m	Washed & Dried
2550 –2713.5 (TD)	10 m**	**Coring**-Not enough representative sample to process

(Note: 1) Samples from 14m to 665m were collected by Rig Crew while Baker Hughes were rigging up the unit and setting up system. Sample weight below 250 gms.
****(Note: 2)**** Not enough samples at the shakers to process, with low flow rate while coring, samples may not be representative. (Coring from 2232m to 2376.37m, 2424m to 2432m and from 2550m to 2713m).
(Note: 3) Bottoms up sample after end of coring/well TD was not circulated.
(Note: 4) Samplex Tray samples were collected, but not bagged.

3.4 Coring

Coring Services were provided by Reservoir Group and operations were conducted utilising a coring BHA. The BHA comprised tandem inner core barrels to enable an 18m, 90mm diameter (3 ½") core to be cut before retrieval via wire to surface without the need to pull the coring assembly out of the hole. The 18m cut lengths had successfully been retrieved by other Operators in the Surat Basin albeit during coring operations at shallower depths.

Several problem operations were associated with the coring operations and these are detailed below. The first interval of continuous coring (Cores 1 through 11) was completed from 2234.0mRT to 2376.37mRT. The core recoveries varied from 55.2% to 100% and averaged 97%.

On attempting to retrieve the first core cut the wireline parted resulting in the inner barrel and core being lost down hole. These were successfully fished from the hole on the second attempt.

Several other incidents resulted in the inner core barrel being lost down hole during wireline retrieval operations. These were a direct result of the inner barrel backing off at the crossover. The root cause of the issue was not resolved by the time the rig was released.

Several instances of pressure spikes and then pressure drops while coring were recorded. These were indicative of the inner core barrel unseating and / or the cut core jamming off. This resulted in early termination of coring and core retrieval.

After Core-11 a drilling insert bit was run and latched to facilitate drilling ahead without the need to change out the coring assembly. To mitigate the risk of further back offs while retrieving cores, after Core-11 the coring assembly was reconfigured to comprise a single inner barrel of 9m in length.

Core-12 was cut from 2424.0mRT to 2432.1mRT and resulted in 66.8% recovery. After this core a drilling insert was again run and latched, and the well was drilled ahead to 2550mRT.

At 2550mRT the drilling insert was retrieved, and continuous coring was resumed with a single inner core barrel. Cores 13 to 31 were cut from 2550.0 to 2713.5mRT with 100% recovery.

Once the cores were retrieved to surface the core was recovered from the inner core barrel with the assistance of core specialists from Stratum Reservoir, cleaned and marked for orientation and depth. Small core chips were then taken at approximately 1m intervals and were described and photographed digitally on site (Appendix 11). These descriptions are included as Appendix 9. The core was then packed into transport trays, photographed digitally and palletised for transport to Stratum Reservoir's laboratory facilities in Brisbane.

Initial work on the recovered core at Stratum Reservoir's laboratory included taking a standard gamma ray log of the core. This indicated the cores drillers depth was consistently 1.2m shallower than Loggers depth. All core was then described in detail for lithology and sedimentology. These descriptions are included as Enclosure 2.

A suite of 30 core plugs were cut with six samples selected for rush routine core analysis by Stratum Reservoir. After the initial results were obtained, all core plugs were cleaned and further analyses are pending. The plugs cut are summarised in the Table 3-3 below. Two samples of offcuts from the routine core analysis plug preparation are also being processed for petrological examination by Stratum Reservoir. These are noted in Table 3-3

In addition to the routine core analysis plugs, an additional six samples of full hole core were selected for specialised Digital Core Analysis at Australian National University (ANU), Canberra. These are also summarised in Table 3-3.

Eight samples of core chips collected on site have also been sent to MG Palaeo for palynological examination (Appendix 14). These are summarised in Table 3-3.

Table 3-3 Samples Selected for Analysis

The minimum	Service Company	Sample ID	Core Chip #	Type	Depth (m)	Depth Reference
RCA Rush	Stratum	1		Core Plug	2254.82	Driller
RCA Rush	Stratum	2		Core Plug	2283.32	Driller
RCA Rush	Stratum	3		Core Plug	2293.25	Driller
RCA Rush	Stratum	4		Core Plug	2303.34	Driller
RCA Rush	Stratum	5		Core Plug	2317.31	Driller
RCA Rush	Stratum	6		Core Plug	2333.82	Driller
Palynology	MGPalaeo	WM1_PAL01		Cuttings	14	Driller
Palynology	MGPalaeo	WM1_PAL02		Cuttings	54	Driller
Palynology	MGPalaeo	WM1_PAL03	12	Core Chip	2244.0	Driller
Palynology	MGPalaeo	WM1_PAL04	29	Core Chip	2261.1	Driller
Palynology	MGPalaeo	WM1_PAL05	68	Core Chip	2297.4	Driller
Palynology	MGPalaeo	WM1_PAL06	103	Core Chip	2333.5	Driller
Palynology	MGPalaeo	WM1_PAL07	132	Core Chip	2362.2	Driller
Palynology	MGPalaeo	WM1_PAL08	158	Core Chip	2552.1	Driller
Palynology	MGPalaeo	WM1_PAL09	198	Core Chip	2589.6	Driller
Palynology	MGPalaeo	WM1_PAL10	322	Core Chip	2713.5	Driller
Palynology	MGPalaeo	WM1_PAL11		Cuttings	2100 - 2110	Driller
Petrology	Stratum	WM1_PET01		Plug Offcut	2254.82	Driller
Petrology	Stratum	WM1_PET02		Plug Offcut	2317.31	Driller
RCA	Stratum	WM1_RCA01		Core Plug	2254.82	Driller
RCA	Stratum	WM1_RCA02		Core Plug	2283.32	Driller
RCA	Stratum	WM1_RCA03		Core Plug	2293.32	Driller
RCA	Stratum	WM1_RCA04		Core Plug	2303.32	Driller
RCA	Stratum	WM1_RCA05		Core Plug	2317.32	Driller
RCA	Stratum	WM1_RCA06		Core Plug	2333.82	Driller
RCA	Stratum	WM1_RCA07		Core Plug	2243.82	Driller
RCA	Stratum	WM1_RCA08		Core Plug	2246.32	Driller
RCA	Stratum	WM1_RCA09		Core Plug	2249.82	Driller
RCA	Stratum	WM1_RCA10		Core Plug	*2254.82*	Driller
RCA	Stratum	WM1_RCA11		Core Plug	2257.82	Driller
RCA	Stratum	WM1_RCA12		Core Plug	2263.82	Driller
RCA	Stratum	WM1_RCA13		Core Plug	2266.62	Driller
RCA	Stratum	WM1_RCA14		Core Plug	2274.82	Driller
RCA	Stratum	WM1_RCA15		Core Plug	2276.32	Driller
RCA	Stratum	WM1_RCA16		Core Plug	*2283.32*	Driller
RCA	Stratum	WM1_RCA17		Core Plug	2286.32	Driller
RCA	Stratum	WM1_RCA18		Core Plug	2288.32	Driller
RCA	Stratum	WM1_RCA19		Core Plug	*2293.32*	Driller
RCA	Stratum	WM1_RCA20		Core Plug	2298.02	Driller
RCA	Stratum	WM1_RCA21		Core Plug	*2303.32*	Driller
RCA	Stratum	WM1_RCA22		Core Plug	*2317.32*	Driller
RCA	Stratum	WM1_RCA23		Core Plug	2323.82	Driller
RCA	Stratum	WM1_RCA24		Core Plug	2327.32	Driller
RCA	Stratum	WM1_RCA25		Core Plug	2330.82	Driller
RCA	Stratum	WM1_RCA26		Core Plug	*2333.82*	Driller
RCA	Stratum	WM1_RCA27		Core Plug	2337.82	Driller
RCA	Stratum	WM1_RCA28		Core Plug	2555.82	Driller
RCA	Stratum	WM1_RCA29		Core Plug	2562.02	Driller
RCA	Stratum	WM1_RCA30		Core Plug	2618.92	Driller
DCA	ANU	1		Whole Core	2311-2312	Driller
DCA	ANU	2		Whole Core	2314-2315	Driller
DCA	ANU	3		Whole Core	2315-2316	Driller
DCA	ANU	4		Whole Core	2316-2317	Driller
DCA	ANU	5		Whole Core	2317-2318	Driller
DCA	ANU	6		Whole Core	2318-2319	Driller

3.5 Wireline Logs

Schlumberger conducted wireline logging operations at West Moonie-1 and two suites of data were acquired. Suite-1 acquired data in 12 ¼" hole on a single run in the hole after the surface hole was drilled to 1622mRT (Driller). Suite-1 data acquisition is summarised below. A detailed diary of events for the Suite is included as Appendix 15.

General Well Data

Well Name	West Moonie-1	**Suite**	1	**Rig**	Rig-101
Permit	EPQ10	**Date 1st Log**	16 Aug 2020	**GL Elevation**	243.0 (m)
Latitude	-27° 49' 48.91835" South	**Date Last Log**	16 Aug 2020	**Witnesses**	M. Lawrence
Longitude	149° 57' 29.14018" East	**Depth Ref.**	mRT	**Engineers**	L. Delange
Easting (m)	200,364.85m E	**Depth Ref. Elev.**	247.2 (m)		
Northing (m)	6,917,885.29m S	**Service Comp.**	Schlumberger		
UTM Zone	56	**Geodetic Datum**	NAD83, GDA94	**Ellipsoid**	Geodetic Reference System 1980

Hole Data

Hole Size	12.250 (in)	**Seabed Temp**	n/a	**Max Hole Dev.**	2.4 (°)
Driller's Depth	1622.0 (m)	**Surface Temp**	20.0 (°C)	**Max Dev Depth**	1595.5 (m)
Logger's Depth	1611.0 (m)	**Max BHT**	56.2 (°C) at 1500mRT	**Survey Type**	Wireline GPIT
Hole Problems	Possible sticky hole from 1250mRT to 1500mRT based on overpulls from wiper trip.				
Comments	Slight tension loss (150lbs toolstring) while RIH on first run in hole through section 1250mRT to 1500mRT.				

Casing Data

Casing String	Shoe Depth MD (m)	Shoe Depth TVD (m)	Casing OD (in)	Casing ID (in)	Weight (lbm/ft)	Hole Size (in)
Conductor	15.7	15.7	14.000		65.00	14.00

Water Based Mud Data

Date Mud Check	Date Time Circ Stopped	Circ Time (h)	Mud Name	MW (ppg)	KCL (%)	Cl (mg/L)	Barite (%)	Rm (ohm.m)	Rm (°C)	Rmf (ohm.m)	Rmf (°C)	Rmc (ohm.m)	Rmc (°C)
15 Aug 2020	16-Aug-2020 03:00	1.50	KCl Polymer	9.20	4.00	21500.0	0.00	0.242	18.2	0.182	24.0	0.303	24.0

Wireline Run Temperature Data

Date Mud Check:	Date/Time Circ. Stopped:	Circ. Time:
15 Aug 2020	16-Aug-2020 03:00	1.50 (h)

Run #	Run Date	Tool String	Max BHT (°C)	Max BHT Depth(m)	Date Time Logger On Bottom	Time Since Circ. Stopped(h)
1	16 Aug 2020	PPC-GPIT-SScan-HRLA-PEX-SP-GR	56.2	1500.0	16-Aug-2020 18:22	15.37

Wireline Run Summary Data

Run #	Tool String	Log from Depth (m)	Log to Depth (m)	Repeat from Depth(m)	Repeat to Depth (m)	Comments
1	PPC-GPIT-SScan-HRLA-PEX-SP-GR	1611.0	14.3	1610.0	1500.0	Recorded log while RIH at reduced speed of 3600ft/hr. Tools stopped recording data at 251m while logging up. Re-powered tools and re-logged section. Hole generally in gauge and good condition

Details of down time are noted in Appendix 15 and summarised in 1.2.8. In general, good quality data was acquired for the hole section.

Suite-2 data was acquired on reaching total depth at the end of coring operations. An extensive programme was planned to include acquisition of: petrophysical data including high resolution image data; extensive formation pressure data including injectivity testing; and a velocity survey to assist with reducing uncertainty in current seismic velocity models for the area.

Despite the expected extensive logging programme planned a single crew of one wireline engineer and two operators were mobilised to the wellsite. A third operator was mobilised to the wellsite later in the programme. It was

Schlumberger intention to monitor the operations real time via their standard satellite link with remotely located specialist engineers online to deal with unusual issues if they were to occur, while the onsite wireline engineer was taking regular rest breaks. Onsite direct control was to be passed to senior operators during these breaks.

Several issues resulting in less efficient wireline operations were noted during Suite-2 data acquisition. Two issues were directly the result of being mobilised at short notice. These issues are summarised in 1.2.8 below. Suite-2 data acquisition is summarised below and a detailed diary of events for the Suite are included as Appendix 15.

General Well Data

Well Name	West Moonie-1	**Suite**	2	**Rig**	Rig-101
Permit	EPQ10	**Date 1st Log**	09 Sep 2020	**GL Elevation**	243.0 (m)
Latitude	-27° 49' 48.91835" South	**Date Last Log**	09 Sep 2020	**Witnesses**	M. Lawrence
Longitude	149° 57' 29.14018" East	**Depth Ref.**	mRT	**Engineers**	Y. Saeedabadian
Easting (m)	200,364.85m E	**Depth Ref. Elev.**	247.2 (m)		
Northing (m)	6,917,885.29m S	**Service Comp.**	Schlumberger		
UTM Zone	56	**Geodetic Datum**	NAD83, GDA94	**Ellipsoid**	Geodetic Reference System 1980

Hole Data

Hole Size	8.500 (in)	**Seabed Temp**	n/a	**Max Hole Dev.**	2.9 (°)
Driller's Depth	2713.5 (m)	**Surface Temp**	20.0 (°C)	**Max Dev Depth**	1914.8 (m)
Logger's Depth	2704.0 (m)	**Max BHT**	80.36°C at 2664.27mRT	**Survey Type**	Wireline FMI
Hole Problems	Washed out section through the Walloon Coal Measures				
Comments	Schlumberger onsite 04:00hrs 9th September 2020. Complete site induction 04:15. Spot unit and prepare to rig up to 05:30. Cool HGNS tool to 06:45. Released 11:15hrs 12th September 2020.				

Water Based Mud Data

Date Mud Check	Date Time Circ Stopped	Circ Time (h)	Mud Name	MW (ppg)	KCL (%)	Cl (mg/L)	Barite (%)	Rm (ohm.m)	Rm (°C)	Rmf (ohm.m)	Rmf (°C)	Rmc (ohm.m)	Rmc (°C)
08 Sep 2020	07-Sep-2020 21:25	1.00	KCL Polymer	9.00	5.00	25000	0.00	0.16	18.1	0.14	18.2	0.20	18.0
11 Sep 2020	11-Sep-2020 09:15	3.00	KCl Polymer	9.00	5.00	25000	0.00	n/a	n/a	n/a	n/a	n/a	n/a

Wireline Run Temperature Data

Date Mud Check:	Date/Time Circ. Stopped:	Circ. Time:
08 Sep 2020 / 11 Sep 2020	07-Sep-2020 21:25 / 11-Sep-2020 09:15	1.00 (h) / 3.00 (h)

Run #	Run Date	Tool String	Max BHT (°C)	Max BHT Depth (m)	Date Time Logger on Bottom	Time Since Circ. Stopped (h)
1	09 Sep 2020	FMI-SSCAN-PPC-TLD-HGNS-HNGS	80.36	2664.27	09-Sep-2020 12:07	38.70
2	09 Sep 2020	CMR	n/a	n/a	Run abandoned	0.00
2a	10 Sep 2020	CMR-PPC	n/a	n/a	Run abandoned	0.00
3	11 Sep 2020	MDT	n/a	n/a	Run abandoned	0.00

Wireline Run Summary Data

Run #	Tool String	Log from Depth (m)	Log to Depth (m)	Repeat from Depth (m)	Repeat to Depth (m)	Comments
1	FMI-SSCAN-PPC-TLD-HGNS-HNGS	2704.0	1500.0	2600.0	2550.0	Recorded log while RIH at reduced speed of 3600ft/hr
2	CMR	n/a	n/a	n/a	n/a	RIH unable to pass ledged/washed out hole section at 1795mMDRT. POH to reconfigure tools. Change out lower bowspring for PPC.
2a	CMR-PPC	n/a	n/a	n/a	n/a	Re-configured Run-2 toolstring attempting to mitigate interpreted tool stand ups on hole ledges.
3	MDT	n/a	n/a	n/a	n/a	Water pump on Schlumberger unit failed while rigging up. Once repaired, rigged up and RIH with MDT. Tool stood up at 1807mRT. Four attempts to pass bridge failed. Remainder of logging programme abandoned.

Details of down time are noted in Appendix 15 and summarised in 1.2.8. In general, good quality data was acquired for the hole section including high resolution image data except for minor compromised data quality over sections of hole with significant washouts, principally through the coal measure sequences.

A composite well log is included as Enclosure 2 and detailed petrophysical analysis of the acquired data is included in Appendix 16.

3.5.1 Temperature Data

Temperature data was recorded during wireline logging operations. Both Suite 1 and Suite 2 logs comprised only a single successful run in the hole therefore conventional Horner extrapolation of bottom hole temperatures was not possible for either suite. However, the Shell method of bottom hole temperature extrapolation for a single wireline run has been applied to each suite. The maximum temperature recorded for Suite 1 and Suite 2 are noted in 1.2.5 above and extrapolated bottom hole temperatures utilising the Shell Method are 73.06 degC and 104.47 degC for Suite 1 and 2 respectively. A geothermal gradient of 3.17 degC/100m is calculated from this data. The geothermal gradient for West Moonie-1 is presented below in Figure 3-1.

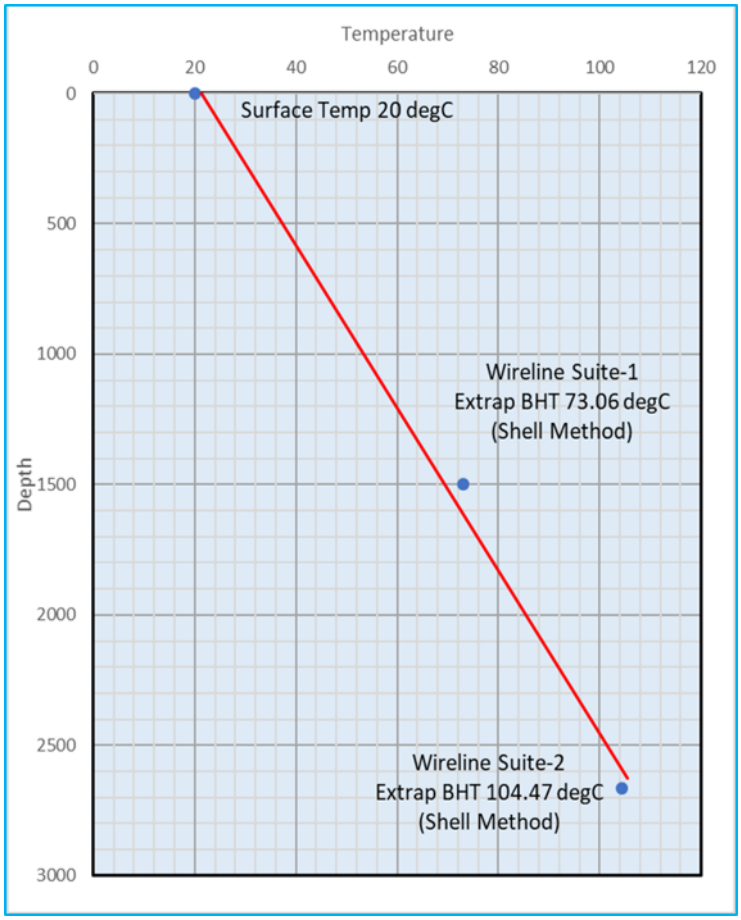

Figure 3-1 West Moonie-1 Geothermal Gradient

3.5.2 Velocity Survey

A velocity survey was programmed as part of the Suite-2 wireline logging operations. Unfortunately, poor hole conditions resulting in several tool stand ups, even immediately after a wiper indicated a very low likelihood of tools passing the final stand up point at 1807mRT. The velocity survey was therefore abandoned.

4. Problem Operations

The following summarises operations that impacted either the efficiency with which operations were conducted or events that had a significant impact on the quality or cost of the data acquired. In short, these are situations or operations that provide opportunities for improvement in future operations.

Drilling

Hole Conditions

Formation Hardness

Problem Date:	03 Sep 2020
Problem Depth:	2553.00 (m)
Problem Description:	After cutting 3.58m of Core-13 pump pressure indicated core barrel jammed off.
Immediate Cause:	Core barrel jammed
Root Cause:	Interbedded lithology encountered.
Solution Applied:	Retrieved Core-13.
Impact on Operations:	Minor
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Hole Cleaning

Problem Date:	09 Sep 2020
Problem Depth:	2704.00 (m)
Problem Description:	Tools tagged TD ~10m shallow.
Immediate Cause:	Fill on bottom.
Root Cause:	A wiper trip prior to POH to log may have resulted in less/no fill on bottom. Also, as Schlumberger were not on location at TD some time waiting on Schlumberger could have been utilised conducting a wiper trip. Invisible lost time waiting to calibrate the CMR tool may also have been incorporated into the time taken for the wiper trip.
Solution Applied:	
Impact on Operations:	Minor
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Washed out hole

Problem Date:	10 Sep 2020
Problem Depth:	1795.00 (m)
Problem Description:	CMR stood up while RIH at 1795mRT.
Immediate Cause:	Hole section washed out to 14" in places with bowspring eccentring the toolstring. Interpreted to be pushing tool bullnose on to ledge.
Root Cause:	Interbedded sandstone, claystone and coals resulting in washed out hole section.
Solution Applied:	POH to reconfigure tools, removing lower bowspring and replacing with PPC tool allowing calipers to be closed thereby mitigating the risk of pushing tool bullnose on to a ledge.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Problem Date:	10 Sep 2020
Problem Depth:	1807.00 (m)
Problem Description:	CMR-PPC tool stood up at 1807mRT.
Immediate Cause:	Washed out hole, bridged off.
Root Cause:	Poor hole conditions, interbedded sandstone, claystone and coal. No wiper trip conducted prior to POH to log may have been a contributing factor.
Solution Applied:	POH to run wiper trip.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Problem Date:	12 Sep 2020
Problem Depth:	1807.00 (m)
Problem Description:	MDT tool stood up at 1807mRT
Immediate Cause:	Hole bridged off
Root Cause:	Washed out hole through interbedded sandstone, claystone and coal.
Solution Applied:	Abandoned remaining wireline logging programme.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Mechanical Down-Hole

BHA Design

Problem Date:	25 Aug 2020
Problem Depth:	2301.00 (m)
Problem Description:	Cutting Core-4 prematurely completed at 13m cut.
Immediate Cause:	Irregular SPP behaviour indicated that coring be terminated.
Root Cause:	On attempted retrieval noted no recovery and lost crossovers, core barrel shoe and inner core barrel downhole. No definitive explanation as to why crossovers backed off downhole.
Solution Applied:	Pulled out of the hole and recovered crossovers, core barrel shoe, inner core barrels and Core-4.
Impact on Operations:	Serious
Follow Up Required:	Yes
Date Follow Up Completed:	
Follow Up Result:	

Problem Date:	31 Aug 2020
Problem Depth:	25.00 (m)
Problem Description:	On retrieving core barrel after cutting Core-12 noted threaded connection parted and inner core barrel lost downhole.
Immediate Cause:	Inner core barrel backed off during Core-12 retrieval.
Root Cause:	No definitive explanation as to why inner core barrel backed off downhole.
Solution Applied:	Pulled out of the hole and retrieved inner core barrel and Core-12. Resolved to cut only single, 9m lengths of core per run cycle, mitigating the potential to back off inner core barrel at joins.
Impact on Operations:	Serious
Follow Up Required:	Yes
Date Follow Up Completed:	
Follow Up Result:	

Tool Failure

Problem Date:	24 Aug 2020
Problem Depth:	1300.00 (m)
Problem Description:	Core barrel was dropped downhole while retrieving Core-1 at 1300mRT.
Immediate Cause:	Wireline parted
Root Cause:	Poor maintenance, failure to properly inspect equipment prior to use.
Solution Applied:	Changed out wire rope socket.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Problem Date:	25 Aug 2020
Problem Depth:	600.00 (m)
Problem Description:	Core barrel dropped downhole after weight loss noted on wireline during retrieval of Core-3
Immediate Cause:	Overshot open
Root Cause:	Poor maintenance, poor inspection of equipment prior to use.
Solution Applied:	Changed out overshot ran in the hole, latched and recovered core barrel.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Operations

Personnel

Problem Date:	27 Aug 2020
Problem Depth:	30.00 (m)
Problem Description:	Just prior to recovering the inner core barrel containing Core-8 the inner core barrel was dropped downhole.
Immediate Cause:	Core Service Company personnel released inner core barrel clamp.
Root Cause:	Lack of concentration on the task by the Service Company personnel.
Solution Applied:	Pulled out of the hole to recover the inner core barrel.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Geological

Interpretation

Procedural Change

Problem Date:	11 Sep 2020
Problem Depth:	2713.50 (m)
Problem Description:	On reaching total depth and acquiring the wireline logs, the interpretation of the stratigraphic sequence was revised.
Immediate Cause:	Misinterpretation of the top hole sequence as the section was drilled where the only available criteria was ROP and gross lithology from cuttings and misinterpretation of wireline logs acquired in the top section due to poor quality offset well log data in the shallow sequence. These problems continued in the 8 1/2" hole section and were compounded by the lack thin coals being identified in the upper Juandah Coal Measures.
Root Cause:	Poor correlation with offset wells as drilling proceeded. Lack of identifiable ROP character with which to correlate with offset wells. Uncertainty in the seismic velocity model for the area. Lack of nearby offset wells in a similar basinal setting.
Solution Applied:	The stratigraphic section was revised on reaching total depth and acquiring wireline log data.
Impact on Operations:	Serious
Follow Up Required:	Yes
Date Follow Up Completed:	15 Sep 2020
Follow Up Result:	Given the potential for increased well costs if the well was drilled deeper than necessary it may have been prudent to have a contingent intermediate wireline logging run or alternatively consider a basic LWD tool deployment to better define the stratigraphic sequence being drilled.

Wireline Logging

Equipment

Problem Date:	09 Sep 2020
Problem Depth:	0.00 (m)
Problem Description:	During operations a sudden slippage on the main winch gear was noted at infrequent intervals.
Immediate Cause:	Unknown and not investigated at the time. Was recognised as an existing issue.
Root Cause:	Not understood at this time.
Solution Applied:	Issue logged. Would recommend the issue be investigated before resulting in equipment failure and a down time event recorded.
Impact on Operations:	Minor
Follow Up Required:	Yes
Date Follow Up Completed:	
Follow Up Result:	

Equipment Failure

Problem Date:	16 Aug 2020
Problem Depth:	251.00 (m)
Problem Description:	While logging out of the hole noted tools stopped recording data.
Immediate Cause:	Tools lost power.
Root Cause:	Unresolved. Similar problem experience on previous job for another Operator. Job believed to have been resolved by changing out a PTO solenoid.
Solution Applied:	Reset Tools. Power returned, closed calipers and RIH to 300mRT. Open calipers and re-log.
Impact on Operations:	Serious
Follow Up Required:	Yes
Date Follow Up Completed:	
Follow Up Result:	

Procedure

Problem Date:	10 Sep 2020
Problem Depth:	0.00 (m)
Problem Description:	Could not immediately pick up CMR tool to RIH and log as it needed to be calibrated for drilling fluid filtrate response.
Immediate Cause:	Tool not prepared and ready to run.
Root Cause:	Schlumberger crew and equipment arrived onsite with no time to adequately spot, set up and prepare tools for logging job. No additional crew available to simultaneously prepare tools and conduct logging operations.
Solution Applied:	Calibrate tools in critical path rather than offline.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	09 Sep 2020
Follow Up Result:	

Tool Failure

Problem Date:	09 Sep 2020
Problem Depth:	0.00 (m)
Problem Description:	During surface tool checks after making up tools for Run-1 could not communicate for FMI tool at the bottom of the toolstring.
Immediate Cause:	Insufficient bandwidth for data communication with the programmed Run-1 tool configuration.
Root Cause:	Programmed toolstring not tested prior to mobilisation to wellsite due overall length. Suspect incompatible communication cartridge to enable full bandwidth communication with FMI tool.
Solution Applied:	SP tool left out of the toolstring. FMI communication restored.
Impact on Operations:	Serious
Follow Up Required:	Yes
Date Follow Up Completed:	
Follow Up Result:	

Miscellaneous

Lost Time

Wait on Equipment

Problem Date:	09 Sep 2020
Problem Depth:	0.00 (m)
Problem Description:	Waited 3.25 hrs while Schlumberger crew rested required period before commencing work.
Immediate Cause:	Wireline crew mobilised with 24 hrs notice, and only one crew available.
Root Cause:	Proposed wireline job should have had 2 full crews to complete the job which would have allowed opportunity for time management to enable continuous operations.
Solution Applied:	Conducted rig maintenance while waiting on crew hours.
Impact on Operations:	Serious
Follow Up Required:	No
Date Follow Up Completed:	
Follow Up Result:	

Summary of all Categories for West Moonie-1

Primary	Main	Drilling	Geological	Miscellaneous
Hole Conditions	Formation Hardness	1	0	0
	Hole Cleaning	1	0	0
	Washed out hole	3	0	0
Interpretation	Procedural Change	0	1	0
Lost Time	Wait On Equipment	0	0	1
Mechanical Down-Hole	BHA Design	2	0	0
	Tool Failure	2	0	0
Operations	Personnel	1	0	0
Wireline Logging	Equipment	0	1	0
	Equipment Failure	0	1	0
	Procedure	0	1	0
	Tool Failure	0	1	0
Grand Total		**10**	**5**	**1**

5. Geology

5.1 Reasons for Drilling

West Moonie-1 was drilled to evaluate the potential of the Precipice Sandstone for demonstration-scale sequestration of supercritical carbon dioxide. Extensive coring was carried out in the Evergreen Formation, Precipice Sandstone and uppermost Moolayember interval to provide data on the sealing and reservoir characteristics of these formations.

Detailed reservoir studies are underway with preliminary results providing encouragement that West Moonie-1 has provided sufficient data to meet the planned well objectives.

5.2 Stratigraphic Prognosis

The stratigraphic prognosis for West Moonie-1 was made utilising data from nearby wells Milgarra-1 (1982) 14.7km to the east, Susses Downs-1 (1966) 16.9km to the northeast and Flinton-1 (1963) located 32.1km to the west. The well penetrated 2271.0m of well documented Jurassic to Cretaceous Surat Basin sediments and 439.5m of Triassic Bowen Basin sediments. The well was terminated in Triassic Moolayember Formation sediments.

Interpretation of the drilled stratigraphic sequence while drilling operations continued was very difficult due to several factors. Chief among these were: the poor well control afforded by the lack of close offset wells, the absence of high quality petrophysical data for the surface hole section in the offset wells, the lack of correlatable drilling parameters with offset wells, the lack of suitable nearby analogues drilled in a similar basinal setting and uncertainty in the velocity models applied to the sparse seismic data in the general area.

Milgarra-1 had a reasonable suite of petrophysical logs recorded but only from the surface casing shoe (1105mKB) to total depth. The only data set available to correlate progress at West Moonie-1 in the shallow section was ROP. However, this data proved to be of little value as the modern PDC bit technology and drilling practices where ROP is optimised, as at West Moonie-1, yields so little ROP 'character' that meaningful correlation with the 1982 vintage ROP log from conventional tricone roller bearing bits used at Milgarra-1 proved fruitless.

Both Flinton-1 and Sussex Downs-1 had a suite of old petrophysical logs comprising SP, induction, and sonic data none of which proved useful for correlation purposes during drilling in the surface hole section at West Moonie-1. The available ROP data for Flinton-1 and Sussex Downs-1 were similarly of little use for correlation of the section while drilling, again due to the lack of sufficient curve character evident on the West Moonie-1 data set.

During the drilling of the surface hole section at West Moonie-1 there was low confidence in the formation picks intersected and reported. Due to the factors noted above, lithological changes were the primary criteria for picking the formation tops in the surface hole. Given the entire sequence is essentially comprised of interbedded, non-marine, clastic fluviatile rocks recognising formation boundaries from cuttings alone was challenging and significant weight was placed on the pre-drill prognosis for guidance in identifying the boundaries.

The first drilling objective for the well was to identify the boundary between the Gubberamunda Sandstone and the Westbourne Formation. The objective was to ensure surface casing was set through the Gubberamunda Sandstone with the casing shoe to be set in a competent claystone. This was important as water flows from the Gubberamunda Sandstone had been reported in several offset wells in the area. If the Gubberamunda Sandstone was not cased off this had the potential to result in a poor surface casing cement job and washed out hole after drilling out of surface casing.

Given the potential for creating difficult drilling conditions if the casing was set too shallow, a conservative approach to casing point selection was taken.

The Westbourne Formation was initially picked at 1573mRT based on a lithology change from sandstone dominant to claystone dominant at around the predicted top of the Westbourne Formation. The recording of a few ppm C2 was also considered a significant indicator of a formation boundary.

The casing point was selected at 1622mRT and a suite of petrophysical logs were acquired in a single run. The initial review of the petrophysical logs indicted, as expected, some minor changes in picks for formation boundaries, generally resulting in formations being intersected approximately 20m higher than initially picked based on cuttings interpretation. The exception to this was the initial pick for the Westbourne Formation which was within 0.5m of the pick while drilling.

This was significant as the pick was considered reasonably robust which set the expectation for the deeper section to also be reasonably close to prognosis.

Correlation with offset well data was also difficult on drilling out of the surface casing shoe in 8 ½" hole, again due to the lack of ROP character with which to match equivalent lithological units between wells. The uncertainty in correlation while drilling was compounded by the almost absence of coals logged in the cuttings returns through the interval where the upper Walloon Coal Measure sequence was predicted.

This resulted in formation tops being picked progressively lower to prognosis as drilling continued. It was thought at the time that this could be consistent with a seismic velocity model that was slower than that used for the prognosis with support from the general setting in the basin being closer to the axis of the Mimosa Syncline where gradual thickening of the section might reasonably be expected.

The first thin coals recognised as drilling continued were interpreted to be representative of the upper Walloon Coal Measure sequence. However subsequent review of the petrophysical logs acquired at total depth indicated these were, in fact, the lower Walloon coals, the Taroom Coal Measure sequence.

This misinterpretation coupled with the difficulty in correlating lithological units resulted in all formation tops leading up to the planned core point being picked some 20m to 30m low to prognosis. On this basis, the best correlation suggested the top of the Lower Hutton Sandstone was some 43m low to prognosis. Carrying this interpretation forward, the core point was selected such that if the isopach for the Lower Hutton Sandstone was close to prediction, then coring commencing at 2234mRT should sample the remaining Lower Hutton Sandstone and continue into the Evergreen Formation. Again, given the section was thought to be thickening into the Mimosa Syncline, this was considered a conservative approach to core point selection.

As coring operations were continuous with resources focussed on handling and processing the core there was little opportunity for a thorough review of the stratigraphic sequence with the benefit of the described cored interval. While it was recognised that the lithologic sequence described from cores was not as expected for the stratigraphic sequence as interpreted at the time and considerable uncertainty existed as to precisely which portions of the stratigraphic sequence were being cored, it was not until petrophysical logs were acquired at total depth that the misinterpretation of the drilled sequence became apparent.

A thorough review of all available data resulted in a reassessment of the drilled stratigraphic sequence and now indicates coring commenced in the lower part of the Evergreen Formation and continued through the upper Moolayember Formation. The lower parts of the cored interval initially interpreted to sample the Evergreen and Precipice Sandstone lithofacies are now re-assigned to the Moolayember Formation.

The re-interpretation of the stratigraphic boundaries intersected at West Moonie-1 indicates that the Westbourne Formation rather than being quite close to prognosis was, in fact, some 140m high to prognosis. Likewise, all formations below the Westbourne Formation rather than being low to prognosis were in the order of 100m+ high to prognosis.

5.3 Stratigraphy

The stratigraphic section encountered in West Moonie-1 is summarised below and formation boundaries are tabulated in Table 5-1. Detailed lithological descriptions of the cores are presented in Appendix 9 and sedimentologist interpretation included as Appendix 12. A generalised Surat Basin stratigraphic column is provided as Figure 5-1.

Table 5-1 Formation Boundaries

Formation Boundaries							
Formation Name	Predicted Depth MD (m)	Predicted Depth TVD (m)	Predicted Depth TVDSS (m)	Actual Depth MD (m)	Actual Depth TVD (m)	Actual Depth TVDSS (m)	Difference TVD (m)
Recent-Quaternary	4.2	4.2	-243.0	4.2	4.2	+243.0	0.0
Griman Creek Formation	16.0	16.0	-231.2	31.0	31.0	+216.2	15.0 Low
Surat Siltstone	376.2	376.2	129.0	328.7	328.7	-81.5	47.5 High
Wallumbilla Formation	474.2	474.2	227.0	446.4	446.4	-199.2	27.8 High
Coreena Member	474.2	474.2	227.0	446.4	446.4	-199.2	28.8 High
Doncaster Member	680.2	680.2	433.0	659.4	659.4	-412.2	20.8 High
Bungil Formation	818.2	818.2	571.0	732.2	732.2	-485.0	86.0 High
Mooga Sandstone	1006.2	1006.2	759.0	929.0	929.0	-681.8	77.2 High
Orallo Formation	1224.2	1224.2	977.0	1053.7	1053.7	-806.5	170.5 High
Gubberamunda Sandstone	1331.2	1331.2	1084.0	1160.1	1160.0	-912.8	171.2 High
Pilliga Sandstone	NP	NP	NP	1407.8	1407.6	-1160.4	Not Predicted
Westbourne Formation	1587.2	1587.2	1340.0	1431.0	1430.8	-1183.6	156.4 High
Springbok Sandstone	1682.2	1682.2	1435.0	1528.5	1528.3	-1281.1	153.9 High
Walloon Sub Group	1769.2	1769.2	1522.0	1630.9	1630.4	-1383.2	138.8 High
Juandah Coal Measures	1769.2	1769.2	1522.0	1630.9	1630.4	-1383.2	138.8 High
Tangalooma Sandstone	1871.2	1871.2	1624.0	1759.6	1759.1	-1511.9	112.2 High

Taroom Coal Measures	1919.2	1919.2	1672.0	1811.6	1811.0	-1563.8	108.2 High
Eurombah Formation	1965.2	1965.2	1718.0	1865.9	1865.2	-1618.0	100.0 High
Hutton Sandstone	1984.2	1984.2	1737.0	1885.8	1885.1	-1637.9	99.1 High
Lower Hutton Sandstone	2111.2	2111.2	1864.0	2034.0	2033.2	-1786.0	78.0 High
Evergreen Formation	2197.2	2197.2	1950.0	2105.2	2104.5	-1857.3	92.7 High
Boxvale Sandstone Member	2262.2	2262.2	2015.0	2153.1	2152.3	-1905.1	109.9 High
Precipice Sandstone	2344.2	2344.2	2097.0	2262.6	2262.0	-2014.8	82.2 High
Lower Precipice Sandstone	2371.2	2371.2	2124.0	2275.2	2274.6	-2027.4	96.6 High
Moolayember Formation	2456.2	2456.2	2209.0	2340.4	2339.9	-2092.7	116.4 High
Total Depth	2550.0	2550.0	2302.8	2713.5	2713.0	-2465.8	163.0 Low

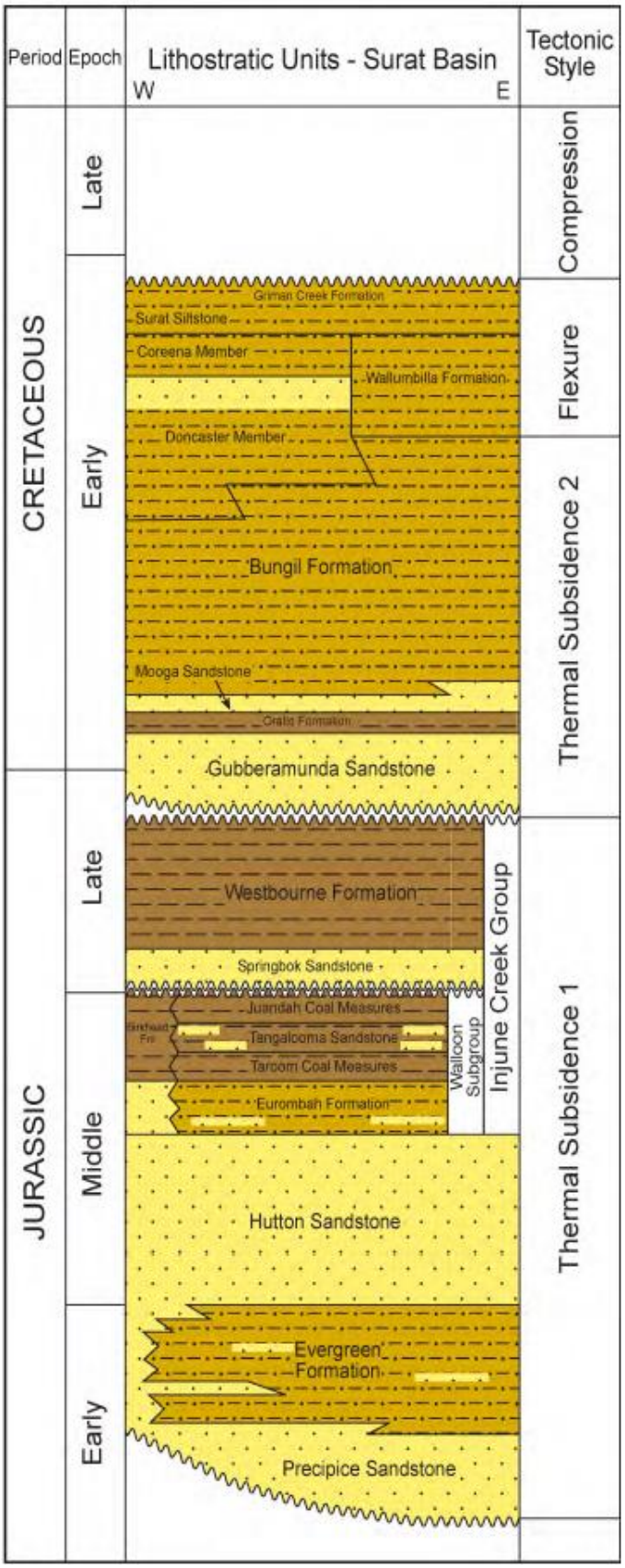

Figure 5-1 Surat Basin Stratigraphic Column

5.3.1 Stratigraphic Units Penetrated

Recent-Quaternary: 4.2 - 31.0 mMDRT (+246.5 - +216.2 mTVDSS, 26.8 m thick)

Interval	16.0 to 31.0 m MDRT	ROP (Range)	to m/h	Average ROP	

Sandstone with thin interbeds of Silty Claystone

SILTY CLAYSTONE: (5 - 40%) Pale brown, soft, dispersive, common silty inclusions.

SILTY CLAYSTONE: (5 - 40%) Dark yellowish orange to moderate reddish brown, firm to moderately hard, sub blocky, commonly silty, commonly limonitic, iron stained.

SANDSTONE: (55 - 80%) Grayish orange pink, fine to medium, occasionally coarse grained, poorly sorted, subangular, elongated, quartzose, occasional lithic grains, trace siliceous cement, trace clay matrix, excellent porosity.

Griman Creek Formation: 31.0 - 328.7 mMDRT (+216.2 - -81.5 mTVDSS, 297.7 m thick)

Interval	31.0 to 75.0 m MDRT	ROP (Range)	to m/h	Average ROP	

Claystone with thin stringers of Sandstone.

CLAYSTONE: (80 - 90%) Grayish orange to very pale orange, soft, dispersive.

SANDSTONE: (10 - 20%) Pale yellowish brown, very fine to fine grained occasionally medium grained, subangular, poor to moderate sorting, slightly elongated, quartzose, common lithic grains, slight siliceous cement, clay matrix, good porosity.

Interval	75.0 to 135.0 m MDRT	ROP (Range)	to m/h	Average ROP	

Interbedded Sandstone and Clayey Siltstone with thin stringers of low rank coal.

SANDSTONE: (30 - 70%) Very light gray to light gray, pale yellowish brown in parts, very fine to fine grained, well sorted, subangular, slightly elongated, quartzose, feldspathic, occasional glauconie, lithic grains, occasional carbonaceous fragments, siliceous cement, fair porosity.

CLAYEY SILTSTONE: (30 - 100%) Light olive gray to pale yellowish brown, soft to firm, sub blocky.

SILTSTONE: (30 - 100%) Light gray, sub blocky, firm to moderately hard, micromicaeous in parts, rare carbonaceous fragments.

COAL: (10 - 10%) Grayish black to black, brittle, angular to sub conchoidal fracture, grades to low rank carbonaceous siltstone in parts.

Interval	135.0 to 225.0 m MDRT	ROP (Range)	4.0 to 62.7 m/h	Average ROP	43.1 (m/h)

Sandstone with interbeds of Claystone.

CLAYSTONE: (10 - 40%) Medium dark gray, sub blocky, firm to moderately hard.

SANDSTONE: (60 - 100%) Light gray to light olive gray, very fine to occasionally fine grained, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, common clay matrix, fair porosity.

Interval	225.0 to 265.0 m MDRT	ROP (Range)	24.6 to 69.9 m/h	Average ROP	55.8 (m/h)

Interbedded Sandstone, Claystone and Siltstone.

SANDSTONE: (40 - 50%) Light gray to light olive gray, very fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, common clay matrix, fair porosity.

SILTSTONE: (60 - 70%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie.

SILTY CLAYSTONE: (20 - 50%) Pale brown, moderately hard, sub blocky, silty in part.

CLAYSTONE: (20 - 50%) Medium dark gray, sub blocky, firm to moderately hard.

Interval	265.0 to 328.7 m MDRT	ROP (Range)	9.6 to 98.0 m/h	Average ROP	59.0 (m/h)

Sandstone with interbeds of Siltstone and Claystone

SANDSTONE: (30 - 80%) Light gray to light olive gray, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments and partings, trace lithic grains, trace glauconie, common clay matrix, fair porosity.

CLAYSTONE: (10 - 40%) Medium dark gray to olive gray, sub blocky, soft to firm occasionally moderately hard.

SILTSTONE: (10 - 40%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, grades to very fine grained sandstone in parts.

Surat Siltstone: 328.7 - 446.4 mMDRT (-81.5 - -199.2 mTVDSS, 117.7 m thick)

Surat Siltstone: 328.7 - 446.4 mMDRT (-81.5 - -199.2 mTVDSS, 117.7 m thick)

Interval	328.7 to 381.0 m MDRT	ROP (Range)	20.3 to 72.0 m/h	Average ROP	50.6 (m/h)

Interbedded claystone, sandstone and siltstone.

CLAYSTONE: (20 - 50%) Medium dark gray to olive gray, sub blocky, soft to firm occasionally moderately hard.

SANDSTONE: (20 - 60%) Light gray to light olive gray, very fine to fine grained, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments and partings, trace lithic grains, common clay matrix, fair porosity.

SILTSTONE: (20 - 30%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, grades to very fine grained sandstone in parts.

Interval	381.0 to 391.7 m MDRT	ROP (Range)	16.1 to 59.5 m/h	Average ROP	47.5 (m/h)

Sandstone with interbeds of claystone and siltstone.

CLAYSTONE: (30%) Medium dark gray to olive gray, sub blocky, soft to firm occasionally moderately hard.

SANDSTONE: (50%) Light gray to light olive gray, very fine to fine grained, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments and partings, trace lithic grains, common clay matrix, fair porosity.

SILTSTONE: (20%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, grades to very fine grained sandstone in parts.

Interval	391.7 to 446.4 m MDRT	ROP (Range)	16.2 to 81.6 m/h	Average ROP	52.8 (m/h)

Interbedded Sandstone, Siltstone and Claystone, with thin Coal stringer towards the base of the interval.

SANDSTONE: (10 - 60%) Light gray to light olive gray, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments and partings, trace lithic grains, common clay matrix, fair porosity.

SILTSTONE: (20 - 70%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, grades to very fine grained sandstone in parts.

CLAYSTONE: (10 - 50%) Medium dark gray to olive gray, sub blocky, soft to firm occasionally moderately hard.

COAL: (0 - 5%) Grayish black to black, angular fracture, brittle, grades to low rank carbonaceous siltstone in parts.

Coreena Member: 446.4 - 659.4 mMDRT (-199.2 - -412.2 mTVDSS, 213.0 m thick)

Interval	446.4 to 555.0 m MDRT	ROP (Range)	34.0 to 69.5 m/h	Average ROP	58.3 (m/h)

Interbedded Claystone, Siltstone and Sandstone.

CLAYSTONE: (20 - 50%) Medium dark gray to olive gray, sub blocky firm to moderately hard.

SILTSTONE: (20 - 40%) Light olive gray, quartzose feldspathic, firm, occasionally friable, occasional carbonaceous fragments, trace lithic grains, trace to common glauconie, grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 40%) Light olive gray, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, occasional glauconie, trace lithic grains, calcareous cement, clay matrix, fair porosity.

Interval	555.0 to 659.4 m MDRT	ROP (Range)	21.2 to 95.2 m/h	Average ROP	55.3 (m/h)

Interbedded Claystone and Sandstone with Sandstone grading to Siltstone interbeds.

CLAYSTONE: (10 - 70%) Medium dark gray to olive gray, sub blocky firm to moderately hard.

SANDSTONE: (10 - 80%) Olive gray to brownish grey, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, occasional glauconie, lithic grains, common carbonaceous fragments, trace pyrite, siliceous cement, trace clay matrix, fair porosity.

SILTSTONE: (10 - 40%) Light olive gray, quartzose feldspathic, firm, trace lithic grains, common glauconie, grades to very fine grained sandstone in parts.

Doncaster Member: 659.4 - 732.2 mMDRT (-412.2 - -485.0 mTVDSS, 72.8 m thick)

Interval	659.4 to 732.2 m MDRT	ROP (Range)	23.4 to 80.6 m/h	Average ROP	59.9 (m/h)

Sandstone grading to Siltstone interbedded with Claystone.

SANDSTONE: (20 - 80%) Light brownish gray to yellowish gray, very fine to fine grained, well sorted, subangular to sub rounded, slightly spherical, friable, quartzose, rare glauconie, rare disseminated pyrite, occasional lithic grain, carbonaceous specks, clay matrix, trace calcareous cement, good porosity.

SILTSTONE: (10 - 50%) Olive gray, brownish gray in part, quartzose feldspathic, firm, lithic grains, trace glauconie, common carbonaceous fragments and lamellae, grades to very fine grained sandstone in parts.

CLAYSTONE: (10 - 40%) Medium gray to olive gray, brownish gray in part, sub blocky firm to moderately hard micromicaeous.

Bungil Formation: 732.2 - 929.0 mMDRT (-485.0 - -682.0 mTVDSS, 196.8 m thick)

Interval	732.2 to 802.0 m MDRT	ROP (Range)	33.4 to 94.0 m/h	Average ROP	64.9 (m/h)

Siltstone grading to Sandstone interbedded with Claystone.

SILTSTONE: (30 - 60%) Olive gray, brownish gray in part, quartzose feldspathic, firm, lithic grains, trace glauconie, common carbonaceous fragments and lamellae, grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 60%) Clear to white, fine to medium grained occasionally coarse grained, poorly to moderately well sorted, subangular to sub rounded, slightly spherical, quartzose, trace siliceous cement, friable, good porosity.

CLAYSTONE: (10 - 30%) Olive gray, brownish gray in part, quartzose feldspathic, firm, lithic grains, trace glauconie, common carbonaceous fragments and lamellae, grades to very fine grained sandstone in parts.

Interval	802.0 to 825.0 m MDRT	ROP (Range)	31.5 to 76.5 m/h	Average ROP	55.8 (m/h)

Siltstone grading to Sandstone interbedded with Claystone.

SILTSTONE: (30 - 60%) Medium light gray to light olive gray, soft, generally amorphous, quartzose, common lithic grains, common lignitic carbonaceous material, grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 60%) Medium light gray to light olive gray, very fine grained, well sorted, subangular to sub rounded, slightly spherical, quartzose, trace lithic grains, occasional platy lignitic carbonaceous material, common clay matrix, fair to good porosity.

CLAYSTONE: (10 - 40%) Brownish gray, firm, occasionally moderately hard, sub blocky.

Interval	825.0 to 929.0 m MDRT	ROP (Range)	14.6 to 92.4 m/h	Average ROP	52.8 (m/h)

Predominantly Siltstone grading to Sandstone interbedded with thin Claystone.

SILTSTONE: (40 - 80%) Medium light gray to light olive gray, soft, generally amorphous, quartzose, common lithic grains, common lignitic carbonaceous material, grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 40%) Medium light gray to light olive gray, very fine grained, well sorted, subangular to sub rounded, slightly spherical, quartzose, trace lithic grains, occasional platy lignitic carbonaceous material, common clay matrix, fair to good porosity.

CLAYSTONE: (10 - 30%) Brownish gray, firm, occasionally moderately hard, sub blocky.

Mooga Sandstone: 929.0 - 1053.7 mMDRT (-682.0 - -806.4 mTVDSS, 124.7 m thick)

Interval	929.0 to 1015.0 m MDRT	ROP (Range)	11.2 to 88.5 m/h	Average ROP	54.3 (m/h)

Interbedded Sandstone and Siltstone with occasional thin Claystone interbeds.

SANDSTONE: (20 - 100%) Medium light gray to light olive grey, clear, very fine to medium grained, occasionally coarse grained, poorly sorted, subangular, slightly elongated to slightly spherical, quartzose, feldspathic, occasional lithic grains and occasional glauconie, slight siliceous cement, common clay matrix, fair to good porosity.

SILTSTONE: (20 - 60%) Light olive gray, commonly grades to very fine grained sandstone, sub blocky, friable in parts, occasional lithic inclusions, occasional glauconie grains.

CLAYSTONE: (10 - 20%) Brownish gray, sub blocky, firm to moderately hard, generally amorphous.

Interval	1015.0 to 1053.7 m MDRT	ROP (Range)	20.6 to 98.3 m/h	Average ROP	53.4 (m/h)

Massive Sandstone with interbeds of poorer quality, less well-developed Sandstone and occasional thin interbeds of Claystone.

MASSIVE SANDSTONE: (50 - 100%) White to very light gray, colourless, translucent, medium to coarse grained, moderately well sorted, sub rounded to rounded, slightly spherical to spherical, quartzose, generally loose grains, slight siliceous cement, excellent porosity.

SANDSTONE: (0 - 50%) Pale yellowish brown to pale brown, very fine to fine grained, occasionally fine to medium grained, moderately well sorted, sub rounded, slightly elongated, quartzose, lithic, common carbonaceous fragments, friable to firm, trace disseminated pyrite, slight siliceous cement, fair to good porosity.

CLAYSTONE: (0 - 20%) Pale brown to olive gray, carbonaceous partings and fragments, occasional lithic grains included, sub blocky, firm to moderately hard.

Orallo Formation: 1053.7 - 1160.1 mMDRT (-806.4 - -912.9 mTVDSS, 106.4 m thick)

Interval	1053.7 to 1160.1 m MDRT	ROP (Range)	22.1 to 130.0 m/h	Average ROP	60.2 (m/h)

Sandstone with occasional thin stringers of silty Claystone.

SANDSTONE: (80 - 100%) White to very light gray, colourless, translucent, medium to coarse grained, moderately well sorted, sub rounded to rounded, slightly elongated to spherical, quartzose, generally loose grains, slight siliceous cement, excellent porosity.

SILTY CLAYSTONE: (0 - 20%) Pale brown to olive gray, carbonaceous partings and fragments, occasional to common lithic grains included, sub blocky, firm to moderately hard.

Gubberamunda Sandstone: 1160.1 - 1407.8 mMDRT (-912.9 - -1160.4 mTVDSS, 247.6 m thick)

Interval	1160.1 to 1255.0 m MDRT	ROP (Range)	24.9 to 133.3 m/h	Average ROP	57.8 (m/h)

Sandstone with thin interbeds of Silty Claystone

SANDSTONE: (70 - 90%) White to very light gray, colourless, translucent, medium to coarse grained, moderately well sorted, sub rounded to rounded, slightly elongated to slightly spherical, quartzose, generally loose grains, slight siliceous cement, excellent porosity.

SILTY CLAYSTONE: (10 - 30%) Pale brown to olive gray, carbonaceous partings and fragments, occasional to common lithic grains included, sub blocky, firm to moderately hard.

Interval	1255.0 to 1316.0 m MDRT	ROP (Range)	7.2 to 93.7 m/h	Average ROP	40.8 (m/h)

Sandstone with thin interbeds of silty Claystone.

SANDSTONE: (70 - 100%) 2 Types: Type 1: White to very light gray, colourless, translucent, medium to coarse grained, moderately well sorted, sub rounded to rounded, slightly elongated to slightly spherical, quartzose, generally loose grains, slight siliceous cement, excellent porosity. Type 2: Very light gray to light gray, very fine to fine grained, well sorted, subangular to sub rounded, slightly elongated, grades to siltstone in part, quartzose, lithic, rare? glauconie, occasional carbonaceous fragments, slight siliceous cement, fair porosity.

SILTY CLAYSTONE: (0 - 30%) Pale brown to olive gray, carbonaceous partings and fragments, occasional to common lithic grains included, sub blocky, firm to moderately hard.

Interval	1316.0 to 1330.0 m MDRT	ROP (Range)	19.4 to 76.8 m/h	Average ROP	46.7 (m/h)

Massive Sandstone.

SANDSTONE 100%: Colourless to white, medium to coarse grained, occasionally very coarse, well sorted, sub rounded, slightly elongated, quartzose, generally loose grains, slight siliceous cement, excellent porosity.

Interval	1330.0 to 1407.8 m MDRT	ROP (Range)	12.7 to 121.8 m/h	Average ROP	48.2 (m/h)

Sandstone with thin interbeds of Siltstone.

SANDSTONE: (50 - 100%) Colourless to white, fine to medium grained, occasionally coarse grained, well sorted, subangular to subrounded, slightly elongated, quartzose, slight siliceous cement, excellent porosity.

SILTSTONE: (0 - 50%) Medium dark gray to olive gray, sub blocky, occasional carbonaceous fragments, occasional lithic grains, moderately hard, grades to very fine grained sandstone in part.

Pilliga Sandstone: 1407.8 - 1431.0 mMDRT (-1160.4 – 1183.7 mTVDSS, 23.2 m thick)

Interval	1407.8 to 1431.05 m MDRT	ROP (Range)	15.1 to 71.9 m/h	Average ROP	48.1 (m/h)

Sandstone with thin interbeds of Siltstone.

SANDSTONE: (30 - 100%) White to very light gray, very fine to fine grained, occasionally medium grained, moderately well sorted, subangular to subrounded, slightly elongated, quartzose, occasional lithic grains, siliceous cement, fair porosity.

SILTSTONE: (0 - 70%) Light olive gray to olive gray, sub block, moderately hard, carbonaceous fragments, lithic grains, grades to very fine grained sandstone in part.

Westbourne Formation: 1431.0 - 1528.5 mMDRT (-1183.7 - -1281.1 mTVDSS, 97.5 m thick)

Interval	1431.0 to 1528.5 m MDRT	ROP (Range)	23.1 to 78.9 m/h	Average ROP	42.8 (m/h)

Interbedded Sandstone and Siltstone.

SANDSTONE: (10 - 80%) White to very light gray, very fine to fine grained subangular to sub rounded, well sorted, slightly elongated, quartzose, trace siliceous cement, common clay matrix, poor to fair porosity, grades to siltstone in part.

SILTSTONE: (20 - 90%) Light olive gray to olive gray, sub block, firm to moderately hard, carbonaceous fragments, lithic grains, grades to very fine-grained sandstone in part.

Springbok Sandstone: 1528.5 - 1630.9 mMDRT (-1281.1 - -1383.4 mTVDSS, 102.2 m thick)

Interval	1528.5 to 1630.9 m MDRT	ROP (Range)	18.8 to 83.4 m/h	Average ROP	35.0 (m/h)

Sandstone with interbeds of Siltstone and Claystone and thin stringers of Coal.

SANDSTONE: (40 - 60%) White to very light gray, very fine to fine grained, subangular to sub rounded, well sorted, slightly elongated, quartzose, common lithic grains common to abundant clay matrix, poor porosity.

SILTSTONE: (20 - 60%) Light olive gray to olive gray, sub blocky, firm to moderately hard, carbonaceous fragments, lithic grains.

CLAYSTONE: (0 - 30%) Moderate to dark yellowish brown, firm, sub blocky, generally amorphous.

COAL: (0 - 5%) Grayish black to black, angular fracture, grades to low rank carbonaceous siltstone in part.

Walloon Sub Group: 1630.9 – 1865.9 mMDRT (-1383.4 - -1618.2 mTVDSS, 235.0 m thick)

Juandah Coal Measures: 1630.9 - 1759.6 mMDRT (-1383.4 - -1512.1 mTVDSS, 128.7 m thick)

Interval	1630.9 to 1759.6 m MDRT	ROP (Range)	7.7 to 52.8 m/h	Average ROP	35.7 (m/h)

Interbedded Sandstone and Siltstone with occasional thin stringers of Carbonaceous Claystone

CARBONACEOUS CLAYSTONE: (0 - 10%) Dark gray to grayish black, sub fissile to sub blocky, dull lustre, brittle, moderately hard.

SANDSTONE: (30 - 60%) Light gray to medium light gray, very fine to fine grained, moderately well sorted, sub angular slightly elongated, quartzose, common lithic grains, occasional carbonaceous fragments, slight calcareous cement, clay matrix, poor to fair porosity.

SILTSTONE: (40 - 60%) Medium dark gray to olive gray, soft to firm, sub blocky, lithic grains included, grades to very fine grained sandstone in part.

Tangalooma Sandstone: 1759.6 - 1811.6 mMDRT (-1512.1 - -1564.0 mTVDSS, 52.0 m thick)

Interval	1759.6 to 1811.6 m MDRT	ROP (Range)	19.2 to 48.8 m/h	Average ROP	32.7 (m/h)

Sandstone with thin interbeds of Siltstone and Claystone

SANDSTONE: (50 - 70%) Very light gray to medium light gray, very fine to fine grained moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, slight calcareous cement, trace clay matrix, fair porosity.

SILTSTONE: (20 - 30%) Medium gray to light olive gray, soft to firm, sub blocky, lithic grains included, grades to very fine grained sandstone in part.

CLAYSTONE: (10 - 20%) Brownish gray, sub blocky, brittle, moderately hard to hard,

Taroom Coal Measures: 1811.6 - 1865.9 mMDRT (-1564.0 - -1618.2 mTVDSS, 52.0 m thick)

Interval	1811.6 to 1865.9 m MDRT	ROP (Range)	20.1 to 50.5 m/h	Average ROP	34.5 (m/h)

Interbedded Sandstone and Siltstone with occasional stringers of Claystone and Coal

SANDSTONE: (30 - 70%) Light gray to light olive gray, very fine to fine grained, occasionally medium grained, poorly to moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, occasional carbonaceous fragments, slightly calcareous cement, slight clay matrix, fair porosity.

SILTSTONE: (20 - 50%) Very light gray to medium light gray, light brownish gray to light olive gray in parts, very fine to fine grained moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, slight calcareous cement, trace clay matrix, fair porosity.

CLAYSTONE: (10 - 30%) Light brownish gray to brownish gray, medium gray in parts, sub blocky, brittle, lithic grains in part, rare carbonaceous fragments included, moderately hard to hard.

COAL: (10 - 10%) Dark gray to grayish black, angular to sub conchoidal fracture, brittle, moderately hard. low rank.

Eurombah Formation: 1865.9 - 1885.8 mMDRT (-1618.2 - -1638.1 mTVDSS, 52.0 m thick)

Interval	1865.9 to 1885.8 m MDRT	ROP (Range)	23.1 to 40.5 m/h	Average ROP	27.5 (m/h)

Interbedded Sandstone and Siltstone

SANDSTONE: (30 - 70%) Light gray to light olive gray, very fine to fine grained, occasionally medium grained, poorly to moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, occasional carbonaceous fragments, slightly calcareous cement, slight clay matrix, fair porosity.

SILTSTONE: (20 - 50%) Very light gray to medium light gray, light brownish gray to light olive gray in parts, very fine to fine grained moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, slight calcareous cement, trace clay matrix, fair porosity.

Hutton Sandstone: 1885.8 - 2105.2 mMDRT (-1638.1 - -1857.2 mTVDSS, 219.4 m thick)

Interval	1885.8 to 1943.0 m MDRT	ROP (Range)	16.9 to 57.1 m/h	Average ROP	36.1 (m/h)

Sandstone with thin interbeds of Siltstone

SANDSTONE: (20 - 70%) White to light gray and light olive gray, very fine to medium grained, occasionally coarse grained, poorly to moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, occasional carbonaceous fragments, slightly calcareous cement, slight clay matrix, fair porosity.

SILTSTONE: (30 - 80%) Light brownish gray to light olive gray, sub blocky, moderately hard, lithic silt sized grains included.

Interval	1943.0 to 2034.0 m MDRT	ROP (Range)	13.2 to 46.5 m/h	Average ROP	33.5 (m/h)

Interbedded Sandstone and Siltstone with thin stringers of Coal

SANDSTONE: (10 - 70%) White to light gray, fine to medium grained, occasionally medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, good porosity.

SILTSTONE: (30 - 80%) Light brownish gray to light olive gray, sub blocky, firm, rare lithic silt sized grains included.

COAL: (0 - 10%) Dark gray to grayish black, angular to sub-conchoidal fracture, dull lustre, grades to low rank carbonaceous claystone.

Lower Hutton Sandstone: 2034.0 - 2105.2 mMDRT (-1786.1 - -1857.2 mTVDSS, 71.2 m thick)

Interval	2034.0 to 2105.2 m MDRT	ROP (Range)	18.9 to 42.3 m/h	Average ROP	33.5 (m/h)

Interbedded Sandstone and Siltstone.

SANDSTONE: (40 - 60%) White to light gray, fine to medium grained, occasionally medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, good porosity.

SILTSTONE: (40 - 60%) Light brownish gray to light olive gray, sub blocky, firm, rare lithic silt sized grains included.

Evergreen Formation: 2105.2 – 2262.6 mMDRT (-1857.2 - -2014.4 mTVDSS, 219.4 m thick)

Interval	2105.2.0 to 2153.0 m MDRT	ROP (Range)	14.3 to 51.1 m/h	Average ROP	33.4 (m/h)

Interbedded Sandstone and Siltstone

SANDSTONE: (10 - 70%) White to light gray, fine to medium grained, occasionally medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, good porosity.

SILTSTONE: (30 - 90%) Brownish gray and light brownish gray to light olive gray, sub blocky, firm, rare lithic silt sized grains included, occasional carbonaceous fragments, grades in part to very fine grained sandstone.

Boxvale Sandstone Member: 2153.1 – 2167.2 mMDRT (-1905.1 - -1919.2 mTVDSS, 14.1 m thick)

Interval	2153.1 to 2167.2 m MDRT	ROP (Range)	29.3 to 35.6 m/h	Average ROP	32.7 (m/h)

Sandstone

SANDSTONE: (100%) White to light gray, fine to medium grained, also medium to coarse grained in part, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, fair to good porosity.

Interval	2167.2 to 2232.0 m MDRT	ROP (Range)	19.3 to 45.6 m/h	Average ROP	30.7 (m/h)

Interbedded Sandstone and Siltstone

SANDSTONE: (20 - 90%) White to light gray, fine to medium grained, also medium to coarse grained in part, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, fair to good porosity.

SILTSTONE: (10 - 80%) Brownish gray, light brownish gray in part, soft to firm, sub block, occasional lithic grains, occasional carbonaceous fragments included.

Interval	2232.0 to 2252.0 m MDRT	ROP (Range)	1.3 to 30.0 m/h	Average ROP	14.4 (m/h)

See Core-1 Descriptions

Interval	2252.0 to 2270.0 m MDRT	ROP (Range)	5.1 to 24.0 m/h	Average ROP	12.4 (m/h)

See Core-2 Descriptions

Precipice Sandstone: 2262.6 - 2275.2 mMDRT (-2014.1 - 2027.0 mTVDSS, 12.6 m thick)

Interval	2270.0 to 2288.0 m MDRT	ROP (Range)	8.8 to 28.7 m/h	Average ROP	16.8 (m/h)

See Core-3 Descriptions

Lower Precipice Sandstone: 2275.2 - 2340.4 mMDRT (-2027.0 - -2092.2 mTVDSS, 65.2 m thick)

Interval	2288.0 to 2301.0 m MDRT	ROP (Range)	7.8 to 13.0 m/h	Average ROP	9.5 (m/h)

See Core-4 Descriptions

Interval	2301.0 to 2302.0 m MDRT	ROP (Range)	7.3 to 9.7 m/h	Average ROP	8.4 (m/h)

Sandstone. 1m drilled prior to re-commencing continuous coring. Cuttings samples unreliable over this interval.

Interval	2302.0 to 2317.7 m MDRT	ROP (Range)	7.4 to 14.5 m/h	Average ROP	10.8 (m/h)

See Core -5 Descriptions

Interval	2317.7 to 2333.6 m MDRT	ROP (Range)	6.3 to 20.5 m/h	Average ROP	12.4 (m/h)

See Core -6 Descriptions

Interval	2333.6 to 2351.1 m MDRT	ROP (Range)	1.0 to 27.3 m/h	Average ROP	8.5 (m/h)

See Core -7 Descriptions

Moolayember Formation: 2340.4 – 2713.5 mMDRT (-2092.2 - -2464.6 mTVDSS, 373.1+ m thick)

Interval	2351.1 to 2369.1 m MDRT	ROP (Range)	0.4 to 16.1 m/h	Average ROP	6.5 (m/h)

See Core -8 Descriptions

Interval	2369.1 to 2371.2 m MDRT	ROP (Range)	3.3 to 5.7 m/h	Average ROP	5.0 (m/h)

See Core-9 Descriptions

Interval	2371.2 to 2376.2 m MDRT	ROP (Range)	3.1 to 5.3 m/h	Average ROP	4.5 (m/h)

See Core-10 Descriptions

Interval	2376.2 to 2376.4 m MDRT	ROP (Range)	to m/h	Average ROP	

See Core-11 Descriptions

Interval	2376.4 to 2424.0 m MDRT	ROP (Range)	0.3 to 15.6 m/h	Average ROP	7.4 (m/h)

Claystone with occasional thin stringers of Sandstone

CLAYSTONE: (80 - 100%) Olive gray to medium dark gray, sub blocky, moderately hard, carbonaceous fragments included in part, grades to silty claystone in part.

SANDSTONE: (0 - 20%) White to very light gray, very fine to fine grained, occasionally medium grained, moderately well sorted, subangular to sub rounded, slightly elongate, quartzose, lithic, siliceous cement, clay matrix, fair porosity.

Interval	2424.0 to 2432.0 m MDRT	ROP (Range)	1.5 to 5.9 m/h	Average ROP	4.4 (m/h)

See Detailed Core-12 Description

Interval	2432.0 to 2447.0 m MDRT	ROP (Range)	2.1 to 6.6 m/h	Average ROP	4.5 (m/h)

Silty Claystone with thin stringers of Sandstone

SILTY CLAYSTONE: (80 - 90%) Olive gray to brownish gray, medium dark gray in part, sub blocky, moderately hard, occasional lithic grains grading to siltstone in part, carbonaceous fragments included in part.

SANDSTONE: (10 - 20%) White to light gray, fine to medium grained, well sorted, subangular, slightly elongated, quartzose, lithic, siliceous cement, common clay matrix, fair porosity.

Interval	2447.0 to 2457.0 m MDRT	ROP (Range)	2.4 to 7.0 m/h	Average ROP	3.7 (m/h)

Silty Claystone with thin stringers of Sandstone and Siltstone

SILTY CLAYSTONE: (20 - 100%) Olive gray to brownish gray, medium dark gray in part, sub blocky, moderately hard, occasional lithic grains grading to siltstone in part, carbonaceous fragments included in part.

SANDSTONE: (0 - 50%) White to light gray, fine to medium grained, occasionally very fine to fine grained, moderately well sorted, subangular, slightly elongated, quartzose, lithic, rarely micromicaeous, siliceous cement, common clay matrix, fair porosity.

SILTSTONE: (0 - 50%) Light olive gray to medium light gray, sub blocky firm to moderately hard, lithic grains included, carbonaceous fragments included, grades to very fine grained sandstone in part.

Interval	2457.0 to 2468.0 m MDRT	ROP (Range)	3.3 to 7.3 m/h	Average ROP	5.5 (m/h)

Sandstone with thin stringers of Silty Claystone and Siltstone

SANDSTONE: (50 - 90%) White to light gray, fine to medium grained, occasionally very fine to fine grained, moderately well sorted, subangular, slightly elongated, quartzose, lithic, rarely micromicaeous, siliceous cement, common clay matrix, fair to good porosity.

SILTY CLAYSTONE: (10 - 20%) Olive gray to brownish gray, medium dark gray in part, sub blocky, moderately hard, occasional lithic grains grading to siltstone in part, carbonaceous fragments included in part.

SILTSTONE: (0 - 30%) Light olive gray to medium light gray, sub blocky firm to moderately hard, lithic grains included, carbonaceous fragments included, grades to very fine grained sandstone in part.

Interval	2468.0 to 2530.0 m MDRT	ROP (Range)	2.1 to 10.2 m/h	Average ROP	4.8 (m/h)

Silty Claystone with interbedded Sandstone and Siltstone

SILTY CLAYSTONE: (10 - 80%) Olive gray to brownish gray, medium dark gray in part, sub blocky, moderately hard, occasional lithic grains grading to siltstone in part, carbonaceous fragments included in part.

SANDSTONE: (0 - 60%) White to light gray, very fine to fine grained, occasionally medium grained, moderately well sorted, subangular, slightly elongated, quartzose, lithic, occasional to common carbonaceous inclusions and partings, siliceous cement, clay matrix, fair to good porosity.

SILTSTONE: (10 - 90%) Light olive gray to medium light gray, sub blocky firm to moderately hard, lithic grains included, carbonaceous fragments included, grades to very fine grained sandstone in part.

Interval	2530.0 to 2550.0 m MDRT	ROP (Range)	0.6 to 7.0 m/h	Average ROP	4.3 (m/h)

Interbedded Sandstone and Siltstone

SANDSTONE: (20 - 80%) White to light gray, very fine to fine grained, occasionally medium grained, moderately well sorted, subangular, slightly elongated, quartzose, lithic, occasional to common carbonaceous inclusions, siliceous cement, common clay matrix, fair porosity.

SILTSTONE: (20 - 80%) Light olive gray to medium light gray, sub blocky firm, lithic grains included, carbonaceous fragments included, grades to very fine-grained sandstone in part.

Interval	2550.0 to 2553.6 m MDRT	ROP (Range)	3.6 to 9.8 m/h	Average ROP	6.7 (m/h)

See Core-13 descriptions

Interval	2553.6 to 2562.7 m MDRT	ROP (Range)	1.1 to 11.3 m/h	Average ROP	7.1 (m/h)

See Core-14 descriptions.

Interval	2562.7 to 2571.5 m MDRT	ROP (Range)	1.9 to 8.8 m/h	Average ROP	6.0 (m/h)

See Core-15 descriptions.

Interval	2571.6 to 2579.8 m MDRT	ROP (Range)	1.8 to 3.0 m/h	Average ROP	2.4 (m/h)

See Core-16 descriptions

Interval	2579.8 to 2587.6 m MDRT	ROP (Range)	0.4 to 5.2 m/h	Average ROP	2.1 (m/h)

See Core-17 descriptions

Interval	2587.6 to 2596.5 m MDRT	ROP (Range)	0.3 to 5.7 m/h	Average ROP	2.0 (m/h)

See Core-18 descriptions

Interval	2596.5 to 2605.5 m MDRT	ROP (Range)	3.6 to 9.6 m/h	Average ROP	7.5 (m/h)

See Core-19 descriptions

Interval	2605.5 to 2614.5 m MDRT	ROP (Range)	0.3 to 11.2 m/h	Average ROP	4.2 (m/h)

See Core-20 descriptions

Interval	2614.5 to 2623.5 m MDRT	ROP (Range)	0.1 to 9.9 m/h	Average ROP	5.2 (m/h)

See Core-21 descriptions

Interval	2623.5 to 2632.5 m MDRT	ROP (Range)	0.5 to 12.3 m/h	Average ROP	8.8 (m/h)

See Core-22 descriptions

Interval	2632.5 to 2641.5 m MDRT	ROP (Range)	4.7 to 9.9 m/h	Average ROP	7.0 (m/h)

See Core-23 descriptions.

Interval	2641.5 to 2650.5 m MDRT	ROP (Range)	4.2 to 8.4 m/h	Average ROP	6.0 (m/h)

See Core-24 descriptions.

Interval	2650.5 to 2659.5 m MDRT	ROP (Range)	2.8 to 13.4 m/h	Average ROP	9.7 (m/h)

See Core-25 descriptions.

Interval	2659.5 to 2668.5 m MDRT	ROP (Range)	0.2 to 12.9 m/h	Average ROP	10.5 (m/h)

See Core-26 descriptions.

Interval	2668.5 to 2677.5 m MDRT	ROP (Range)	2.0 to 12.9 m/h	Average ROP	7.4 (m/h)

See Core-27 descriptions.

Interval	2677.5 to 2686.5 m MDRT	ROP (Range)	3.0 to 14.9 m/h	Average ROP	9.4 (m/h)

See Core-28 descriptions.

Interval	2686.5 to 2695.5 m MDRT	ROP (Range)	2.6 to 10.0 m/h	Average ROP	7.3 (m/h)

See Core-29 descriptions.

Interval	2695.5 to 2704.5 m MDRT	ROP (Range)	5.5 to 10.8 m/h	Average ROP	9.0 (m/h)

See Core-30 descriptions

Interval	2704.5 to 2713.5 m MDRT	ROP (Range)	6.1 to 14.4 m/h	Average ROP	10.0 (m/h)

See Core-31 descriptions.

Total Depth (driller 2713.5 mRT / logger 2714.7 mRT)

5.4 Hydrocarbon Shows

Other than gas peaks from coal seams no significant hydrocarbon shows recorded.

Appendix 1 - EWG Rig 101 Specs

Appendix 2 - Daily Drilling Reports

Appendix 3 - Casing and Cementing Reports

Appendix 4 – Drilling Mud Recap Report

Appendix 5 - Tubular Running Services Report

Appendix 6 - Daily Geological Reports

Appendix 7 - Mudlogging Report

Appendix 8 - Cuttings Sample Descriptions

Appendix 9 - Core Chip Descriptions

Appendix 10 - Core Analysis

Appendix 11 - Core Photos

Appendix 12 - Sedimentology Report

Appendix 13 - Petrology Report

Appendix 14 - Palynology Report

Appendix 15 - Wireline Logging Report

Appendix 16 - Petrophysical Interpretation

Appendix 17 - Mud Gas Isotope Analysis

Appendix 18 - Geomechanics Report

Appendix 19 - Well Location Survey Report

Enclosure 1 - Mudlog

Enclosure 2 - Composite Well Log - 1 to 500 scale

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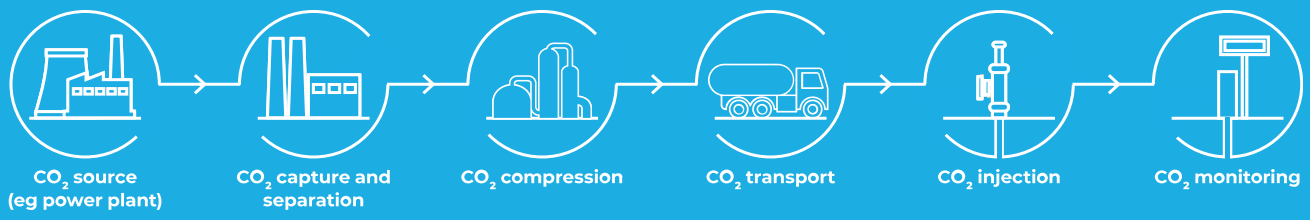

EPQ10 West Moonie-2 Well Completion Report

Document properties

Date, Version	December 2021, REV 0
Program, Area	EPQ10
Prepared by	Nick Hall and Rob Heath

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Figures

Tables

1. West Moonie-2 Well Card

Location Details			
Latitude	027° 49' 48.715" South	**Seismic Reference**	Not located on a seismic line
Longitude	149° 57' 28.679" East	**Rig**	Rig-101
UTM Easting	200,352.070m E	**Permanent Datum**	Australian Height Datum
UTM Northing	6,917,891.240m S	**Rig RT to Datum**	247.2m
UTM Zone	56	**Water Depth**	Not applicable
Geodetic Datum	NAD83, GDA94	**Planned TD**	2500.0m MDRT (2474.0 m TVDSS)
Geodetic Ellipsoid	Geodetic Reference System 1980	**Driller's TD**	2450.0m MDRT
Permit	EPQ10	**Logger's TD**	2449.2m MDRT
Current Status	Cased and suspended	**Max Deviation**	19.96° at 536.90m

Block Interests	
Joint Venture Partner	**Interest %**
Carbon Transport and Storage Company	100

Participating Interests	
Joint Venture Partner	**Interest %**
Carbon Transport and Storage Company	100

Primary Dates	
Date Rig on Contract	20-Jun-2021 06:00
Date Rig on Location	20-Jun-2021 06:00
Date Rig Released	23-Jul-2021 18:00
Date Rig Off Contract	23-Jul-2021 18:00

Well Section Dates	
Spud Date / Kick Off Date	**Date TD Reached**
01-Jul-2021 00:00	17-Jul-2021 10:30

Hole Summary		
Hole Size (in)	**Depth MDRT (m)**	**Depth TVDRT (m)**
14.000	12.0	12.0
12.250	1545.0	1516.8
8.500	2450.0	2421.7

Casing Summary		
Casing String	**MDRT (m)**	**TVDRT (m)**
Conductor	11.2	11.2
9-5/8" Surface Casing	1539.8	1511.6
7" Production Casing	2436.0	2407.7

Well Completion Details

Completion Details:
The well has been cased and suspended for further work pending the interpretation of analytical data gathered during the drilling of the well.

Formation Tops							
Formation Name	**Predicted Depth MD (m)**	**Predicted Depth TVD (m)**	**Predicted Depth TVDSS (m)**	**Actual Depth MD (m)**	**Actual Depth TVD (m)**	**Actual Depth TVDSS (m)**	**Difference TVD (m)**
Recent-Quaternary	4.2	4.2	-243.0	4.2	4.2	-243.0	0.0
Griman Creek Formation	26.0	26.0	-221.2	32.1	32.1	-215.1	6.1 Low
Surat Siltstone	334.0	328.0	80.8	332.9	327.4	80.2	0.6 High
Wallumbilla Formation	459.0	445.0	197.8	458.5	445.7	198.5	0.7 Low
Coreena Member	459.0	445.0	197.8	458.5	445.7	198.5	0.7 Low
Doncaster Member	684.0	659.0	411.8	677.5	653.1	405.9	5.9 High
Bungil Formation	758.0	732.0	484.8	753.1	726.5	479.3	5.5 High
Mooga Sandstone	956.0	930.0	682.8	955.5	927.3	680.1	2.7 High
Orallo Formation	1079.0	1053.0	805.8	1079.9	1051.7	804.5	1.3 High
Gubberamunda Sandstone	1186.0	1160.0	912.8	1185.3	1157.1	909.9	2.9 High
Westbourne Formation	1457.0	1431.0	1183.8	1458.5	1430.3	1183.1	0.7 High
Springbok Sandstone	1555.0	1529.0	1281.8	1559.4	1531.1	1283.9	2.1 Low
Walloon Sub Group	1657.0	1631.0	1383.8	1657.9	1629.7	1382.5	1.3 High
Juandah Coal Measures	1657.0	1631.0	1383.8	1657.9	1629.7	1382.5	1.3 High
Tangalooma Sandstone	1786.0	1760.0	1512.8	1780.7	1752.5	1505.3	7.5 High
Taroom Coal Measures	1838.0	1812.0	1564.8	1835.4	1807.2	1560.0	4.8 High
Eurombah Formation	1892.0	1866.0	1618.8	1898.2	1870.0	1622.8	4.0 Low
Hutton Sandstone	1912.0	1886.0	1638.8	1909.1	1880.8	1633.6	5.2 High
Lower Hutton Sandstone	2060.0	2034.0	1786.8	2062.1	2033.8	1786.6	0.2 High
Evergreen Formation	2131.0	2104.7	1857.5	2128.4	2100.1	1852.9	4.5 High
Boxvale Sandstone Member	2179.0	2153.0	1905.8	2184.6	2156.4	1909.2	3.4 Low
Precipice Sandstone	2281.0	2254.0	2006.8	2287.5	2259.3	2012.1	5.3 Low
Lower Precipice Sandstone	2288.0	2261.0	2013.8	2298.2	2269.9	2022.7	8.9 Low
Moolayember Formation	2366.0	2340.0	2092.8	2362.9	2334.6	2087.4	5.4 High

MWD FEWD Interval Summary					
Run #	**Tool Description**	**Start Interval (m)**	**End Interval (m)**	**Interval Logged (m)**	**Comments**
1	Directional-GR	12.20	701.30	688.9	Motor, directional, gamma ray toolstring. Pulser unit failed at 701.1mMDRT. Surface inspection indicated turbine clogged with drill cuttings. Time re-classified from Down Time to Lost Time. Intermittent pump problems during drilling considered to inhibit optimal hole cleaning.
2	Directional-GR	701.30	1545.00	843.7	Motor, directional, gamma ray toolstring.
3	Directional-GR	1545.00	2130.00	585.0	Motor, directional, gamma ray toolstring.
4	Directional-GR	2139.00	2450.00	311.0	Directional-GR data acquisition. GR data acquired while washing and reaming to bottom through cored interval from 2130mMD to 2139mMD.

Wireline Logging Summary

Suite: 1 Hole Size: 8.50 in
Date Mud Check: 18 Jul 2021 Date/Time Circ. Stopped: 17-Jul-2021 20:00 Circ. Time: 2.50

Run #	Tool String	Logged Interval (m)	BHT/Time Since Last Circ	Comments
1	FMI-SScan-PPC-HRLA-PEX-HNGS-SPGR	2447.0 - 165.0	74.560 / 21.25	Logged TD to Surface, however, GR failed to be recorded from 183m to surface. Re-logged on Run 2 and spliced in log.
2	CMR-GR	2441.0 - 1909.0	74.560 / 30.32	GR recorded over interval 183m to 10m which failed to be recorded from Run-1.
3	MDT (Dual Packer, Dual Probe)	2360.5 - 1909.0	76.590 / 41.92	Dual Probe (1x XLarge Dia, 1x Standard Dia), Dual Packer, 2x Strain gauge and 2x Quartz gauge toolstring run in the hole. Acquired 24 pretests (XLarge Dia), 20 valid, 2 supercharged, 2 tight. Acquired 1 dual packer Kv/Kh measurement (Standard Dia). Attempted 1 dual packer XLOT measurement (Standard Dia) however formation failed to leak off after 3 attempts to pressure up and maximum station 45min station time met. XLOT aborted.
4	VSI	14.0 - 2430.0	76.450 / 65.50	Data was acquired at a total of 31 levels including ground level and total depth. A total of 7 stations were shot while running in the hole which were repeated while pulling out of the hole to check for drift. Note: the tool was incorrectly zeroed prior to running in which resulted in the 7 shots acquired while running in being 16.2m shallower than intended. The tool zero was corrected at TD. All reported depths are accurate.

Coring Summary

Date	Core #	Start Depth (m)	End Depth (m)	Cut (m)	Recovery (m)	Recovery %	Comments
14 Jul 2021	1	2130.0	2139.0	9.00	7.2	79.56	Very slow coring for the first 2m. Recovered 7.16m interpreted to represent the uppermost Evergreen Formation. On running back in the hole to drill ahead after cutting Core-1 the drill bit held up approximately 2m off bottom. This is interpreted to represent the lost recovery from Core-1. This, together with the LWD GR data acquired when drilling ahead suggests coring commenced at the top of the Evergreen Formation.

2. Well Summary

The West Moonie Project Area is located in south- eastern Queensland in EPQ10 to the east of the axis of the Mimosa Syncline of the Surat Basin, approximately 356 km by road southwest of Brisbane and 50 km west of the township of Moonie, Figure 2-1. The closest wells to West Moonie are Milgarra-1 (1982) 14.7km to the east, Sussex Downs-1 (1966) 16.9km to the northeast and Flinton-1 (1963) located 32.1km to the west.

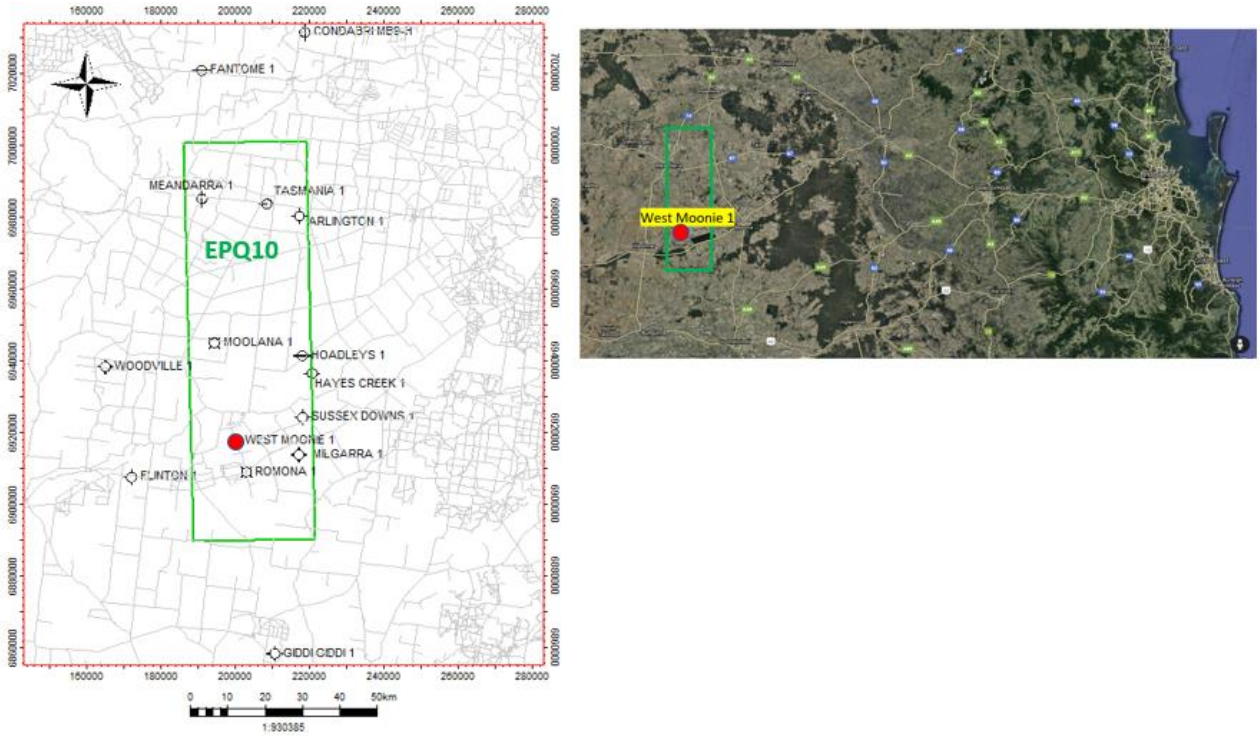


Figure 2-1 West Moonie Project Location: West Moonie-2 bottom hole location is 780 m ENE of West Moonie-1

West Moonie-2 is the second West Moonie Project well drilled in the southern Surat Basin to evaluate the potential of the Precipice Sandstone for demonstration-scale sequestration of an approved Greenhouse Gas Stream. Of particular importance to the effectiveness of the Precipice Sandstone as a CO_2 storage reservoir within this part of the southern Surat Basin was the quality (porosity and permeability) of the Precipice Sandstone, the nature of the underlying and overlying sealing formations (Moolayember Formation and Evergreen Formation), and the quality of the Precipice Sandstone groundwater.

West Moonie-1, drilled in August 2020 cored the entire lower Precipice interval and found the Precipice Sandstone reservoir properties to be well developed with good to excellent porosity and permeability with the sequence from Evergreen Formation to Moolayember Formation having the required characteristics for demonstration-scale greenhouse gas sequestration.

West Moonie-2 was designed to further appraise the subsurface geology in this area and enable acquisition of MDT pressure data and wireline logs (CMR, SP and checkshots) that were not able to be acquired in West Moonie-1 because of tight hole conditions within the Walloons Subgroup section below the 9 5/8” casing shoe. A 9 m conventional core taken at the top of the Evergreen Formation was included to enable further evaluation of the properties of this interval which is interpreted to be the ultimate vertical seal to the Lower Precipice Sandstone

storage interval. The well will eventually be completed for GHG Stream monitoring; however, the well design also enables it to be utilised as a secondary injection well.

West Moonie-1 and West Moonie-2 are both located on the "Kurmala" property. The surface locations are 15 m apart. The surface location survey is included as Appendix 1.

West Moonie-2 was deviated (S-shape) and at the Base Jurassic Unconformity (the base of the Precipice Sandstone), the well bores are 178 m apart see Figure 2-2.

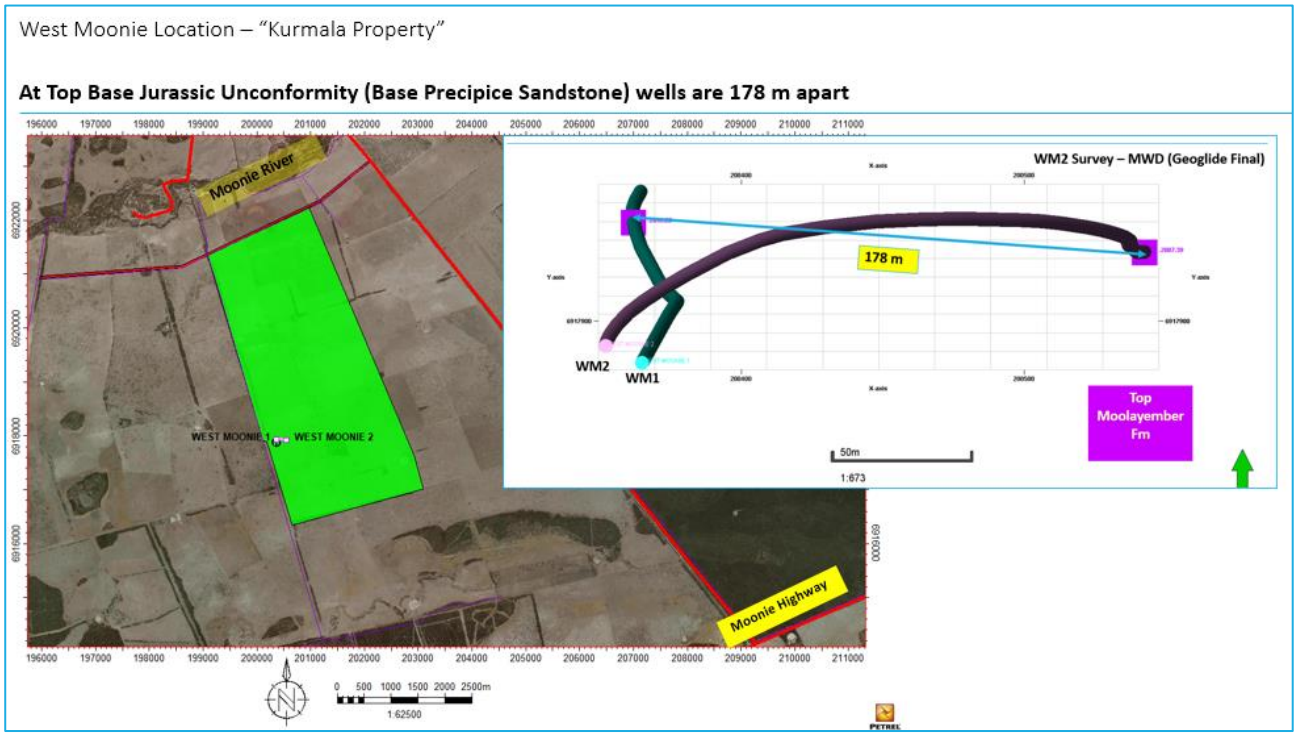


Figure 2-2 Location map and inset plan view showing West Moonie-1 and West Moonie-2 well trajectories

The cellar and 14" conductor were pre-set at 11.2 mMD by civils contractors during lease preparations in June 2021. West Moonie-2 was spudded at 00:00 hrs on 1st July 2021 with EWG Rig 101 trailer-mounted rig.

A 12 ¼" diameter hole was drilled with a mud motor and directional drilling assembly utilising a KCl polymer mud system from the conductor at 11.2 mMD. The directional drilling plan required building angle to approximately 20 deg inclination, holding tangent until the required separation from West Moonie-1 was achieved and then reducing angle until a vertical wellbore was drilled to total depth.

The 12 ¼" hole was drilled until MWD pulse signal was lost at 701.3 mMD and the BHA was pulled from the hole. Drill cuttings were found to have clogged the pulser turbine preventing pulse communications with the surface. The MWD probe was changed out and drilling recommenced to 1545 mMD where a string of 9 5/8" surface casing was run and cemented in place with the casing shoe at 1539.8 mMD.

An 8 ½" hole was then drilled to 2130 mMD where the drilling BHA was pulled from the hole. An 8 ½" coring assembly was then run in the hole and a 9 m core was cut from 2130 mMD to 2139 mMD. A total 7.16 m (79.56%) was recovered.

Drilling 8 ½" hole resumed and an 8 ½" hole was drilled to 2450mMD. Total depth was reached at 10:30 hrs 17th July 2021.

Wireline logging operations comprising 4 runs in the hole were conducted. Hole conditions for wireline logging were good throughout. However, Run 3 comprising a MDT run with Dual Packers became stuck in the hole after conducting an extended leak off test at the top of the Evergreen Formation. It is interpreted that the dual packers failed to deflate completely after the test and attempts to pull free after the test may have damaged the packer elements, distorting and compressing the packer rubbers occluding the borehole. Repeated inflation and deflation of the packer elements and careful overpull management eventually resulted in the toolstring being pulled from the hole. Run 4 (Seismic Checkshot survey) was run immediately after without incident.

A string of 7" production casing was run and cemented to 2436mMD. A wellhead was installed and the well suspended for future work. The rig was released at 18:00 hrs 23rd July 2021.

While detailed analyses of the recovered core and other petrophysical data acquired at West Moonie-2 is still in progress, initial interpretation confirmed that the Precipice Sandstone reservoir properties at this location within the West Moonie-1 Project Area are well developed with good to excellent porosity and permeability within the Precipice Sandstone with the sequence from Evergreen Formation to Moolayember Formation having the required characteristics for demonstration-scale greenhouse gas sequestration.

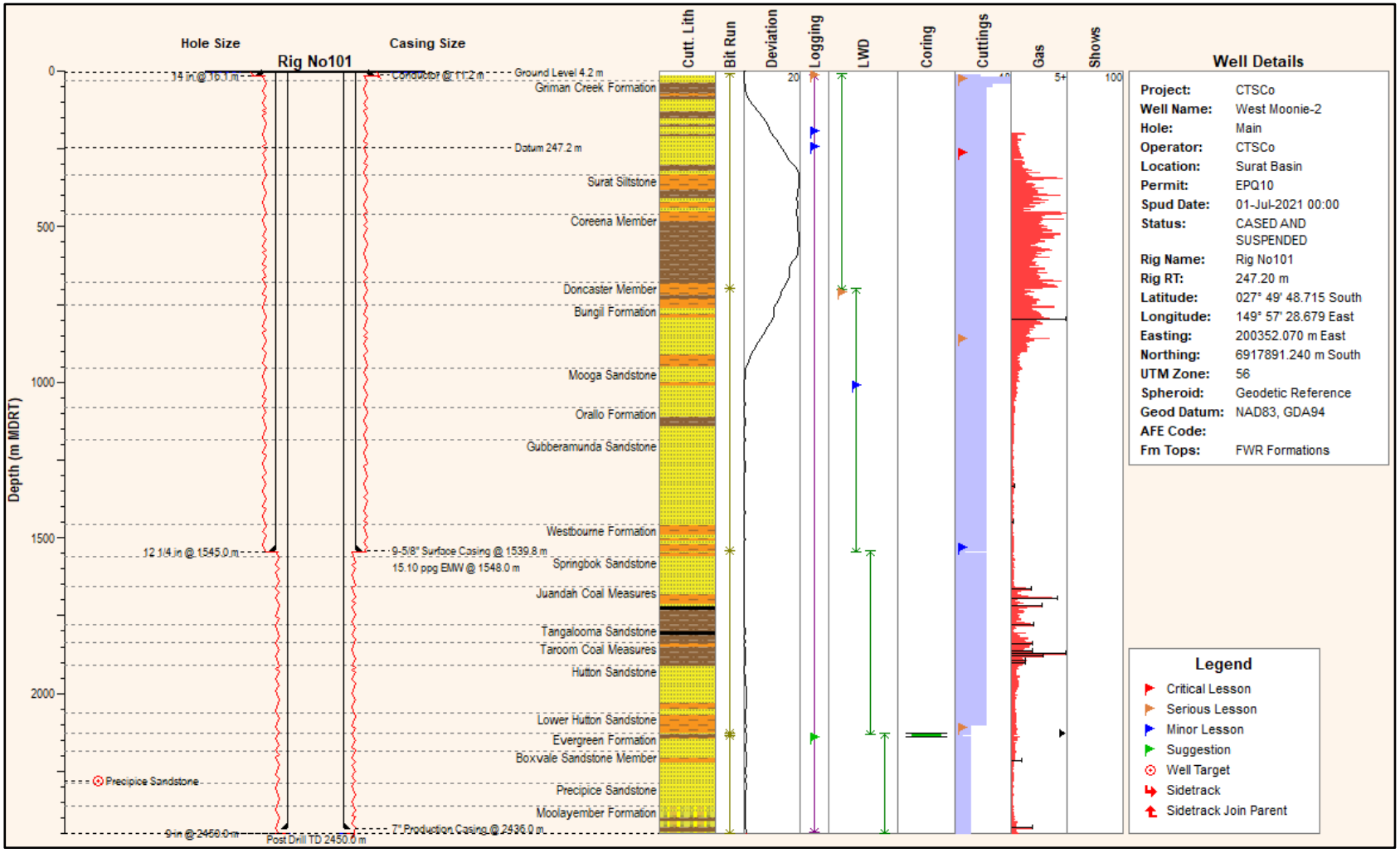


Figure 2-3 West Moonie-2 Summary Well Sketch

2.1 Log Interpretation

The quick look petrophysical interpretation was conducted over the interval from the Top Hutton Sandstone to total depth in the Moolayember Formation. Details of the analysis are included as Appendix 18. Table 2-1 is a summary of the results. Note that the "cave facies" is an informal name used by CTSCo to describe a sedimentary baffle that exists within the Lower Precipice Sandstone. Its type section is within a Precipice Sandstone cave in Bulimba Bluff outcrop at Carnarvon Gorge.

Table 2-1 Log Interpretation petrophysical sums and averages

Interval (mRT)	Formation	Gross interval (m)	Net Reservoir (m)	PHIE Av %	SWE Av %	Vcl Av %
1909.06 – 2128.37	Hutton Sst	219.31	50.45	15.2	99.7	14.85
2128.37 – 2184.61	Upper Evergreen Fm	56.24	1.78	11.3	100	25.1
2196.70 – 2287.53	Lower Evergreen Fm	90.83	9.6	13.7	99.5	10
2287.53 – 2298.17	Upper Precipice Sst	10.64	3.15	13.4	98.3	13.9
2298.17 - 2321.86	Lower Precipice Sst above "cave facies"	23.69	18.39	13.5	100	7.8
2324.60 – 2362.86	Lower Precipice Sst below "cave facies"	38.26	36.36	16.2	99.8	5.5
2362.86 – 2454.62	Moolayember Fm	91.76	0	0	0	0
Cut-offs for Pay Summary: Vcl < 30%; PHIE >10%						

3. Drilling Operations

3.1 Primary Contractors and Service Providers

Table 3-1 Primary Contractors

Service	Provider
Drilling Rig	Easternwell EWG 101
Rig Camp	Easternwell EWG 101
Rig Transport	Easternwell, Neil Mansell Transport
Well Engineering, Project Management and Site Supervision	InGauge Energy
Wireline logging (Open Hole)	Schlumberger
Mud Engineering & Mud material Supply	COHO
Cementing	Halliburton
Casing Accessories	Halliburton/GPOT
Drilling tools, stabilisers, etc.	Tango
Drill bits	Ulterra
Directional Drilling	Geoglide
Mud Logging	Schlumberger
Coring	Reservoir Group
Surface Core Handling	Stratum Reservoir
Tubular Make Up (TRS)	DrillQuip
Lease preparation / Cellar / Conductor	Kerwicks
Wellhead	Cactus Wellheads
Casing Supply	MITO
Waste Disposal (Drilling Fluids)	COHO
Rig and Camp Waste Disposal (Solids / Sewerage)	Cleanaway
Potable Water Supply	Superior Services
Transport / Logistics	Pentagon Freight / Roma Transport
Water Cartage and Pre-Well Logistics	Kurmala Pastoral Company

3.2 Mobilisation/Rig Move

The Easternwell Rig 101 carrier was mobilised from Denison Gas, Queensland to the Wellpad on 20th June 2021.The first loads began arriving on site with a total of 31 rig loads and 9 camp loads transported by Neil Mansell Transport from Denison Gas. The full specifications of Rig 101 and camp can be found in Appendix 2.

The full drilling crew were mobilised to site from Toowoomba, and an Icebreaker was conducted by InGauge Energy on the 30th of June 2021 at the rig site, with both sets of crews.

3.3 Conductor

The 14" conductor pipe was pre-installed together with the cellar during lease preparations by Kerwicks in June 2021. The 14" conductor was run to 11.2 mRT and grouted in place. The cellar was pre constructed by Nebgar engineering in Miles and installed on site by Kerwicks. A new sump was installed, with one of the existing sumps replaced and rehabilitated at the same time.

3.4 Surface Hole

After undergoing rig pre-acceptance, West Moonie-2 was spudded on 00:00 on 1st July 2021.The drilling fluid programmed for this section was a 3-4% KCl / Xanthum Gum mud system at ~8.6ppg-8.8ppg

A 12-1/4" UO3981-7 Ulterra PDC bit with a TFA of 0.773in^2 was picked up and drilled with a MWD and Geoglide 7/8" x 4 stg motor (~1.15°) utilizing 12" string stabilisers with 6 ¼" drill collars to section TD at 1545 mRT.

The surface hole mud returns were taken through a riser and flowline. Returns were then pumped from to a cuttings bin before being transferred to a lined sump. Cuttings from the shakers were slurrified as required. The mud was run through Easternwell shakers to remove solids.

High yield sweeps of between 5 and 10bbls were pumped every 60m to aide in hole cleaning and cuttings removal.

The well was kicked off at approximately 100 mRT and brought back to vertical at around 900 mRT.

Section TD was called at 1545 mRT /1516.77 mTVD (87 m into the Westbourne Formation) and was reached at 06:00 on 6th July 2021. Two 10 bbl Hi-Vis sweep was circulated on bottom, returning large volumes of sand and clay and the well was circulated until clean returns were observed.

A flow check was completed and the BHA began to be pulled out of hole.

While pulling out of hole with the BHA, tight hole was encountered with ~20Klbs overpull at 1419 mRT, 1407 mRT,1393 mRT, 1380 mRT, 1355 mRT, 1342 mRT, 1316 mRT, 1303 mRT, 1113 mRT, 1076 mRT and 1052 mRT.

The BHA was run back in hole and the well was circulated and pipe rotated at 1520 mRT for 6 hours. Some high gel mud flooded the shakers, requiring the screens to be swapped out.

20 bbls of high vis pill with 4ppb LCM was pumped on bottom and circulated back to surface retuning fine sand, silt and dislodged filter cake.

After circulating the open hole clean, the rig pulled the BHA out of the hole. No further tight hole was experienced while pulling out of hole to surface.

The bit and BHA were pulled out of hole and the bit dull graded at 1/1/-/-/X/In/-/DTF.

3.5 Surface Casing and Cementing

The slip table was removed, riser drained, and flow line and riser removed. The conductor stump was cut down and removed from the cellar. A 32" Cactus landing base was installed in the cellar prior to running 9-5/8" 36# K55 BTC casing. A 2 joint shoe track was run and baker-locked across the shoe track and a further 2 joints above the float collar (see casing tally in Appendix 5).

The 9-5/8" 36# K55 surface casing was RIH by the rig crew. GPOT Bow spring centralisers were installed two per joint across the 9-5/8" shoe track joints with stop collars, one every three joints back to the vertical section, and 2 per joint over the deviated sections from surface to 900m to achieve 80% standoff.

The casing was filled and circulated through while running in hole to periodically condition the mud. The casing was washed down from 1480 mRT to TD. Some minor losses of 36bph were experienced and treated accordingly with LCM.

The casing was picked up and the wash joint was removed. The casing head running tool and landing joint were installed and the casing was landed out at 1539.78 mRT.

The well was circulated with 2 x casing volumes through the landing joint.

Halliburton were rigged in to perform the cement job, making up the double plug BTC cement head, wiper plugs and surface lines. The lines were flushed, and pressure tested successfully to 3,800psi before the bottom plug was released. 40bbls of 9.0ppg Mud Flush Spacer was pumped.

The cement volumes were calculated based on 50% open hole excess on a gauge hole size of 12.5" for both the lead and tail cement. The top of the 15.0ppg tail cement was programmed to be above the Gubberamunda Sandstone.

Halliburton mixed and pumped 207.4 bbls of 12.50 ppg lead cement and 147.6 bbls of tail slurry at 15.0 ppg. Full returns were seen throughout the job. The top plug was released and displaced a total of 391 bbls, 290 bbls being rig supplied drilling fluid and 101 being fresh water. The pump pressure rose to +/-1260 psi immediately prior to plug bump. The pressure was incremented up to 2,807 psi and held successfully for 10 minutes, with 4.25 bbls returned to the displacement tanks, confirming floats had held. Cement was in place at 08:00 on 9th July 2021.

Approximately 61 bbls of cement returns were recorded at surface, with the initial returns a mixture of both mud and cement. Returns were checked with a pressurised mud balance to confirm a density of 12.50 ppg. Cement returns were sent across to the cellar and then transferred across to the sump. Refer to the Halliburton Cementing End of Well Report for details in Appendix 5.

The cement head and surface lines were rigged down while preparing the casing hanger slips for the landing base in the cellar. The elevators were latched, and the slips set with 12 Klbs string weight into 32" landing base with Cactus Wellhead technician on hand. The casing running tool and landing joint were removed from the wellhead and laid out. The DrillQuip CRT was then rigged down. The 2-1/16" 5M casing head side outlets were installed and successfully tested against a 1-1/2" VR plug to 5,000 psi for 15 minutes.

3.6 Nipple Up BOPs

The 11" 3K BOPE comprising of 3K mud cross, 3K double gate and 3K annular were rigged up onto the Cactus CTF-Q 11" 5M casing head connection. The accumulator lines, flow nipple, flowline, possum belly nipple, kill and choke lines were all installed. The 11" Nominal x 4-1/2" IF CW Test Plug/Retrieving Tool was RIH and the test plug was set in place.

The BOPE connections were pressure tested to 250 psi low / 3000 psi high for 5 and 10 minutes, respectively.

The test plug was removed and wear bushing RIH and set in the "A" section.

3.7 Production Hole

An Ulterra 8-½" U03778 PDC bit was picked up and RIH with a Geoglide BHA assembly with Geoglide 7/8" x 5 stg motor (~0.78°) Motor and MWD.

Prior to tagging cement, emergency drills were conducted with the crew, covering BOP and muster drills, with the well secured in 22 seconds.

The top of hard cement was tagged at approximately 1514.66 mRT with 7 Klbs.

The top plug and cement were then drilled out in 1.5 hours.

The bottom plug, shoe track and float shoe were drilled out to 1544.8 mRT in approximately ~3 hours. The BHA tagged TD and drilled another 4 m of new hole to 1548 mRT. The mud was circulated to 9.0 ppg even density in and out prior to the FIT.

The FIT was conducted successfully per program with 9.0 ppg fluid to 1610 psi of surface pressure, giving an equivalent mud weight of 15.0 ppg.

The driller continued to drill 8-1/2" hole vertically with the Geoglide BHA and Motor.

8-1/2" hole was drilled to 2130 mRT, at which point the Geologist confirmed the BHA was calculated to be approximately 2 m above the top Evergreen, at the proposed coring point. The well was circulated with 1.5 x bottoms up. 130 bbls of fresh 3% KCL premix mud was circulated in hole.

A flow check was performed and the BHA was pulled out of hole, experiencing some tight hole and requiring to be connected to the TDS to work tight hole from with +/-20 Klbs Over pull from 2068-2055 mRT, 2040-1949 mRT, 1666 to 1620 mRT, 1608 to 1566 mRT. An additional 230 bbls of 3% KCL was circulated in hole and the BHA was pulled back to surface.

3.7.1 Coring

Once back at surface the 8-1/2" BHA was laid out and the Reservoir Group coring BHA was prepared at surface to be RIH.

The 3-1/2" coring BHA consisted of an 8-1/2" Reservoir Group PDC bit, 9 m core barrels, stabilisers, 6-1/4" drill collars and 4" rig supplied heavyweight and drill pipe and was to be run and pulled conventionally.

The coring BHA was run in hole, stopping occasionally to fill pipe. The coring BHA tagged up at TD at 2130 mRT and the hole was circulated clean, with sharp coal cavings seen back at surface. New hole was cored at a rate of 0.77 m/hr with 50-75 RPM, 6.5-8.5 klbs torque, 3klbs WOB, increasing to 15-16 klbs as the driller attempted to increase the ROP. The ROP remain largely unchanged at 0.85 m/hr and 0.82 m/hr until the final coring depth of 2139 mRT was reached. The coring BHA was pulled with approximately 183 klbs to snap off the core (18 klbs over string weight).

The coring BHA was pulled back to surface and laid out 7.16 m of core out of 9.0 m was retrieved, with a recovery rate of 79.6%. The core was cut into 1 m portions and sent to Brisbane for analysis by the Stratum Reservoir geologist. It is likely the bottom Hutton Formation may have been soft and washed away during circulation at the beginning of the coring, or a piece of core may have been left downhole, when the core was snapped off, given the 79.6% recovery. The Evergreen seal was recovered successfully, meeting the objectives of the coring operations.

The core bit had minimal wear and was scored at 1/1/WT/A/X/In/BT-N/BHA

Table 3-2 Coring Summary

Coring Summary							
Date	**Core #**	**Start Depth (m)**	**End Depth (m)**	**Cut (m)**	**Recovery (m)**	**Recovery %**	**Comments**
14 Jul 2021	1	2130.0	2139.0	9.00	7.2	79.56	Very slow coring for the first 2 m. Recovered 7.16 m interpreted to represent the uppermost Evergreen Formation. On running back in the hole to drill ahead after cutting Core-1 the drill bit held up approximately 2 m off bottom. This is interpreted to represent the lost recovery from Core-1. This, together with the LWD GR data acquired when drilling ahead suggests coring commenced at the top of the Evergreen Formation. **Note 1: The marked core is 1.84m deeper than actual drillers core depth.** **Note 2**: The core was sent to Stratum Reservoir's Brendale laboratory for analysis. A GR was run over the core and comparison to the Schlumberger wireline GR shows that that **the driller's core depths (2130.0 – 2139 mRT (D) should be shifted up 1.58 m to match the reference wireline GR depth. Core interval is 2128.42 – 2137.42 mRT (L)**

3.8 8½" Open hole logging

The logging equipment was rigged up at surface in preparation for the logging runs at 10:45am on 18th July 2021.

Run #1 was run in hole with the following tools - Spectral Gamma Ray, X-Y Caliper, SP, PEF, Density-Neutron, MSFL-SLL-DLL, Dipole Sonic, Micro-Imager (FMI). The logging string was run to TD and logged back to surface. The logging string reached surface at 21:30 on 18th July 2020.

Logging run #2 was rigged up with the CMR Tool and GPIT. The string was run in hole without issue and completed by 07:00 on the 19th July 2021.

Wireline Run #3 was made up with the MDT tool with dual packers and probe. The probe took approximately 23 pressure point samples in the open hole. The string was run back to the Precipice at 2390 mRT where the packers were set and a Kh/Kv test was completed.

The string was pulled up to the Evergreen Formation and packers re-set in preparation for an XLOT. The pressure was cycled three times to 7,000 psi without leak off. The tool was unset after 47 minutes but could not be moved from position, reaching its maximum approved overpull of 9,500 lbs. Over the next 10-12 hours, the packers were cycled open and closed multiple times and were slowly pulled out of hole. The overpull varied from 3 klbs to 9.5 klbs. Upon pulling the tool back to surface, the packer elements appeared to be partially inflated. The investigation on the failure mode by Schlumberger is still ongoing.

Wireline Run #4 made up a checkshot survey tool and Vibrosesis™ truck at surface. The run went without incident, and 37 shots were taken across formation tops. The tool was POOH and laid out at 21:15 on 20th July 2021.

3.9 Production Casing and Cementing

The rig floor was dressed in preparation for casing running to handle the 7" BTC casing. The bail arms, elevators, slips and blocks were swapped out. The 7” 26# N80 BTC casing was run in hole with a two joint BTC shoe track.

The shoe was made up with standard N80 Carbon steel casing. Above the shoe, ~472 m of SM13CR-85 Vam Top HC casing across and above the future potential CO_2 injection zone. Above the injection zone, the string crossed over back to the standard N80 carbon steel casing.

The shoe and collar were run in hole and tested successfully to confirm flow. The shoe track and 2 joints above it were baker locked in place.

The casing handling equipment was changed out to the DrillQuip premium casing handling equipment. Changing out to non-marking slips, DrillQuip bail arms and elevators to suit 7" 26ppf SM13CR-85 Vam Top HC casing.

The DrillQuip Valant casing running tool was dressed for 7in casing, and weCAAT wireless torque sub were rigged up and the 7in 26ppf SM13CR-85 Vam Top HC was run in hole. Maximum, Minimum and Optimal torques were set in accordance with the MITO data sheet.

The casing was filled on every joint and circulated every 5 joints through the volant tool, while running in hole.

The casing was run in hole to approximately 2014 mRT where the circulation could not be achieved and the SPP rose to 1860 psi and then further to 2300 psi. Two joints were laid out and a 10 bbl high yield pill was pumped, with a large volume of cuttings and caved in materials seen back at surface. The string was run in hole from 2326 to 2438 mRT, with the pump pressure fluctuating significantly across the section.

Once at casing setting depth of 2435 mRT the well was circulated with 1.5 casing volumes, prior to the cement job to help remove settled solids and break down any mud gelation prior to cementing.

40 bbls of 9.0 ppg Tuned Spacer was mixed in the rig pits and pumped downhole by the rig pumps. The 7” BTC cement head was rigged up onto the landing joint. The surface lines were flushed to the cellar and the cement head was installed and lines pressure tested to 500 psi for 5 mins and 5,500 psi for 10 minutes.

Halliburton mixed and pumped 51.7 bbls of 12.50 ppg 65/35 GP/Poz Blend lead cement slurry and 71.6 bbls of 14.50 ppg CO_2 resistant tail slurry.

The top plug was released, and the displacement fluid was pumped with 8.5 ppg brine. Full returns were observed throughout the cement job.

Prior to bumping the plug, the displacement rate was staged down from 6 to 2 bpm, 10 bbl. prior to bumping. The plug was bumped with 300 bbls pumped. The casing was pressured up to 4,500 psi for 10 minutes. Pressure was bled off and 4.5 bbls return volume was observed back into the cement displacement tub, confirming floats held. The cement head and surface lines were rigged down, and all remaining cementing equipment demobilised from location. Cement was in place at 01:56 hrs on 22nd July 2021.

3.10 Secure Well

The cement head was laid down and the BOPs were lifted to install the wellhead “B” and “C” section.

The “C” section was installed on the “B” section and tested to 5,000 psi.

The packoff assembly was installed and pull tested to 40Klbs over block weight (52 klbs total).

The wellhead “B” section was nippled up onto the “A” section 11” 5M flange successfully and tightened per the Cactus procedures. The “B” section was pressure tested to confirm integrity, testing the 7” mandrel packoff void and casing head and tubing head connection void to 5000 psi over 15 mins.

The Tubing hanger was installed inside the “B” section and all valves were left closed.

The rig was released from the well at 18:00 hrs on 23rd July 2021.

3.11 Daily Report Summary

All daily drilling reports are included in Appendix 3. The Casing and Cementing Report is included in Appendix 5. The Mud Recap report is included as Appendix 4 and Tubular Running Services Report as Appendix 6.

Table 3-3 below is a summary of daily activities. The West Moonie-2 drilling scope took 22.75 days from spud to rig release. A total of 12 hours of Non-Productive Time (NPT) were incurred during the operation. The Time-depth chart is shown in Figure 3-3.

Table 3-3 Daily Report Summary

Report Date	Report #	Midnight Depth (m)	24-hour Summary
30 Jun 2021	1	0.0	Completed rigging up and conducted pre-spud checklist. Unloaded road trains of tubulars. Performed hazard hunt. Picked up motor and bit. Modified bit breaker and made-up bit. Mixed Mud. Conducted Ice breaker and Pre-Spud meetings.
01 Jul 2021	2	250.0	Rig accepted at 00:00hrs. Handled BHA and drilled 12¼" surface hole from tagged depth 11.2mMDRT to 38.5 mMDRT. L/O 6.5" spiral DCs and cleared mud ring from motor and bit. Installed DD-assembly and MWD probe. Shallow tested tools. Drilled 12¼" surface hole from 38.5m to 250mMDRT using Geoglide 7/8 x 4 stg motor (~1.15°). Incremented flow rates as BHA installed. 10.99°INC at midnight.
02 Jul 2021	3	667.0	Drilled 12¼" surface hole from 250 m to 667 mMD/ 658.6 mTVD using Geoglide 7/8 x 4 stg motor (~1.15°). Completed build to +/-19°INC by 550 mMD and holding tangent with occasional slides.
03 Jul 2021	4	735.0	Drilled ahead to 701.0mMDRT. Lost signal from Geoglide MWD toolstring. POOH to change out MWD assembly. Replaced MWD probe. Checked bit and motor. RIH to 179mMDRT. Slipped drill line and recalibrated block height. RIH to 673 mMDRT. Washed to bottom. Drilled ahead to 735 mMDRT.
04 Jul 2021	5	1122.0	Drilled 12¼" surface hole from 735 m MD /709.8mTVD to 1122 m MD /1093.9mTVD using Geoglide 7/8 x 4 stg motor (~1.15°). Trajectory dropped to vertical as per well design with bit +/- 3 m left and +/-4 m below plan. Using blend of sump water and fresh water to maintain drilling fluid as possible until roads open.
05 Jul 2021	6	1465.0	Drilled 12¼" surface hole from 1122 m MD /1093.9 mTVD to 1465 m MD /1437.2 mTVD using Geoglide 7/8 x 4 stg motor (~1.15°). Cycled parameters to improve ROP as hard bands intersected in lower Gubberamunda Sandstone. WOB limited by drilling TQ & stalling of the TDS. Some seepage losses into the Gubberamunda Sandstone (~30bph) treated on-the-fly with direct additions of LCM to the active. Removed whole mud for storage and replaced it with less solids laden fluid to control properties as possible.
06 Jul 2021	7	1542.0	Drilled 12¼" surface hole from 1465 m MD /1437.2mTVD to 1542 m MD/ 1513.94 mTVD using Geoglide 7/8 x 4 stg motor (~1.15°). Circulated and swept well clean. POH 12¼" Directional BHA from 1545 m to 1089 m with nearly continuous over pull. Worked 10 tighter sections of +/-20 Klbs OP. Circulated well at crew change. Continued POH 12¼" Directional BHA from 1089 m to 179 m (DCs) with nearly continuous over pull. Worked several tighter sections of+/- 20 Klbs OP. Serviced Rig. RIH from 179 m to 1520 m, broke circulation every +/- 400 m to break gels as possible. Washed and lightly reamed to bottom without noticing any fill. Changed shaker screens to cope with high gel fluid flooding shakers.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
07 Jul 2021	8	1545.0	Changed shaker screens to cope with high gel fluid flooding shakers. Diluted fluid as possible at reduced pump rate. Drilled additional 12¼" surface hole from 1542 m MDRT / 1513.94 mTVDRT to 1545 m MDRT/ 1516.94 mTVDRT using Geoglide 7/8 x 4 stg motor (~1.15°) to increase the length of rat hole. Circulated well clean, flow checked and POH from 1545 m to 231 m. Flow checked and slipped 6 m drill line. Laid out BHA, flushed motor and retrieved MWD probe and checked bearing play; ok. Gauged stabs and bit. Broke and graded bit. Removed flow line, riser and cut conductor flush to ground level. Installed 32" landing base plate. Rigged up to run casing. Pick up and make up shoe track and tested floats; ok. RIH 36 ppf K55 9-5/8" BTC surface casing to 225 m.
08 Jul 2021	9	1545.0	RIH 36 ppf K55 9-5/8" BTC surface casing from 225 m to 1480 mRT. Topped up each joint and fully filled every 5-10jnts. Washed 9-5/8" BTC surface casing into hole from 1480 m to 1523 m as high drag/string weights and pressures observed when attempting to circulate. Circulated high gel dehydrated fluids from well and pumped away LCM to treat seepage losses detected 1505 m. Washed 9-5/8" BTC surface casing into hole to 1533 m. Picked up and washed in the hole with joint #137 - wash down joint - to ensure land out clean and clear. Laid out washdown joint and picked up landing joint, running tool and wellhead.
09 Jul 2021	10	1545.0	Landed wellhead with 220 Klbs casing weight. Circulated and prepared to cement. Pumped spacer and cemented 36 ppf K55 9-5/8" BTC surface casing as per Halliburton program with 207.4 bbls lead slurry @ 12.5 ppg & 147.6 bbls tail slurry @15 ppg pumped in well. Dropped Top plug. Cement and plug was displaced with 391 bbls of fluid. The pump pressure rose to +/-1260 psi before the plug was bumped. The pressure was incremented up to 2807 psi & pressure held over 10 mins for a good casing test. The pressure was bled back with 4.25 bbls fluid returned to displacement tank. Floats held. Cement was in place at 07:35 hrs. 61 bbls cement (weighed @12.6 ppg) was observed as returned to surface by the end of the job. Full returns were witnessed throughout the job.
10 Jul 2021	11	1545.0	Completed pressure testing BOP 300 psi low / 3000psi high x 5 mins/10 mins. Installed 9" ID Wear Bushing into Cactus CTF-Q 9-5/8" x 7" x 3½" 5M Wellhead. Picked and made up 8-1/2" directional BHA, installed probe and shallow tested GeoGlide directional drilling assembly; no good. POH GeoGlide directional drilling assembly and checked bit nozzles, all BHA components and both mud pumps. Issue with MP#1 rectified. RIH with BHA to 249 mMD. Slipped 20' and cut 60' drill line. Recalibrated block height into telemetry systems. RIH with 4" DP from 249 m to 905 mMD.
11 Jul 2021	12	1824.0	RIH to 1500 m. Washed in hole and tagged cement at 1514.66 m. Drilled cement, plugs, Float collar, Shoe track, Float shoe and 3m of new formation to 1548 mMD. Performed FIT @ 1548 mMD/1520 mTVD w/ 9.0 ppg mud = 15.1 ppg EMW (1580 psi @ surface). Drilled 8½" production hole from 1548 mMD /1520.4 mTVD to 1824 m MD /1796 mTVD using Geoglide 7/8 x 5 stg motor (~0.78°) from 1548 mMD/1520 mTVD to 1824 mMD/1796 mTVD.
12 Jul 2021	13	2130.0	Drilled 8½" production hole from 1824 mMD/1796 mTVD to 2130 mMD/2102 mTVD using Geoglide 7/8 x 5 stg motor (~0.78°). Circulated Core-Point sample up. Circulated well clean.
13 Jul 2021	14	2130.0	Pulled out of the hole with 8½" Geoglide directional drilling assembly to casing shoe at 1539 mMDRT. Backreamed tight sections between 2065 mMDRT to 1949 mMDRT, 1666 mMDRT to 1566 mMDRT with +/-20 Klbs O/Pull. Conducted drill line slip & recalibrated telemetry systems. Wiper tripped to bottom and displaced well to fresh fluid (3% KCL & 2 ppb Starch P) for upcoming coring operations. Pulled out of the hole wiper trip to shoe; all good. Pulled out of the hole to 480 m & displaced well to new fluid at prescribed intervals.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
14 Jul 2021	15	2132.3	Pulled out of the hole with 8½" Geoglide directional drilling BHA to surface & displaced well to new fluid at prescribed intervals. Flushed directional drilling assembly & pulled probe. Gauged bit and stabilisers, checked bearing play (<1mm). Graded bit & laid out motor, stab, bit. Cleared floor & PJSM. Picked up Res Group QC89S, Triple-Tube TSS™ barrel, dressed w/ Slotted Aluminium Liners, QuickCore™ 8½" x 3½" coring assy. with 8½" DC613QD Core Head installed. Loaded tubes and shallow tested barrel assy. RIH to 209 m and conducted drill line slip; recalibrated telemetry systems. Ran in the hole with core pipe & filled string at +/- 300 m intervals. Circulated bottoms up. Cored ahead from 2130 m to 2132.3 m.
15 Jul 2021	16	2139.0	Continued to core from 2132.3 m to 2139 mMD. Snapped core with 18 Klbs overpull. Flow checked and pulled out of the hole with Res Group QC89S, Triple-Tube TSS™ barrel, dressed with Slotted Aluminium Liners, QuickCore™ 8½" x 3½" coring assembly. Laid out inner core barrels. Logged and processed core with WSG, Stratum & Reservoir Group techs on hand. 7.16 m of Evergreen observed = 79.6% recovered. Picked up, made up and ran in the hole with 8½" PDC bit, Geoglide Motor and MWD assembly; shallow tested same. Ran in the hole with BHA from surface to 236 m. Ran in the hole on 4" DP from 236 m to 437 m.
16 Jul 2021	17	2338.0	Run in the hole with 4" DP from 236 mMDRT to 437 mMDRT. Performed Slip (20') & Cut (60'). Run in the hole and tagged fill/lost core at 2137.44 m. Logged cored section 2130 m-2139 mMDRT with Geoglide Gamma Ray tool. Drilled 8½" production hole from 2130 mMDRT/2102 mTVDRT to 2338 mMDRT/2309 mTVDRT using Geoglide 7/8 x 5 stg motor (~0.78°). Performed water sampling & field testing on West Moonie #1 well fluid while drilling ahead.
17 Jul 2021	18	2450.0	Drilled 8½" production hole from 2338 mMDRT/2309 mTVDRT to 2450 mMDRT/2421.5 mTVDRT using Geoglide 7/8 x 5 stg motor (~0.78°). Circulated and worked stuck pipe when problematic well conditions encountered during connection at 2367 mMD. Circulated & swept well clean with high yield sweeps at TD. Conducted wiper trip to 1910 m and worked-on 4x sections of tight hole. Ran in the hole and circulated well clean. Spotted 20 bbls high vis pill into annulus at TD. Pulled out of the hole to 1785 mMD & spotted 30bbls high yield pill across Juandah CM / Walloon subgroup at 300 GPM. Pulled out of the hole with 8½" directional drilling assembly from 1785 m to 1670 mMD.
18 Jul 2021	19	2450.0	Pulled out of the hole with 8½" directional drilling assembly on 4" DP elevators from 1670 m to 1531 m (9-5/8" surface casing shoe); hole slick. Slipped 20' drill line and serviced rig. Pulled out of the hole with 8½" directional drilling assembly on 4" DP elevators from 1531m to 238mMD. Laid out BHA, flushed Geoglide directional tools, retrieved probe, checked bearing play (0.53 mm). Removed and graded Ulterra 8½" PDC. Rigged up to run wireline logs with Schlumberger. Pick up and run in the hole with Run #1: FMI-SSCAN-PPC-HRLA-PEX-HNGS-SP-GR. Logged well; on surface 21:30 hrs. Broke down Run #1 tools and Laid out. Make up tools for Run #2: CMR-GR.
19 Jul 2021	20	2450.0	Completed wire line run #2 with Schlumberger CMR-GR. Swapped out tools and ran MDT-GR and probes across 23 probe pretest points & 2 x Dual Packer MDT stations. Tools became stuck for several hours after station 2 tests. Regained communication to bleed-off valve and relaxed packers enough to POH gradually & incrementally to 2074mMD with constant 3-9.5 Klbs tension.
20 Jul 2021	21	2450.0	Completed wire line run #3 with SLB MDT-GR by working partially deflated packers from well with 3-9.5 Klbs consistent wireline tension. Swapped out tools and ran Checkshots across 37 points. Broke down and laid out logging tools. Rigged down E-loggers and moved unit. Picked up tools and retrieved wear bushing. Rigged up to run casing and installed casing running tool.

Report Date	Report #	Midnight Depth (m)	24-hour Summary
21 Jul 2021	22	2450.0	Rigged up and ran in the hole with 7" 26 ppf N80 BTC casing shoetrack. Tested floats, thread locked joints and installed centralisers. Removed cup seal from CRT when unable to insert into BTC/VAM crossover joint. Ran in the hole with 7" 26 ppf SM13Cr-85 VAM Top HC casing from 41m to 500 m. Installed VAM / BTC Crossover joint. Ran in the hole with 7" 26 ppf N80 BTC casing from 500 m to 1360 m. All joints top-filled while running in the hole.
22 Jul 2021	23	2450.0	Ran in the hole with 7" 26 ppf N80 BTC casing from 1360 m to 1877 m. Completed running in the hole with 7" 26 ppf N80 BTC casing; worked tight hole and washed casing to shoe setting depth, 2435 mMDRT. Landed casing with CTF-TP6, fluted, 11" X 7" BTC box, Bottom X 7.750-4 Stub ACME-2G right hand box top hanger. Circulated well and rigged up to cement with Halliburton.
23 Jul 2021	24	2450.0	Mixed and pumped 51.1 bbls of 12.5 ppg lead cement slurry. Mixed and pumped 71.6 bbls of tail slurry at 14.5 ppg. Released top plug. Completed displacement with 8.5 ppg brine a total of 300 bbls tub count. Staged pump rate down from 6 bbls/min to 2 bbls/min 10 bbls prior to bumping plug with circulating pressure at 2716 psi @ 2 bpm. Pressured up to kick outs at 4,500 psi x10 minutes for casing pressure test; good test. Bled off and observed 4.5 bbls returned volume; floats holding. Broke off surface lines and observed floats holding. Rigged down surface equipment and cement head. Cement was in place at 01:56hrs. Laid out cementing and casing equipment. Jetted & flushed wellhead. Ran in the hole with pack-off assembly under Cactus technician directions with 40 Klbs pull test and 5 Kpsi pressure test. Rigged down floor and nippled down BOPE. Installed tubing adaptor and 5 M tree cap. Pressure tested tree installation. Cleaned mud tanks. Rig released 18:00 hrs 23 July 2021.

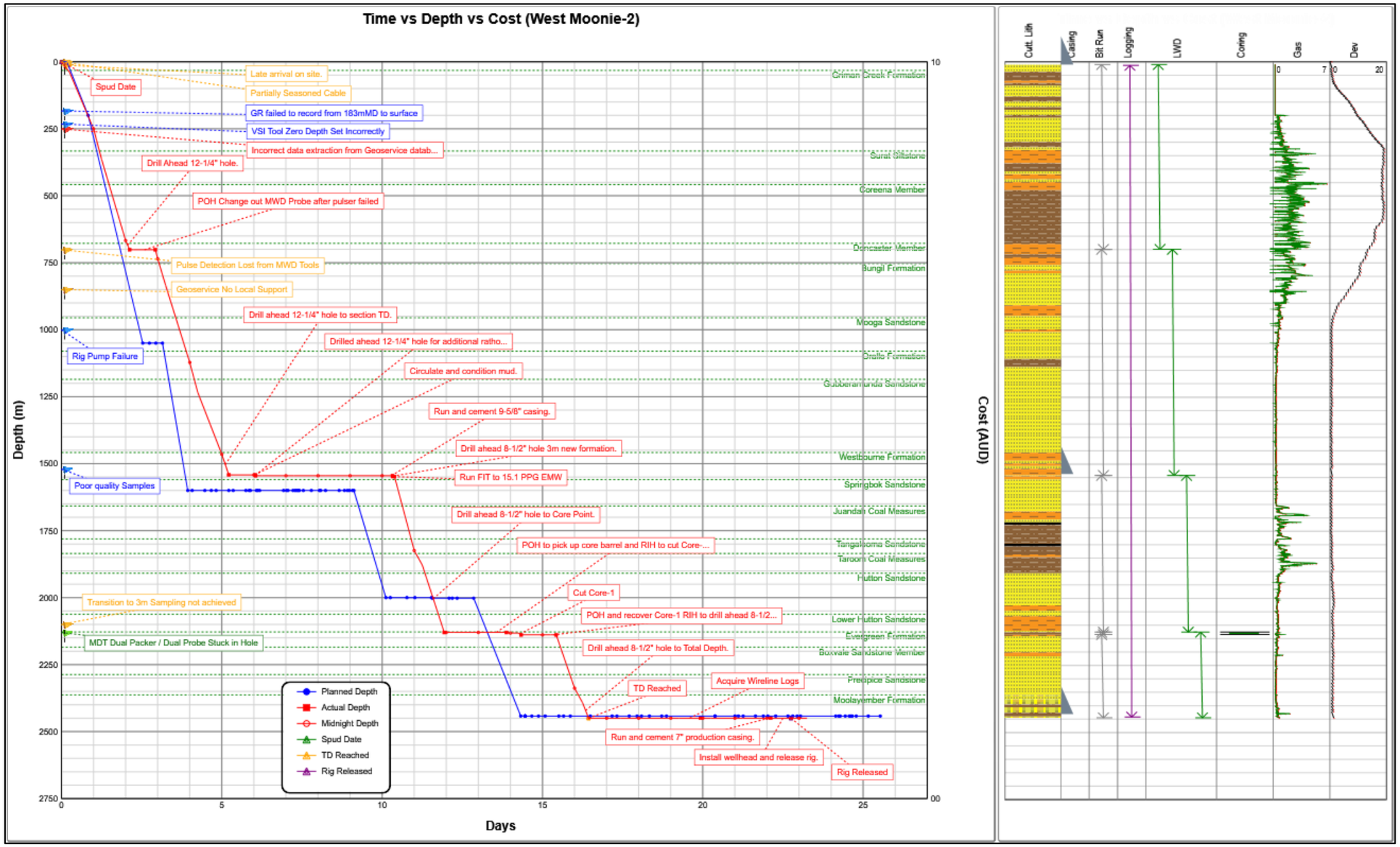


Figure 3-1 West Moonie-2 Time-depth chart

3.11.1 Time Breakdown

The time breakdown for the West Moonie-2 project is as follows:

Table 3-4 Time breakdown

Item	Total Time (Hrs)	Total Time (Days)	Percentage
Drilling	160.2	6.67	29.34
Tripping	132.3	5.51	24.23
NPT	12	0.50	2.20
Run Casing and cement	96.0	4.00	17.59
Rig Repair	0.5	0.02	0.09
Wireline logs	53.8	2.24	9.85
Circulate and Condition	19.8	0.82	3.62
Rig Service	2.5	0.10	0.46
Safety	1.0	0.04	0.18
Reaming	0.8	0.03	0.14
Other	23.0	0.96	4.21
Rig up / Down BOP	8.5	0.35	1.56
Test BOPE	10.8	0.45	1.97
Replace Drill line	7.5	0.31	1.37
Specialised Directional	10.3	0.43	1.88
RU/TD/MU	6.0	0.25	1.10
Testing	1.3	0.05	0.23
Coring	11.0	0.46	2.02
Total	545.9	22.75	

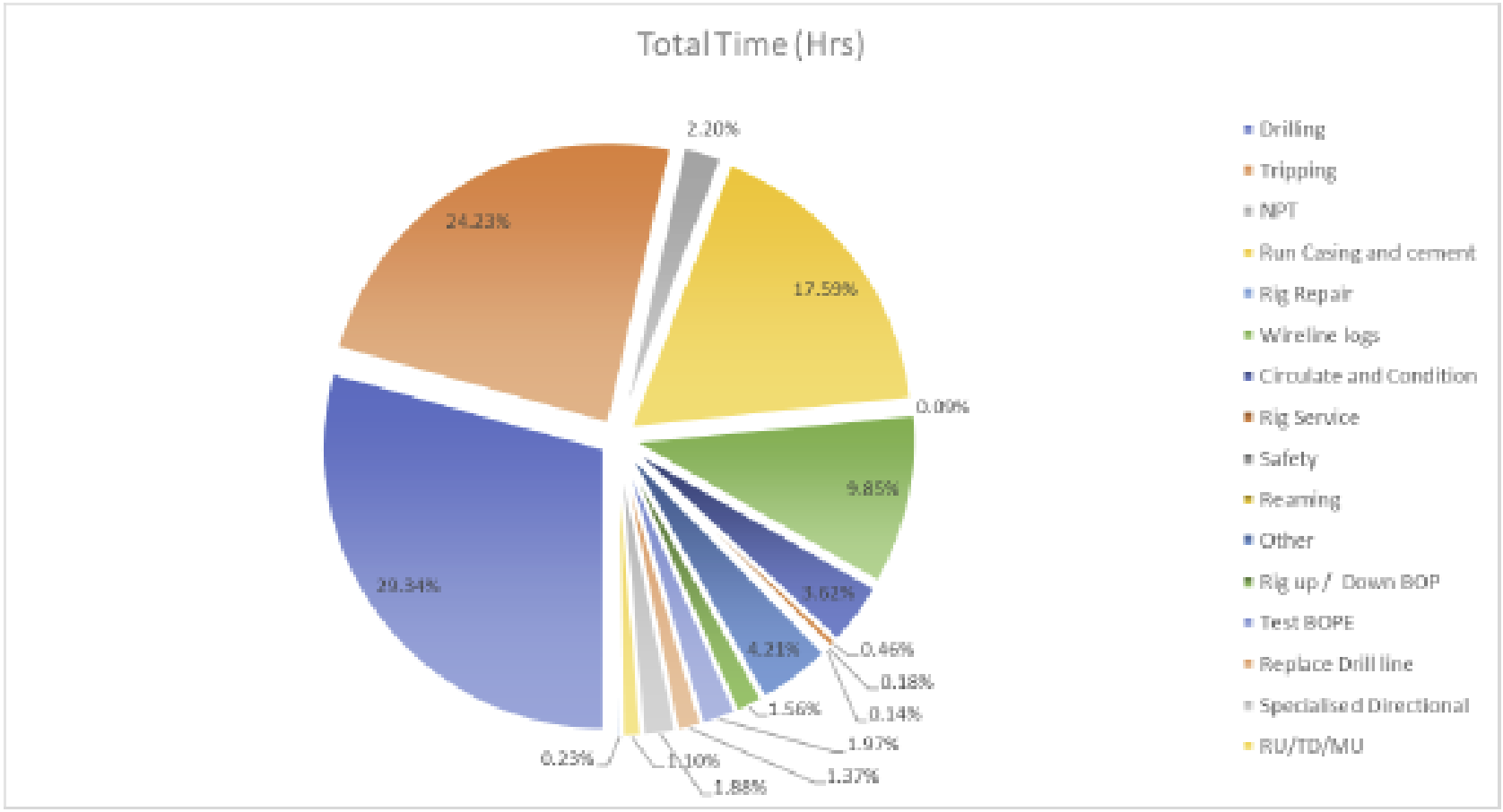


Figure 3-2 West Moonie-2 Time Breakdown

3.11.2 NPT Breakdown

The NPT breakdown is as follows:

Table 3-5 NPT Breakdown

Item	Hours
Changed Shaker Screens Out	1.25
Bop Leak During Testing	3.75
MDT Packer Deflation Issue	6
CRT Cup Seal Swap Out (Leak)	1
Rig repair/NPT Total:	**12**

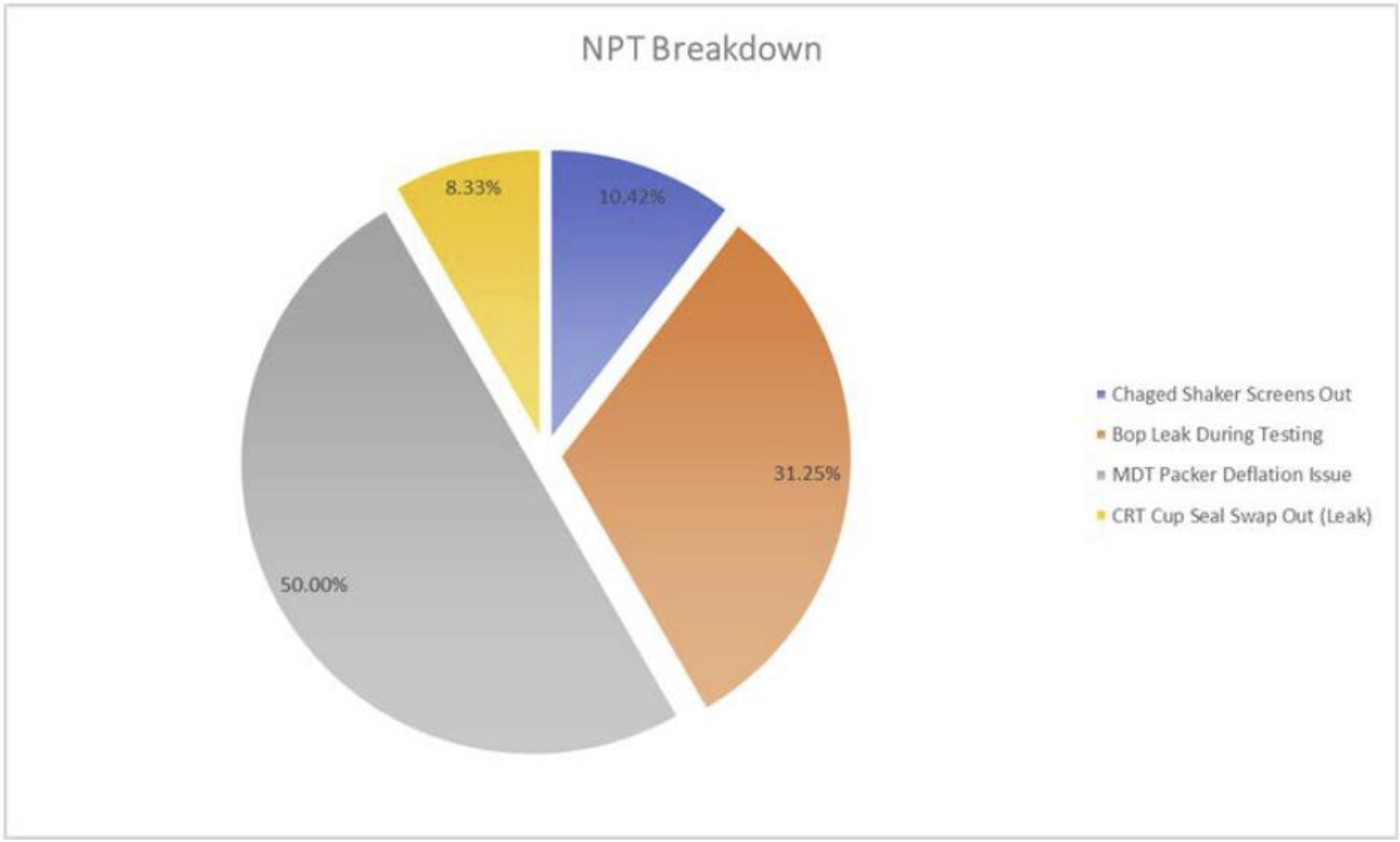


Figure 3-3 West Moonie-2 NPT Breakdown

3.12 Bit Run Data

Bit run data for both drilling and coring is presented below. Coring bits are named with the prefix 'DC' and 'RS'.

Table 3-6 Bit Run History – Part 1

Number	1	2RR1	3	4C
Size, in.	12 1/4"	12 1/4"	8 1/2"	8½" x 3½"
Type	Ulterra UO3981-7	Ulterra UO3981-7	SPL519s: U03778	DC 613 QD
Serial No.	55219	55219	54262	1270
TFA	0.773	0.773	0.61	Core Bit
W.O.B., Klbs.	2-16	3-20	8-30	15-20
R.P.M.	82-120	80/128	50-160	50-75
Depth Out, m	701.3	1545	2130	2139
Depth In, m	11.2	701.3	1545	2130
Meterage	690.1	843.7	585	9
Hours on btm	18.30	31.19	24.93	10.80
ROP (m/hr)	37.70	27.05	23.46	0.83
Condition	1,1,-,-,X,IN,-,TDTF	1,1,WT,NO,X,IN,RT,TD	1,1,WT,A,X,IN,NO,CP	1,1,WT,A, X, IN, BT-N, BHA

Table 3-7 Bit Run History – Part 2

Number	5 (3RR1)
Size, in.	8½"
Type	SPL519s: U03778
Serial No.	5262
TFA	0.61
W.O.B., Klbs.	4-17
R.P.M.	40-50
Depth Out, m	2450
Depth In, m	2139
Meterage	311
Hours on btm	18.60
ROP (m/hr)	5.8
Condition	1,1,WT,A,X,IN,RR,TD

Table 3-8 Drilling and Coring Parameters

Date	Avg. ROP (m/hr)	Avg. RPM TDS/Motor	Avg. WOB (klbs)	Avg. TQ (kft-lbs)
01/07/2021	12.9	38/82	9.6	4.4
02/07/2021	17.4	35/115-122	11.9	7
03/07/2021	14.3	37/119-127	8.9	8
04/07/2021	16.6	35/112-125	11.8	10
05/07/2021	14.29	40/80-124	25.18	13
06/07/2021	14.66	45/118-123	20.5	13
07/07/2021	12	20-45/110-126	4-11	13
08/07/2021	N/A	N/A	N/A	N/A
09/07/2021	N/A	N/A	N/A	N/A
10/07/2021	N/A	N/A	N/A	N/A
11/07/2021	18.6	40/109-112	8-28	6-10.5
12/07/2021	13.45	50/106	13-30	7-11
13/07/2021	N/A	N/A	N/A	N/A
14/07/2021	0.77	50-75	3-16	6.5-8
15/07/2021	0.84	50-75	16-17	7.5-8
16/07/2021	14.47	50/112	5-17	8.8-11
17/07/2021	11.2	50/112-126	6-5	8-12.7

3.13 Well Integrity

3.13.1 Surface Casing and Cement

The surface casing run by the rig was 9-⅝" 36ppf K55 BTC. It was cemented back to surface with 207.4 bbls of 12.50 ppg lead cement and 147.6 bbls of 15.00 ppg tail cement and successfully pressured tested to 2,807 psi prior to drilling out. It was estimated that 61 bbls of cement returns came back to surface. No losses were experienced while the cement was pumped around the annulus. The theoretical top of premium tail cement is at 1036 mRT. However actual top of tail cement including the excess is likely to be at ~784 mRT assuming gauge hole and no static losses after cement placement.

The surface casing was tested prior to the drill out of the shoe track and FIT with a successful pressure test to 2,800 psi for 10 minutes.

3.13.2 Production Casing

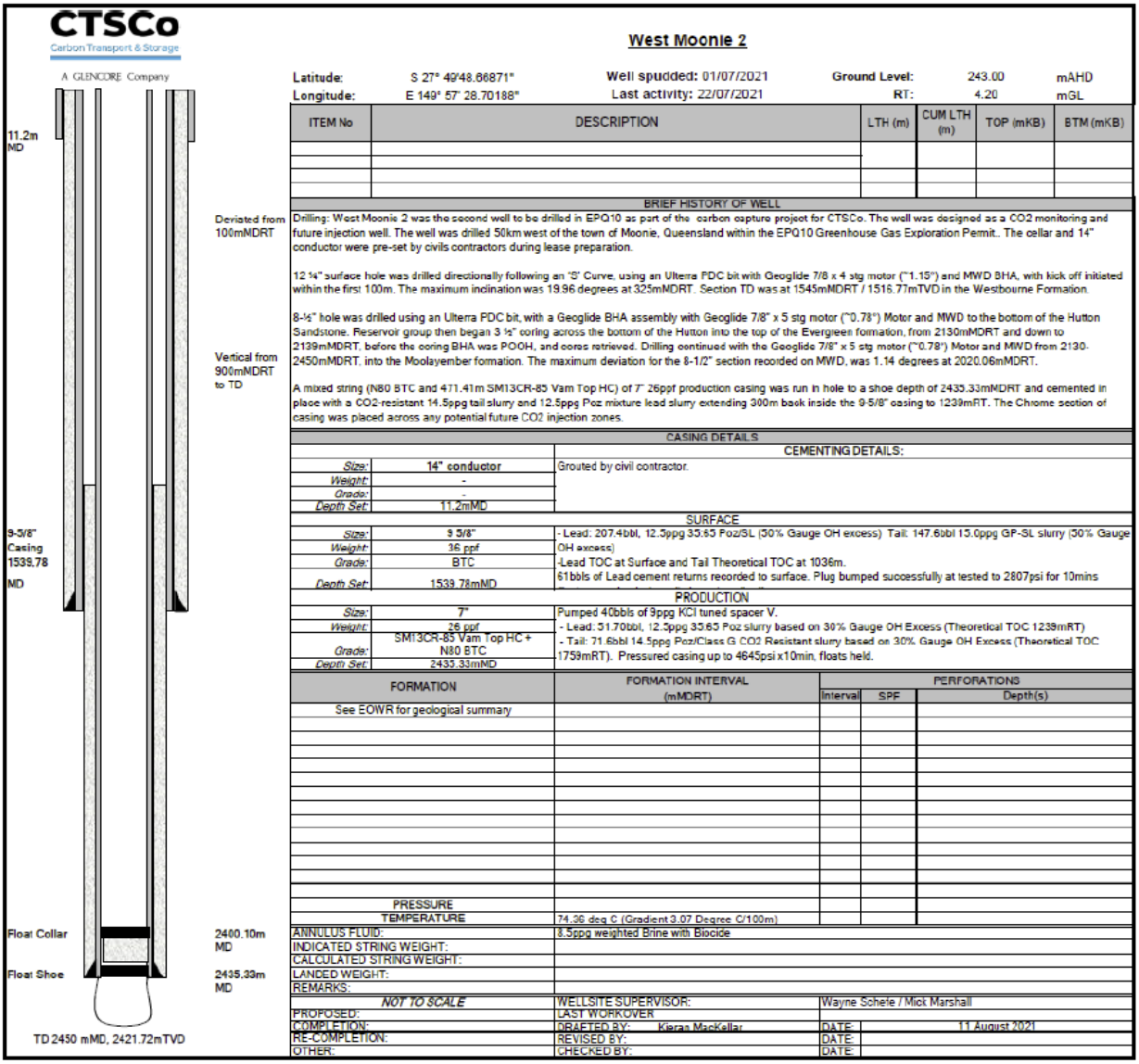
Corrosion Resistant Alloy (CRA) material was used across a 471 m section of the production casing allowing for future CO_2 injection into the Precipice Sandstone. The production casing intervals installed were as follows:

- 7", 26ppf, L80, BTC from surface to 1928.69 mRT (to top SM13Cr80)
- 7", 26ppf, SM13Cr80, Vam Top HC from 1928.69 to 2400.10 mRT (across Precipice and Hutton) 7", 26ppf, L80, BTC from 2627.23 mRT to 2673.52 mRT (to top 13Cr80)
- 7", 26ppf, N80, BTC from 2400.10 mRT to 2435.33 mRT - 7", 26ppf, (1 joint above and 2 joint shoe track)

The 7" 26ppf 13Cr80 casing was made up using a Tubular Running Service provided by Drill Quip, Appendix 6. The premium JFE Bear Threads were torqued to the manufacturer's specification. The casing running charts from Drill Quip are included in the end of well data pack. Casing centralisers were run over every 2nd coupling giving a calculated standoff of >80%.

Once on depth, the casing was cemented back to 300m inside the surface casing shoe to 1316 mRT and the casing was successfully pressure tested to 4,500 psi for 10 minutes. The pressure chart for this test is included in the Casing and Cementing Report (Appendix 5).

The West Moonie-2 downhole diagram is shown in Figure 3-4.



West Moonie 2

Latitude:	S 27° 49'48.66871"	**Well spudded:** 01/07/2021	**Ground Level:**	243.00	mAHD
Longitude:	E 149° 57' 28.70188"	**Last activity:** 22/07/2021	**RT:**	4.20	mGL

ITEM No	DESCRIPTION	LTH (m)	CUM LTH (m)	TOP (mKB)	BTM (mKB)

BRIEF HISTORY OF WELL

Drilling: West Moonie 2 was the second well to be drilled in EPQ10 as part of the carbon capture project for CTSCo. The well was designed as a CO2 monitoring and future injection well. The well was drilled 50km west of the town of Moonie, Queensland within the EPQ10 Greenhouse Gas Exploration Permit.. The cellar and 14" conductor were pre-set by civils contractors during lease preparation.

12 ¼" surface hole was drilled directionally following an "S" Curve, using an Ulterra PDC bit with Geoglide 7/8 x 4 stg motor ("1.15°) and MWD BHA, with kick off initiated within the first 100m. The maximum inclination was 19.96 degrees at 325mMDRT. Section TD was at 1545mMDRT / 1516.77mTVD in the Westbourne Formation.

8-½" hole was drilled using an Ulterra PDC bit, with a Geoglide BHA assembly with Geoglide 7/8" x 5 stg motor ("0.78°) Motor and MWD to the bottom of the Hutton Sandstone. Reservoir group then began 3 ½" coring across the bottom of the Hutton into the top of the Evergreen formation, from 2130mMDRT and down to 2139mMDRT, before the coring BHA was POOH, and cores retrieved. Drilling continued with the Geoglide 7/8" x 5 stg motor ("0.78°) Motor and MWD from 2130-2450mMDRT, into the Moolayember formation. The maximum deviation for the 8-1/2" section recorded on MWD, was 1.14 degrees at 2020.06mMDRT.

A mixed string (N80 BTC and 471.41m SM13CR-85 Vam Top HC) of 7" 26ppf production casing was run in hole to a shoe depth of 2433.33mMDRT and cemented in place with a CO2-resistant 14.5ppg tail slurry and 12.5ppg Poz mixture lead slurry extending 300m back inside the 9-5/8" casing to 1239mRT. The Chrome section of casing was placed across any potential future CO2 injection zones.

CASING DETAILS

		CEMENTING DETAILS:
Size:	14" conductor	Grouted by civil contractor.
Weight:	-	
Grade:	-	
Depth Set:	11.2mMD	
	SURFACE	
Size:	9 5/8"	- Lead: 207.4bbl, 12.5ppg 35:65 Poz/SL (30% Gauge OH excess) Tail: 147.6bbl 15.0ppg GP-SL slurry (30% Gauge OH excess)
Weight:	36 ppf	-Lead TOC at Surface and Tail Theoretical TOC at 1036m.
Grade:	BTC	61bbls of Lead cement returns recorded to surface. Plug bumped successfully at tested to 2807psi for 10mins
Depth Set:	1539.78mMD	
	PRODUCTION	
Size:	7"	Pumped 40bbls of 9ppg KCl tuned spacer V.
Weight:	26 ppf	- Lead: 51.70bbl, 12.5ppg 35:65 Poz slurry based on 30% Gauge OH Excess (Theoretical TOC 1239mRT)
Grade:	SM13CR-85 Vam Top HC + N80 BTC	- Tail: 71.6bbl 14.5ppg Poz/Class G CO2 Resistant slurry based on 30% Gauge OH Excess (Theoretical TOC 1759mRT). Pressured casing up to 4645psi x10min, floats held.
Depth Set:	2433.33mMD	

FORMATION	FORMATION INTERVAL (mMDRT)	PERFORATIONS Interval	SPF	Depth(s)
See EOWR for geological summary				
PRESSURE				
TEMPERATURE	74.36 deg C (Gradient 3.07 Degree C/100m)			

ANNULUS FLUID:	8.5ppg weighted Brine with Biocide		
INDICATED STRING WEIGHT:			
CALCULATED STRING WEIGHT:			
LANDED WEIGHT:			
REMARKS:			
NOT TO SCALE	WELLSITE SUPERVISOR:	Wayne Schefe / Mick Marshall	
PROPOSED:	LAST WORKOVER		
COMPLETION:	DRAFTED BY: Kieran MacKellar	DATE:	11 August 2021
RE-COMPLETION:	REVISED BY:	DATE:	
OTHER:	CHECKED BY:	DATE:	

Figure 3-4 Downhole Diagram

3.13.3 Wellhead Pressure Testing

The wellhead provided by Cactus Group was rated and tested to 5,000 psi.

Table 3-9 Wellhead Pressure Testing

#	Test	Pressure	Time (s)
1	Tubing Head Adapter and Tubing Head Void Test, with Tree Cap	5000	1300
2	Casing Head Companion Flange against VR Plug	5000	1050
3	Casing Head Annulus Against VR Plug	5000	1100
4	11" x 7" Mandrel Packoff Void	5000	1850
5	Casing Head, Tubing Head Connection	5000	1500

The post drilling wellhead diagram is shown in Figure 3-5.

Refer to Cactus IP1149 R2 for a full list of wellhead components. The well was suspended with the “C” section installed and Tubing Hanger installed

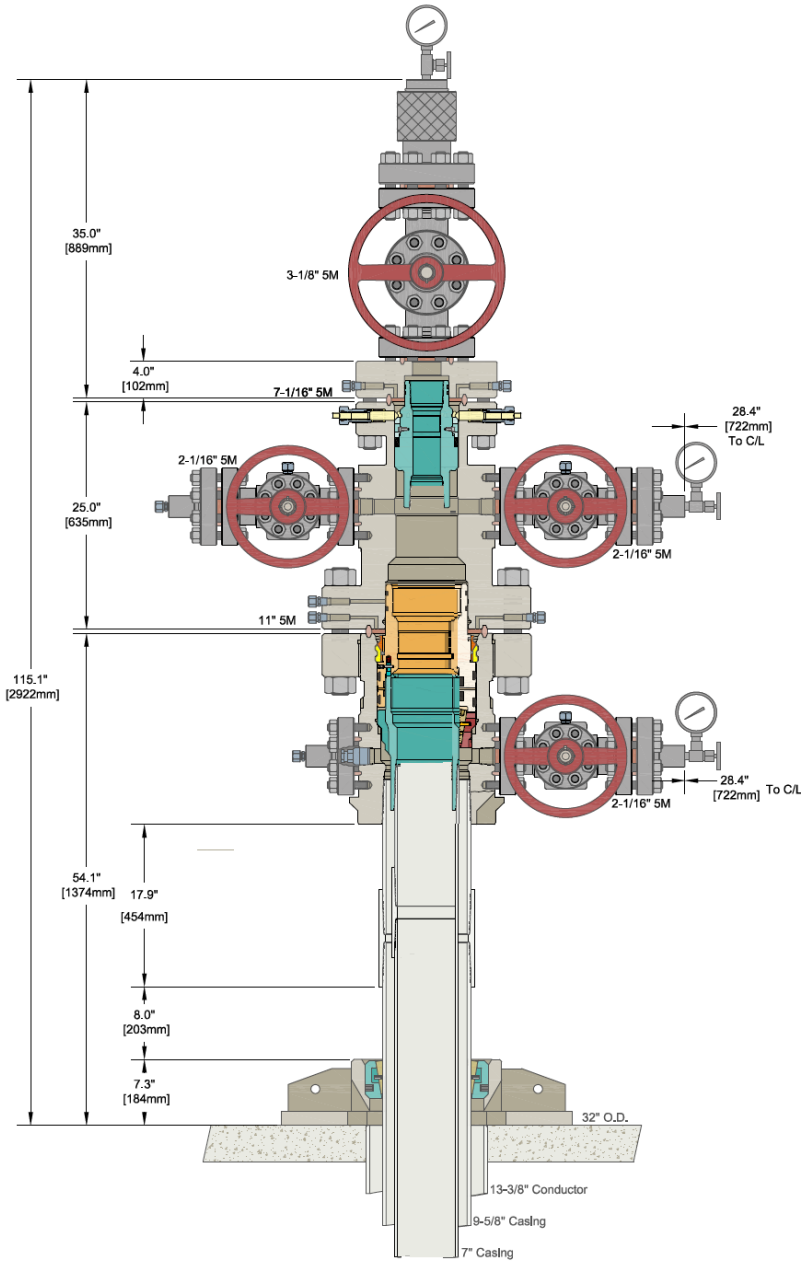


Figure 3-5 Wellhead Diagram

3.14 HSE Overview

The following HSE Statistics were recorded for the duration of the drilling campaign. There were no accidents or incidents, and no recorded first aid cases.

Using the daily rig POB, there were approximately 4716 EWG Man Hours and a total of 8,286-man hours recorded during the drilling phase of the project.

Table 3-10 Safety Statistics

West Moonie-2 HSE Statistics											
Month	**HAZOB**	**Inductions**	**JHA**	**Job Start**	**PTW**	**SOP**	**TBM**	**STJ**	**KMs Driven**	**ERDs**	**Safe Acts**
July	194	32	20	328	37	39	97	113	>10,000	7	401

4. Well Evaluation Operations

4.1 Wellsite Geology

Wellsite geological services were provided by Australian International Petro-Consultants Pty Ltd and Mark Lawrence provided the onsite geological supervision for CTSCo. Drilling progress was monitored onsite and geological sampling was overseen from spud to release of the wireline logging crew at total depth. Daily Geological Reports are included as Appendix 8. All drill cuttings samples were collected by the Mudlogging crew with occasional assistance from the rig crew predominantly during the initial drilling phase where the Mudlogging crew were engaged in commissioning the mudlogging unit after its delayed arrival on site.

All geological samples collected were described and photographed digitally on site.

4.2 Mudlogging

Mudlogging services were provided by Geoservices and were programmed from spud to total depth to comprise monitoring rig functions with a direct WITS data feed from the drilling contractors installed sensors (no independent sensors were installed); and independent ditch gas monitoring for total gas and chromatographic components of the alkane series C1 through C5. All cuttings sample preparation and packaging was completed by Geoservices personnel.

Poor logistics planning resulted in the late arrival onsite of the mudlogging crew. The crew arrived approximately 9 ½ hours after spud. Most of their first day onsite was spent rigging up the unit and commissioning the equipment. Without access to critical monitoring equipment the wellsite geologist collected cuttings samples from the shakers based on drilling depth and the samples were unlagged to a depth of 200 mMDRT. Therefore, samples to this depth are considered unreliable.

Geoservices provided the ALS3B software platform for the service which was first introduced to service in the late 1980's and has been superseded by two later platforms, the most recent of which is the Gen5 platform. The older ALS3B platform is significantly more difficult to commission and, more importantly, was unfamiliar to the crew assigned to West Moonie-2. This resulted in a most inefficient commissioning exercise and a significant number of errors in data capture, calibration and data presentation were realised in the early stages of drilling. This significantly distracted attention from robust monitoring of drilling operations and attending to the timely, routine data capture and presentation duties of the crew.

Also due to the late arrival onsite of the mudlogging crew, the Geoservices database of rig functions data had to be back populated by extracting data from the rig's NOV RigSense data platform with no opportunity to QC the data set. Gas data recording commenced from 200mMD.

The Mudlogging crew lagged and collected drill cuttings samples as directed by the wellsite geologist as drilling progressed from 200mMD to total depth. Unfortunately, no support from the rig crew was available as the drilling contractor was short staffed and in times of very fast instantaneous ROP, sample collection and preparation became unsustainable at the required intervals. The sampling programme was modified with samples collected at 5m intervals rather than the programmed 3m intervals. The Geoservices deliverables included a mudlog, drilling log and gas log.

A conventional gas trap was deployed in the header box at the shale shakers and a stream of ditch gas was pumped to the mudlogging unit and analysed in the Geoservices Geo Fast Flame ionisation gas chromatograph. The results of the analysis are presented on the Mudlog included as Enclosure 1. A gas log and drilling were also prepared and are held by CTSCo.

A set of IsoTube™ gas samples were collected from a sampling manifold installed adjacent to the GFF gas chromatography equipment in the mudlogging unit. The depth and concentrations of gas within the IsoTube™ is summarised in Table 4-1.

Laboratory analysis results are included as Appendix ~~19~~20.

Table 4-1 IsoTube™ Sample Summary

Isotube No. #	Depth TVDSS (m)	LAG DEPTH m MDRT	Date	Time	TGAS %	Taken By	Sample Pressure	C1	C2	C4	IC4	NC4	IC5	NC5
1	100	**350**	7/02/2021	5:35	**2%**	DVN	1 Bar	24261	0	0	0	0	0	0
2	200	**450**	7/02/2021	12:17	**4%**	SDM	1 Bar	44587	0	0	0	0	0	0
3	300	**550**	7/02/2021	17:39	**3.06**	SDM	1 Bar	30589	141	35	20	14	13	0
4	400	**670**	7/03/2021	0:30	**2%**	DVN	1 Bar	24095	172	44	14	0	20	0
5	500	**770**	7/04/2021	2:00	**2%**	DVN	1 Bar	21116	156	49	0	0	11	0
6	600	**870**	7/04/2021	8:04	**2%**	DVN	1 Bar	15210	46	21	0	0	14	0
7	700	**970**	7/04/2021	15:39	**0.5**	SDM	1 Bar	5489	0	0	0	0	0	0
8	800	**1070**	7/04/2021	20:43	**0.1**	SDM	1 Bar	1931	0	0	0	0	0	0
9	900	**1170**	7/05/2019	2:18	**0.15**	DVN	1 Bar	1490	33	0	0	0	0	0
10	1000	**1270**	7/05/2021	7:59	**0.09**	DVN	1 Bar	988	0	0	0	0	0	0
11	1100	**1370**	7/05/2021	16:40	**0.07**	SDM	1 Bar	653	0	0	0	0	0	0
12	1200	**1470**	7/06/2021	0:25	**0.08**	DVN	1 Bar	736	0	0	0	0	0	0
13	1300	**1570**	7/11/2021	10:30	**0.22**	DVN	1 Bar	2302	0	0	0	0	0	0
14	1400	**1670**	7/11/2021	14:09	**0.85**	SDM	1 Bar	9263	187	160	135	10	18	0
15	1500	**1770**	7/11/2021	21:00	**0.75**	SDM	1 Bar	6569	361	273	144	32	38	11
16	1600	**1870**	12/07/2021	4:35	**2.12**	DVN	1 Bar	16011	752	628	341	74	71	14
17	1700	**1970**	12/07/2021	11:30	**0.27**	DVN	1 Bar	2188	105	103	68	21	25	0
18	1800	**2070**	12/07/2021	19:10	**0.32**	SDM	1 Bar	3021	85	46	54	16	28	0
19	1900	**2170**	16/07/2021	13:54	**0.24**	SDM	1 Bar	1470	51	31	13	0	0	0
20	2000	**2270**	16/07/2021	19:42	**0.12**	SDM	1 Bar	936	18	17	10	14	0	11
21	2100	**2370**	17/07/2021	4:12	**0.06**	DVN	1 Bar	450	18	12	13	10	0	14
22	2200	**2450**	17/07/2021	11:16	**0.48**	DVN	1 Bar	3578	192	80	43	34	19	21

4.3 Ditch Cutting Samples

Drill cuttings samples were collected, described and digitally photographed from spud to TD. Cuttings samples from 12 mMD to 200 mMD were collected based on drilling depth and the samples were unlagged and therefore unreliable. The samples were generally composited over 10m intervals from 12 mMD to 2100 mMD and were composited over 5 m intervals from 2100 mMD to total depth, except over cored interval (2130 m to 2139 mMD) where cuttings sample were collected composited over 2 m. These cuttings samples are also considered unreliable due to the relatively small volume of material returned across the shakers during coring operation.

Cuttings sample intervals summarised in Table 4-2 below and cuttings descriptions are provided in Appendix 10.

A set of washed and dried samples were packaged in foil pouches and delivered to CTSCo for onward delivery to the Queensland Department of Resources (DoR). A set of washed and dried samples were packaged in Samplex Trays and are held by CTSCo.

Table 4-2 Cuttings Sample Summary

Depth Range (mMDRT)	Sample Intervals	Sample Data
12-20	8 m*	Washed & Dried
20-38	18 m*	Washed & Dried
38-50	12 m*	Washed & Dried
50-1540	10 m*	Washed & Dried
1540-1542	2 m	Washed & Dried
1542-1545	3 m	Washed & Dried
1545-1550	5 m	Washed & Dried
1550-2100	10 m	Washed & Dried
2100-2130	5 m	Washed & Dried
2130-2140	2 m	Washed & Dried
2140-2450	5 m	Washed & Dried

***(Note:** Samples from 12 m to 200 m were collected by wellsite geologist while Geoservices were rigging up the unit and setting up system.)

4.3.1 Cuttings Analyses

The following analyses have been completed on West Moonie-2 cuttings samples:

- Rock Typing (PERM), Table 4-3 refer to Appendix 13
- Palynology (MG Palaeo), Table 4-4 refer to Appendix 15
- Vitrinite Reflectance (ERC), Table 4-5 refer to Appendix 16
- Trace Metals (ALS), Table 4-6 refer to Appendix 21

Table 4-3 Rock Typing analysis sample listing

Rock Typing Samples (Driller's depth mRT)			
2115-2120	2260-2265	2305-2310	2350-2355
2120-2125	2265-2270	2310-2315	2360-2365
2125-2130	2270-2275	2315-2320	2365-2370
2180-2185	2275-2280	2320-2325	2370-2375
2185-2190	2280-2285	2325-2330	
2190-2195	2285-2290	2330-2335	
2195-2200	2290-2295	2335-2340	
2250-2255	2295-2300	2340-2345	
2255-2260	2300-2305	2345-2350	

Table 4-4 Palynology analysis sample listing

Palynology Samples (Driller's depth mRT)			
150-160	1890-1900	2160-2165	2375-2380
380 -390	1910-1920	2170-2175	2440-2445
730-740	2130-2132	2200-2205	2135.25-2135.3 (core chip)
980-990	2138-2139	2235-2240	
1330-1340	2139-2140	2295-2300	
1660-1670	2155-2160	2330-2335	

Table 4-5 Vitrinite Reflectance analysis sample listing

Vitrinite Reflectance Samples (Driller's depth mRT)			
150	850	1000	1680
380	860	1330	1700
730	940	1370	1890
790	950	1410	1910
820	980	1660	

Table 4-6 Trace Metal analysis sample listing

Trace Metals Samples (Driller's depth mRT)			
2115-2120	2260-2265	2305-2310	2350-2355
2120-2125	2265-2270	2310-2315	2355-2360
2125-2130	2270-2275	2315-2320	2360-2365
2180-2185	2275-2280	2320-2325	2365-2370
2185-2190	2280-2285	2325-2330	2370-2375
2190-2195	2285-2290	2330-2335	
2195-2200	2290-2295	2335-2340	
2250-2255	2295-2300	2340-2345	
2255-2260	2300-2305	2345-2350	

4.4 Coring

Coring Services were provided by Reservoir Group and operations were conducted utilising a coring BHA. The BHA comprised slotted liner with aluminium inner core barrels. A 9 m, 90 mm diameter (3 ½") core was cut before pulling out of the hole with the coring BHA. Total recovery of Core-1 was 7.16 m (79.6%)

Once the core was retrieved to surface the core was wiped down, depth and orientation marked with the assistance of a core specialist from Stratum Reservoir. No sampling or description was made of the core at the wellsite to minimise the exposure of the core to atmosphere. The core was cut into ~1 m lengths and immediately sealed in mylar core bags and transported to Stratum Reservoir's laboratory facilities to await detailed analytical tests.

The core point was selected to allow for coring the interface between the Lower Hutton Sandstone and the Evergreen Formation. Based on the well correlation carried as the drilling approached the core point, approximately 1 m to 2 m of the Lower Hutton Sandstone were expected to be recovered before the transition to Evergreen Formation. Initial inspection of the core during sealing operations indicated no Lower Hutton Sandstone was recovered. Very slow ROP for the first 2 m of coring was initially interpreted to have washed away the expected Lower Hutton Sandstone and the lost core recovery was assigned to the top of the core and the core was depth marked accordingly.

However, on running back in the hole with the drill bit to drill ahead to total depth, the bit stood up approximately 2 m off bottom. This suggested the lost core recovery was, in fact, from the bottom of the cored interval. Using this information together with detailed gamma ray correlation of the LWD log acquired over the cored interval and West Moonie-1 wireline logs, confirmed coring commenced right at the Lower Hutton Sandstone – Evergreen Formation interface. The entire 7.16 m of Core-1 recovered represents the uppermost Evergreen Formation. Note: The marked core, then, is 1.84 m deeper than actual driller's core depth. The depth shift from drillers to wireline GR log reference depth (subtract 1.58 m from drillers depth) is discussed section 4.4.1. Acquisition parameters are summarised in Appendix 11 which also includes field photographs of the recovered core and Stratum Reservoir's Core Handling Report.

4.4.1 Core depth shift

The core was sent to Stratum Reservoir's Brendale Queensland laboratory for analysis. A GR was run over the core and comparison to the Schlumberger wireline GR shows that that the driller's core depths should be shifted up 1.58 m to match the reference wireline GR depth, Figure 4-1. In summary cored interval is 2130-2139 mRT (Driller's depth) which is adjusted to 2128.42 – 2137.42 mRT (Loggers depth).

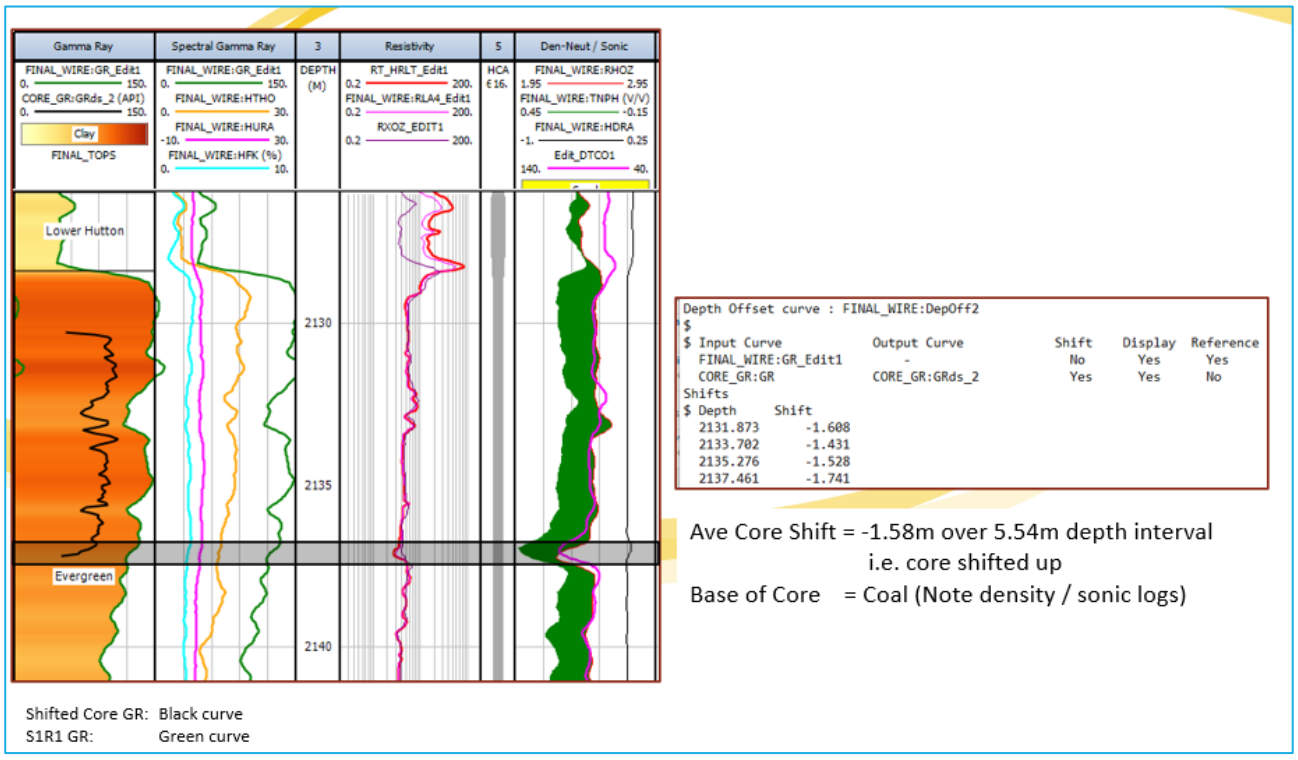


Figure 4-1 Core GR depth shift to match reference wireline GR depth

4.4.2 Core Analysis

The following analyses have been conducted on the core:

- Sedimentological description (Precipice Consulting) refer to Appendix 12
- Petrology (Stratum Reservoir) Table 4-7 refer to Appendix 14
- Capillary Pressure (Stratum Reservoir), MICP Core Chip Samples Table 4-8 in progress refer to Appendix 11
- Geomechanics (Stratum Reservoir) Table 4-9 refer to Appendix 22
- No routine core analysis (RCA) has been conducted on the core

Table 4-7 Petrology core chip samples

Petrology Samples (Driller's depth mRT)			
2131.84	2134.3	2138.3	

Table 4-8 MICP core chip samples

MICP Samples (Driller's depth mRT)			
2131.93	2132.6	2133.85	2138.5

Table 4-9 Geomechanics (Rock Strength) whole core samples

Geomechanics Samples (Driller's depth mRT)			
2133.88-2134.34	2135.34-2136.34		

4.5 MWD-LWD Service

Directional drilling services were provided by GeoGlide Australia Pty Ltd. The GeoGlide crew provided 24hr cover during drilling directing the operations in accordance with the directional plan for the well. Included in the MWD package was a Gamma Ray tool from which data was pulsed to surface real time allowing close monitoring and correlation of the stratigraphic sequence penetrated. This data was essential to enable selection of a suitable core point for acquisition of the required core samples across the uppermost interval of Evergreen Formation.

Four MWD-LWD runs were required with Run 1 terminated at 701.3 mMD due to loss of real time pulse detection. After the BHA was pulled to surface the cause of the pulse detection failure was found to be cuttings build up in the pulser module preventing the impeller from rotating. The cuttings build up indicates poor hole cleaning parameters during drilling of the top-hole section of the well.

Run 4 was conducted after completing coring operations. Gamma Ray data was pulsed to surface as the cored section from 2130 m to 2139 mMD was reamed before drilling ahead to total depth.

Details of the directional plan and equipment used are included in the Drilling Final Well Report. A listing of the final definitive deviation survey data is presented in Appendix 7.

The MWD runs are summarised in Table 4-10 and pdf log plots are included as Appendix 17.

Table 4-10 MWD FEWD Interval Summary

MWD FEWD Interval Summary					
Run #	**Tool Description**	**Start Interval (m)**	**End Interval (m)**	**Interval Logged (m)**	**Comments**
1	Directional-GR	12.20	701.30	688.9	Motor, directional, gamma ray toolstring. Pulser unit failed at 701.1mMDRT. Surface inspection indicated turbine clogged with drill cuttings. Time re-classified from Down Time to Lost Time. Intermittent pump problems during drilling considered to inhibit optimal hole cleaning.
2	Directional-GR	701.30	1545.00	843.7	Motor, directional, gamma ray toolstring.
3	Directional-GR	1545.00	2130.00	585.0	Motor, directional, gamma ray toolstring.
4	Directional-GR	2139.00	2450.00	311.0	Directional-GR data acquisition. GR data acquired while washing and reaming to bottom through cored interval from 2130mMD to 2139mMD.

4.6 Wireline Logs

Schlumberger conducted wireline logging operations at West Moonie-2 a single suite of 4 wireline runs were acquired. Suite-1 acquired data in 8 ½" hole on reaching total depth. Suite-1 data acquisition is summarised in Table 4-11 to Table 4-17. Final logs (LAS, DLIS and pdf formats) are included in Appendix 18.

Table 4-11 Wireline Logging Acquisition Summary

Date Mud Check: 18 Jul 2021			**Date/Time Circ. Stopped:** 17-Jul-2021 20:00			**Circ. Time:** 2.50 (h)
Run #	**Run Date**	**Tool String**	**Max BHT (degC)**	**Max BHT Depth (m)**	**Date Time Logger On Bottom**	**Time Since Circ. Stopped (h)**
1	18 Jul 2021	FMI-SScan-PPC-HRLA-PEX-HNGS-SPGR	74.6	2413.3	18-Jul-2021 17:15	21.25
2	18 Jul 2021	CMR-GR	74.6	2431.4	19-Jul-2021 02:19	30.32
3	19 Jul 2021	MDT (Dual Packer, Dual Probe)	76.6	2380.0	19-Jul-2021 13:55	41.92
4	20 Jul 2021	VSI	76.5	2413.0	20-Jul-2021 13:30	65.50

Table 4-12 General Well Data

Well Name	West Moonie-2	**Suite**	1	**Rig**	Rig No101
Permit	EPQ10	**Date 1st Log**	18 Jul 2021	**GL Elevation**	243.0 (m)
Latitude	027° 49' 48.715" South	**Date Last Log**	20 Jul 2021	**Water Depth**	
Longitude	149° 57' 28.679" East	**Depth Ref.**	RT	**Witnesses**	M. Lawrence
Easting (m)	200,352.070m E	**Depth Ref. Elev.**	247.2 (m)	**Engineers**	L. Delange, P. Lima
Northing (m)	6,917,891.240m S	**Service Comp.**	Schlumberger		
UTM Zone	56	**Geodetic Datum**	NAD83, GDA94	**Ellipsoid**	Geodetic Reference System 1980

Table 4-13 Hole Data

Hole Size	8.500 (in)			**Max Hole Dev.**	20.0 (°)
Driller's Depth	2450.0 (m)	**Surface Temp**	20.0 (degC)	**Max Dev Depth**	326.0 (m)
Logger's Depth	2449.3 (m)	**Max BHT**	76.6 (degC)	**Survey Type**	Open hole

Table 4-14 Casing Data

Casing String	Shoe Depth MD (m)	Shoe Depth TVD (m)	Casing OD (in)	Casing ID (in)	Weight (lbm/ft)	Hole Size (in)
Conductor	11.2	11.2	14.000	13.125	65.00	14.00
9-5/8" Surface Casing	1539.8	1511.6	9.625	8.922	36.00	12.25

Table 4-15 Water Based Mud Data

Date Mud Check	Date Time Circ Stopped	Circ Time h	Mud Name	MW ppg	KCL %	Cl mg/L	Barite %	Rm ohm.m	Rm degC	Rmf ohm.m	Rmf degC	Rmc ohm.m	Rmc degC
18 Jul 2021	17-Jul-2021 20:00	2.50	KCl Polymer	8.95	3.55	18000.0	0.00	0.179	20.3	0.162	20.3	0.223	24.0

Table 4-16 Wireline Run Temperature Data

Date Mud Check: 18 Jul 2021	Date/Time Circ. Stopped: 17-Jul-2021 20:00	Circ. Time: 2.50 (h)

Run #	Run Date	Tool String	Max BHT (degC)	Max BHT Depth (m)	Date Time Logger On Bottom	Time Since Circ. Stopped (h)
1	18 Jul 2021	FMI-SScan-PPC-HRLA-PEX-HNGS-SPGR	74.6	2413.3	18-Jul-2021 17:15	21.25
2	18 Jul 2021	CMR-GR	74.6	2431.4	19-Jul-2021 02:19	30.32
3	19 Jul 2021	MDT (Dual Packer, Dual Probe)	76.6	2380.0	19-Jul-2021 13:55	41.92
4	20 Jul 2021	VSI	76.5	2413.0	20-Jul-2021 13:30	65.50

Table 4-17 Wireline Run Summary Data

Run #	Tool String	Log From Depth (m)	Log To Depth (m)	Repeat From Depth (m)	Repeat To Depth (m)	Comments
1	FMI-SScan-PPC-HRLA-PEX-HNGS-SPGR	2447.0	165.0	2440.0	2372.0	Logged TD to Surface, however GR failed to be recorded from 183m to surface. Re-logged on Run 2 and spliced in log.
2	CMR-GR	2441.0	1909.0			GR recorded over interval 183m to 10m which failed to be recorded from Run-1.
3	MDT (Dual Packer, Dual Probe)	2360.5	1909.0	n/a	n/a	Dual Probe (1x XLarge Dia, 1x Standard Dia), Dual Packer, 2x Strain gauge and 2x Quartz gauge toolstring run in the hole. Acquired 24 pretests (XLarge D), 20 valid, 2 supercharged, 2 tight. Acquired 1 dual packer Kv/Kh measurement (Standard D). Attempted 1 dual packer XLOT measurement (Standard D) however formation failed to leak off after 3 attempts to pressure up and maximum 45min station time met. XLOT aborted.
4	VSI	14.0	2430.0	n/a	n/a	Data was acquired at a total of 31 levels including ground level and total depth. A total of 7 stations were shot while running in the hole which were repeated while pulling out of the hole to check for drift. Note: the tool was incorrectly zeroed prior to running in which resulted in the 7

Run #	Tool String	Log From Depth (m)	Log To Depth (m)	Repeat From Depth (m)	Repeat To Depth (m)	Comments
						shots acquired while running in being 16.2m shallower than intended. The tool zero was corrected at TD. All reported depths are accurate.

In general, good quality data was acquired for the well and lessons learned on the previous well, particularly with respect to crew resourcing, did not arise at West Moonie-2. Full, 24-hour coverage of all crew positions including the wireline engineer was available on location throughout the job.

One area of concern was the use of a 'partially' seasoned cable for the job. Few deep wells had been logged utilising the cable deployed to site and on the first run in the hole it became evident below approximately 1000m that the cable appeared significantly "less used". This had the potential to give rise to depth discrepancies between runs as the cable became more "seasoned". This was mitigated by conducting more corelation runs than would normally be run on subsequent runs in the hole.

A Composite Well Log is included as Enclosure 2 and detailed petrophysical analysis of the acquired data is included in Appendix 19.

4.6.1 Pressure Data

As noted above, a single run in the hole with a MDT Dual Probe Dual Packer toolstring was completed. The primary aim of the pressure survey was to assess the pressure regime present in the Precipice Sandstone and compare that to the regime present in the overlying Evergreen Formation and Hutton Sandstone. This data will be used for detailed assessment of the containment potential of the Precipice Sandstone for GHG storage.

A total of 24 formation pressure tests were attempted with 20 valid measurements obtained Table 4-18 to Table 4-20). Of the remaining tests, 2 were tight tests and 2 were super charged. The pressure data is summarised in Table 4-18 below and a plot of the interpreted pressure gradients is presented in Figure 4-2.

To assist in detailed reservoir characterisation of the Precipice Sandstone a Kv/Kh measure measurement was made utilising the Dual Packers.

A preliminary interpretation of the MDT survey data is included in Appendix 19.

An attempt to acquired extended leak off test data was also made utilising the Dual Packers. Three attempts to pressure up the formation to leak off were made without success and the test was aborted as the considered safe maximum time for packer deployment had been reached.

Table 4-18 Formation Pressure Survey Data

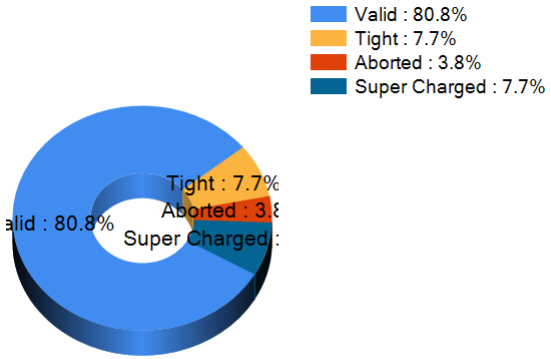
General Well Data		Logging Data	
Well Name	West Moonie-2	**Service Company**	Schlumberger
Field	West Moonie	**Logging Suite #**	1
Permit	EPQ10	**Run Number**	3
Latitude	027° 49' 48.715" South	**Run Date**	19-Jul-2021
Longitude	149° 57' 28.679" East	**Tool Type**	MDT-GR Dual Packer
Easting (m)	200,352.070m E	**Probe Type**	1 x XLarge Diameter and 1 x Standard Diameter
Northing (m)	6,917,891.240m S	**Probe Diameter**	13.0 and 9.0 (mm) respectively
Primary Objective	Precipice Sandstone	**Quartz Gauge Type**	BQP1 primary
Rig Elevation	247.2 (m)	**Tool Configuration**	MDT-GR Dual Packer Dual Probe
Mud Type	KCl Polymer	**Engineers**	L. Delange, P. Lima
Mud Weight	9.0 (ppg)	**Witnesses**	M. Lawrence
Hole Size	8.500 (in)	**Total Depth (Lgr)**	2449.3 (m)

Table 4-19 Formation Pressure Survey Data

Pretest #	Pretest Depth MD (m)	Pretest Depth TVDMSL (m)	Hydro Before (psia)	Draw Down Vol (cm3)	Final Pressure (psia)	Gauge Temp (degC)	Hydro After (psia)	Mobility (mD/cP)	Result	Comments
1	2013.0	1737.6	3085.1	5.00	2908.9	69.3	3085.1	52.5	Valid	XLarge Diameter Probe
2	2030.7	1755.3	3112.8	5.00	2933.5	69.2	3112.8	74.8	Valid	XLarge Diameter Probe
3	2051.5	1776.1	3145.1	5.00	2962.2	69.4	3145.1	102.6	Valid	XLarge Diameter Probe
4	2059.3	1783.9	3157.3	5.00	2973.4	69.7	3157.4	5.4	Valid	XLarge Diameter Probe
5	2121.9	1846.5	3254.2	5.00	3061.5	72.3	3254.2	335.9	Valid	XLarge Diameter Probe
6	2123.3	1847.9	3256.4	5.00	3063.4	71.9	3256.4	503.9	Valid	XLarge Diameter Probe
7	2188.7	1913.2	3356.6	10.00	3173.8	72.5	3356.7	0.8	Super Charged	XLarge Diameter Probe
8	2194.9	1919.4	3366.2	5.00	3175.8	72.9	3366.3	12.9	Super Charged	XLarge Diameter Probe
9	2259.5	1984.0	3464.4	5.00	3196.5	74.8	3464.5	8.2	Valid	XLarge Diameter Probe
10	2270.0	1994.5	3480.6	5.00	3210.9	74.8	3480.6	40.8	Valid	XLarge Diameter Probe
11	2277.7	2002.2	3492.4	5.00		75.0	3492.5		Tight	Pulled, XLarge Diameter Probe
12	2277.4	2001.9	3492.0	5.00		75.1	3492.5		Tight	Reset, XLarge Diameter Probe
13	2292.8	2017.3	3515.4	5.00	3162.9	75.2	3515.5	9.7	Valid	XLarge Diameter Probe
14	2299.6	2024.1	3525.9	5.00	3170.5	75.4	3526.1	71.5	Valid	XLarge Diameter Probe
15	2302.4	2026.9	3530.4	5.00	3173.2	75.6	3530.5	20.9	Valid	XLarge Diameter Probe
16	2308.5	2033.0	3539.7	5.00	3190.1	75.8	3539.9	3.4	Valid	XLarge Diameter Probe
17	2316.9	2041.4	3553.0	5.00	3192.0	76.2	3553.0	24.9	Valid	XLarge Diameter Probe
18	2320.5	2045.0	3558.5	5.00	3196.6	76.1	3558.6	176.1	Valid	XLarge Diameter Probe
19	2327.7	2052.2	3569.5	5.00	3206.4	76.1	3569.6	174.8	Valid	XLarge Diameter Probe
20	2335.3	2059.8	3581.1	5.00	3216.9	76.1	3581.2	826.7	Valid	XLarge Diameter Probe
21	2343.2	2067.7	3593.3	5.00	3228.0	76.3	3593.4	782.4	Valid	XLarge Diameter Probe
22	2346.6	2071.1	3598.5	5.00	3233.0	76.3	3598.7	457.9	Valid	XLarge Diameter Probe
23	2356.2	2080.7	3613.2	5.00	3246.2	76.5	3613.4	1377.1	Valid	XLarge Diameter Probe
24	2360.5	2085.0	3619.8	5.00	3252.3	76.6	3252.3	1054.8	Valid	XLarge Diameter Probe
25	2344.6	2069.1	3597.7	5.00	3231.9	75.1	3599.5	724.5	Valid	Dual Packer - Upper Probe Kv/Kh pretest Dual Packer 2346-2347mMD. Strd Probe utilised
26	2130.5	1855.0	3267.8			72.2	3261.0		Aborted	Dual Packer XLOT test. Pressured up 3 times, formation failed to leak off, test aborted. Strd Probe utilised.

Table 4-20 Formation Pressure Survey Summary

Run/Tools	Valid	Tight	Dry	Seal Failure	Aborted	Super Charged	Unstable	Total
3 - MDT (Dual Packer, Dual Probe)	21.00	2.00	0.00	0.00	1.00	2.00	0.00	26.00
Total	21.00	2.00	0.00	0.00	1.00	2.00	0.00	26.00



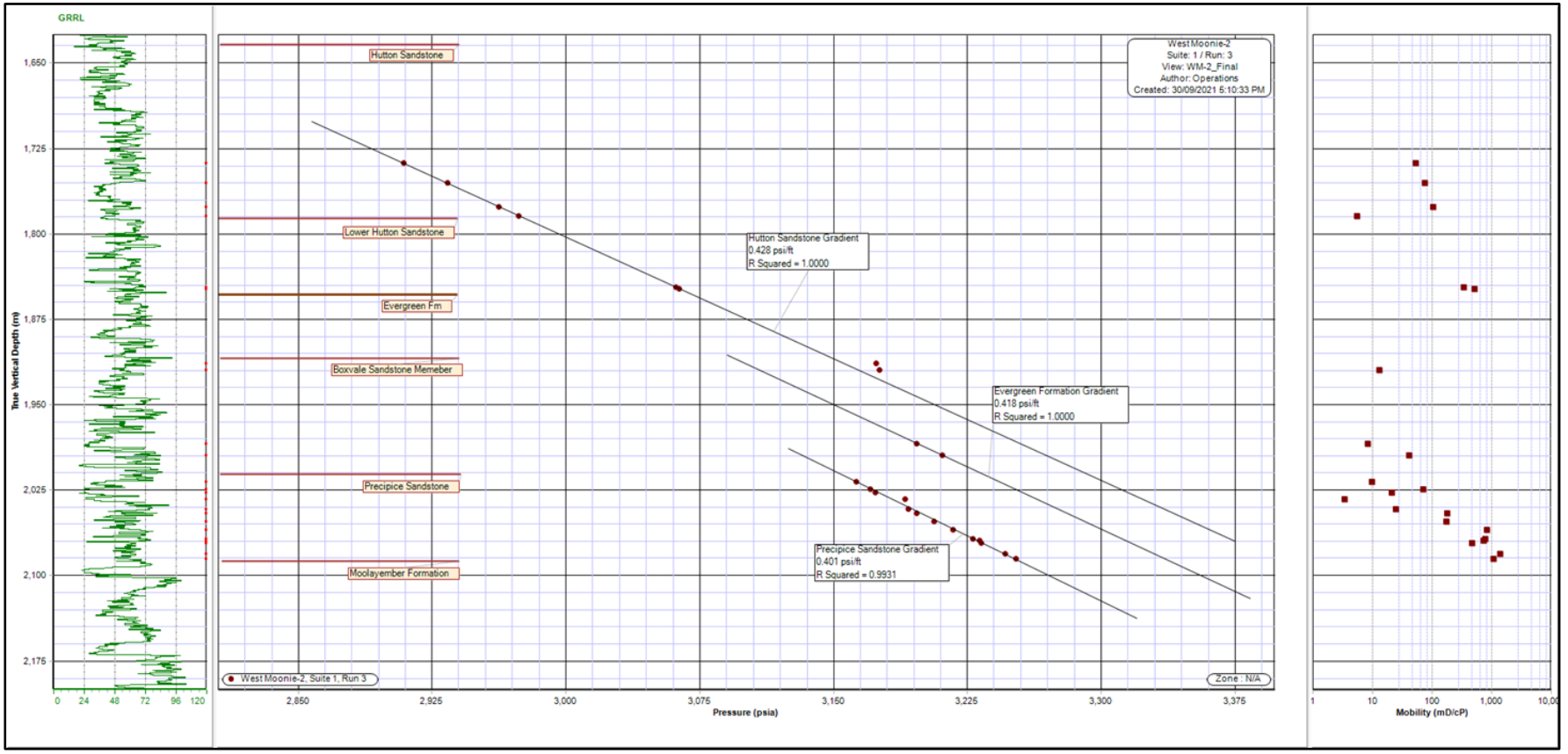


Figure 4-2 Pressure Survey Gradient Plot

4.6.2 Temperature Data

Maximum bottom hole temperatures were recorded for each run utilising the cable head temperature sensor, Table 4-21. A standard thermometer carrier was not included in any of the tool stings run at West Moonie-2.

An extrapolated bottom hole temperature was calculated and normalised using a Horner plot Table 4-22 and Figure 4-3.

Table 4-21 Hole Data

Hole Data					
Hole Size	8.5 (in)			**Max Hole Dev**	20.0 (°)
Driller's Depth	2450.0 (m)	**Surface Temp**	20.0 (degC)	**Max Dev Depth**	326.0 (m)
Logger's Depth	2449.3 (m)	**Max BHT**	76.6 (degC)	**Survey Type**	Open hole

Table 4-22 Horner Plot Data

Horner Plot Data					
Date of Mud Check	18 Jul 2021	**Date/Time Circ. Stopped**	17-Jul-2021 20:00	**Circ. Time (Tx)**	2.50 (h)

Run #	**Tool String**	**Max BHT (degC)**	**BHT Depth (m)**	**Logger on Bottom**	**Elapsed Time (T) (h)**	**T / (Tx + T)**
1	FMI-SScan-PPC-HRLA-PEX-HNGS-SPGR	74.56	2413.3	18-Jul-2021 17:15	21.25	0.8947
2	CMR-GR	74.56	2431.4	19-Jul-2021 02:19	30.32	0.9238
3	MDT	76.59	2380.0	19-Jul-2021 13:55	41.92	0.9437
4	VSI	76.45	2413.0	20-Jul-2021 13:30	65.50	0.9632

Table 4-23 Extrapolated BHT Data

Extrapolated BHT Data	
Horner BHT (degC)	**Horner Modified BHT** (degC)
77.74	80.0

- Extrapolated temperature at top of Upper Precipice Sandstone (2259 mTVD) = 75.85 deg C
- Extrapolated Temperature at base Precipice Sandstone (Base Jurassic Unconformity) (2334 mTVD = 77.7 deg C

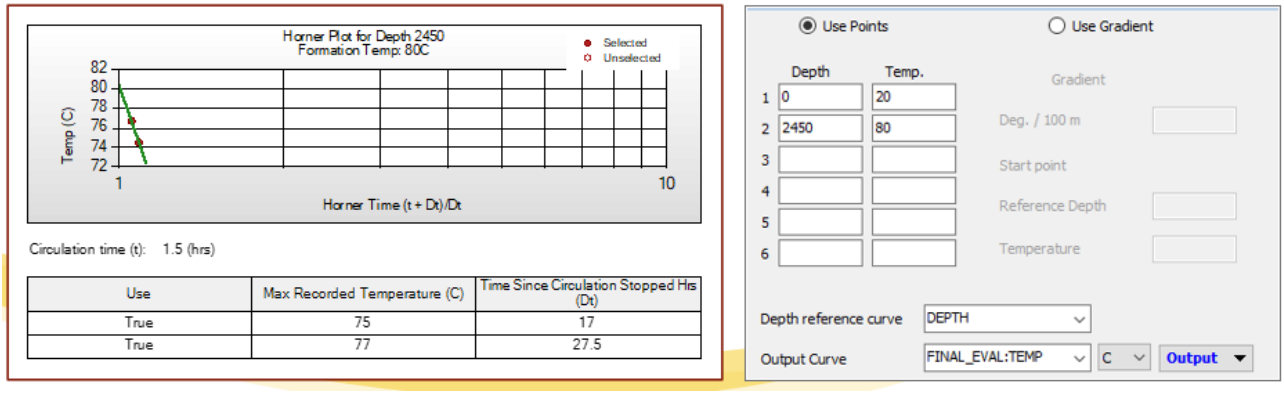


Figure 4-3 Horner Temperature Extrapolation

4.6.3 Velocity Survey

A velocity survey was conducted as part of the wireline logging operations. This survey utilised a mini vibrator as the energy source and a single, gimballed downhole geophone on the wireline. Full details of the acquisition parameters are held by CTSCo. In summary, 31 levels were acquired with 7 stations acquired while running in the hole repeated while pulling out of the hole. Generally, 3 to 4 sweeps were adequate for good first break definition while running in the hole though better signal to noise ratio was obtained with 5 sweeps so 5 sweeps were used while pulling out of the hole acquiring data. Also noteworthy was that X:Y data was of good quality whereas Z data was nearly always noisy.

A wavefield plot for the checkshots is presented in Figure 4-4 below.

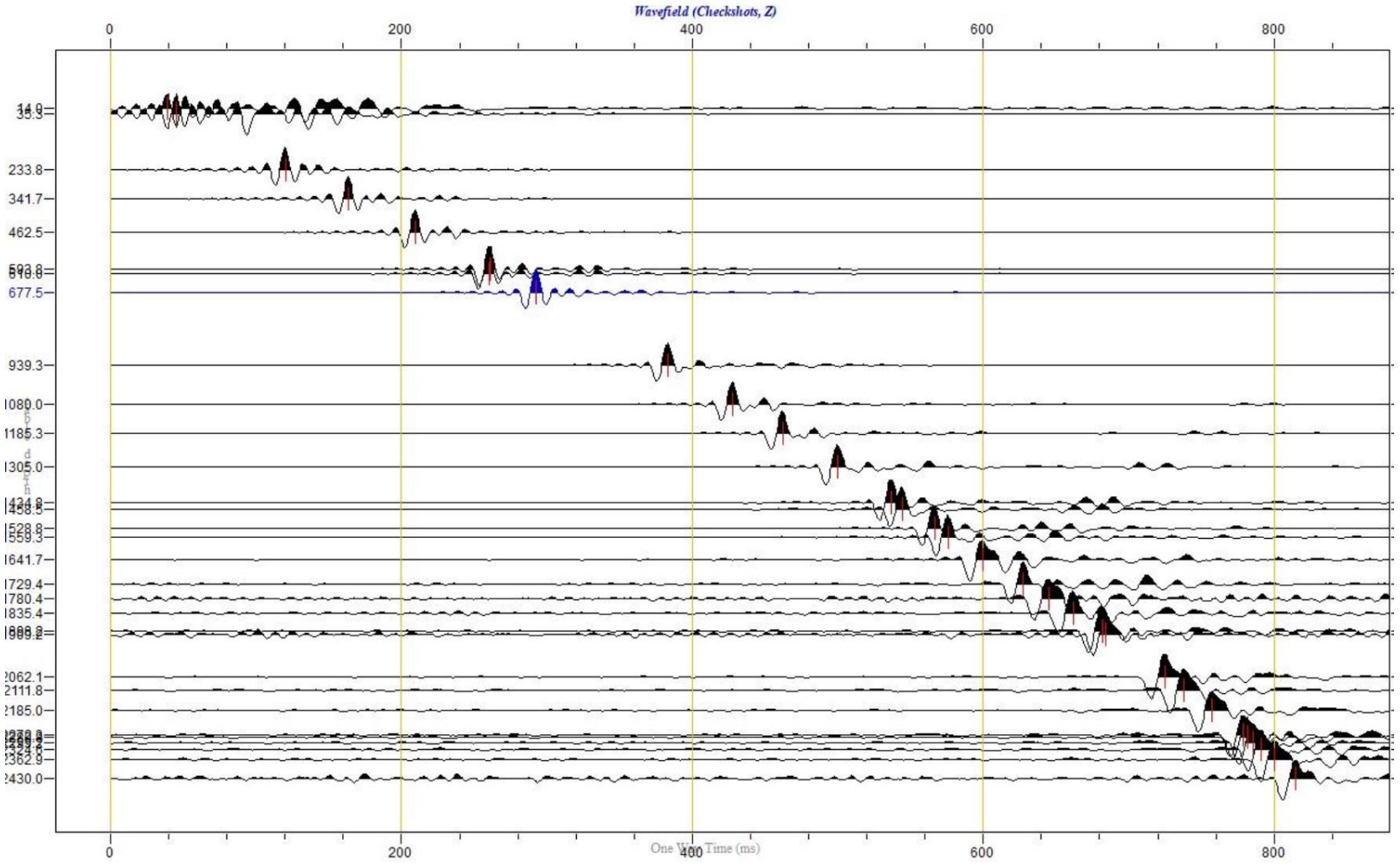


Figure 4-4 Checkshot Survey Wavefield

4.6.4 Problem Operations

The following summarises operations that impacted either the efficiency with which operations were conducted or events that had a significant impact on the quality or cost of the data acquired. In short, these are situations or operations that provide opportunities for improvement in future operations.

Table 4-24 Summary of Problem Operations

Primary	Main	Well	Drilling	Geological
Mechanical Down-Hole	Tool Failure	West Moonie-2	1	0
Mechanical Surface	Pumps	West Moonie-2	1	0
Mudlogging	Equipment	West Moonie-2	0	1
	Software issues	West Moonie-2	0	1
	Support	West Moonie-2	0	1
Sample Cuttings	Lost / Missed sample	West Moonie-2	0	1
	Sample Quality	West Moonie-2	0	1
Wireline Logging	Equipment	West Moonie-2	0	1
	New Technology/Tools	West Moonie-2	0	1
	Procedure	West Moonie-2	0	1
	Tool Failure	West Moonie-2	0	1
Grand Total			**2**	**9**

Drilling
Mechanical Down-Hole
Tool Failure

Problem Date:	06 Jul 2021
Problem Depth:	701.00 (m)
Problem Description:	Pulse detection lost from MWD-LWD tools while drilling ahead.
Immediate Cause:	Drill cuttings clogged turbine in pulser unit.
Root Cause:	Poor hole cleaning due to intermittent pump issues resulted in a build up of cuttings in the pulser unit that impeded operation of the turbine impeller.
Solution Applied:	POH and removed and replaced MWD probe with back up.
Impact on Operations:	Serious
Follow Up Required:	No

Mechanical Surface
Pumps

Problem Date:	04 Jul 2021
Problem Depth:	1000.00 (m)
Problem Description:	Intermittent rig pump failures from 1000mMD to ~1400mMD resulted in reduced sample quality and hazardous walking path to shaker screens.
Immediate Cause:	Connection leaks around pumps.
Root Cause:	Poor pump maintenance.
Solution Applied:	Investigate issues and tighten connections.
Impact on Operations:	Minor
Follow Up Required:	No

Geological
Mudlogging
Equipment

Problem Date:	01 Jul 2021
Problem Depth:	12.00 (m)
Problem Description:	Mudlogging crew arrived onsite 9 1/2 hrs after the well was spudded. All samples collected from surface to 200mMD were collected by the wellsite geologist and were unlagged, collected on depth only. Sample intervals for cuttings from surface to 200mMD are therefore unreliable. No drill gas monitored from surface to 200mMD.
Immediate Cause:	Crew out of hours on arrival in Roma after overnight travel from Perth via Brisbane from 29th June to 30th June.
Root Cause:	Poor communication with Geoservices point of contact. Failed to discuss detailed mobilisation plan for WA based crew that would have allowed crew to arrive onsite with sufficient time to ensure equipment fully operational and provide service as contracted prior to spud.
Solution Applied:	Wellsite geologist collected samples based on depth only. Intervals unreliable. Rig functions data extracted from the rig NOV system and merged with Geoservices database once unit fully rigged up.
Impact on Operations:	Serious
Follow Up Required:	No

Software issues

Problem Date:	06 Jul 2021
Problem Depth:	250.00 (m)
Problem Description:	Torque data and Gas Data extracted from the Geoservices database was incorrect. Data acquired was accurate but whenever extracted from the database in csv or text files resulted in incorrect data.
Immediate Cause:	Inappropriate templates applied during extraction process resulting application of incorrect coefficients being applied to data fields selected for extraction.
Root Cause:	Old ALS3B software package deployed. This software is in excess of 15 years old and has been superseded by 2 newer versions. Crew unfamiliar with the old software as they mainly work offshore with modern systems and equipment. Workflow utilised for data extraction was very inefficient and also unfamiliar to crew. Geoservices pricing strategy provides for low-cost base level service by providing obsolete equipment.
Solution Applied:	Service centre remote support (India service centre) required over very poor communications links to talk crew through discovery of issues and rectifying faults including reconfiguring extraction templates. No support available in Australia and the quality of the service was also very poor with the resolution of the problems taking several days and numerous follow up contacts, all while trying to monitor and capture data while drilling ahead.
Impact on Operations:	Critical
Follow Up Required:	No

Support

Problem Date:	08 Jul 2021
Problem Depth:	850.00 (m)
Problem Description:	Inconsistent advice for rectifying software and training issues.
Immediate Cause:	No local support available for troubleshooting software and training issues.
Root Cause:	Very poor support for Australian operations with no equipment or software support personnel (technicians) available in Australia.
Solution Applied:	Attempt to liaise with Indian support centres that have little detailed knowledge of the service type and conditions prevailing in Australian remote operations. A long and inefficient process for solving field issues.
Impact on Operations:	Serious
Follow Up Required:	No

Sample Cuttings

Lost / Missed sample

Problem Date:	13 Jul 2021
Problem Depth:	2100.00 (m)
Problem Description:	Rate of penetration precluded safe and consistent cuttings sampling at the required 3m sample interval.
Immediate Cause:	Instantaneous ROP too fast for 3m sample intervals as required in the sampling plan with insufficient time between sample intervals for a one-man service to: collect, process, and catalogue the samples while also maintaining oversight of rig drilling functions and capturing the required data sets.
Root Cause:	During well planning it appears only the average ROP per hour was considered when setting the sampling interval. This parameter is unsuitable for this purpose. The relevant parameter for assessing the maximum safe sampling rate should be instantaneous ROP. With the absence of safe walkways through constantly wet, muddy, slippery ground to the shakers (from both rainfall and leaking/pump maintenance) and instantaneous ROP frequently exceeding 25m/hr, 4 to 5 samples per hour was considered the maximum safe collection rate.
Solution Applied:	The requirement for 3m sample intervals was abandoned and a 5m sample interval was adopted.
Impact on Operations:	Serious
Follow Up Required:	No

Sample Quality

Problem Date:	07 Jul 2021
Problem Depth:	1520.00 (m)
Problem Description:	Poor quality sample obtained from 1520m to 1540mMD.
Immediate Cause:	Drilling fluid flooding over shakers washed material off sample collection board.
Root Cause:	Highly gelled mud failed to pass through shakers screens rapidly enough.
Solution Applied:	Changed out screens to larger size and diluted drilling fluid in possum belly.
Impact on Operations:	Minor
Follow Up Required:	No

Wireline Logging

Equipment

Problem Date:	18 Jul 2021
Problem Depth:	0.00 (m)
Problem Description:	During the first run in the hole it became obvious the wireline cable showed distinctly different use characteristics for the section from surface to approximately 1000mMD compared to the section from section 1000mMD to 2450mMD. It appeared the cable could only be classified as "seasoned" for the interval 0-1000mMD. This suggests the potential for depth inconsistencies between runs through the interval 1000mMD to 2450mMD.
Immediate Cause:	The wireline cable drum had a history of being deployed on relatively shallow wells elsewhere in the Surat Basin and had been deployed on very few deep wells.
Root Cause:	Possible planning oversight where a fully seasoned cable for the entire anticipated total depth of the well should have been specified for the job.
Solution Applied:	On subsequent runs in the hole more frequent correlation checks and depth corrections were considered necessary and completed. All depth corrections were logged. It could be argued that at least some of the time taken for correlation and depth corrections should be re-assigned as invisible lost time.
Impact on Operations:	Serious
Follow Up Required:	No

New Technology/Tools

Problem Date:	19 Jul 2021
Problem Depth:	2130.00 (m)
Problem Description:	After attempting an XLOT test over the interval 2130-2131mMD the packers became stuck in the hole.
Immediate Cause:	Packers pulled out of the hole distorted indicating packer elements may have failed to deflate completely prior to attempting to pull free after test.
Root Cause:	As the annular clearance between the packer elements and in gauge hole is quite small there is elevated risk of retrieving the toolstring should the packer elements sustain damage during the testing operation.
Solution Applied:	It would be prudent to consider the use of Schlumberger's Saturn Packer element. This tool allows similar testing options but with less risk of getting stuck in the hole. Downside elements are high cost of the tool and reduced depth of investigation compared to Dual Packer toolstring.
Impact on Operations:	Suggestion
Follow Up Required:	No

Procedure

Problem Date:	20 Jul 2021
Problem Depth:	232.00 (m)
Problem Description:	On reaching TD after RIH with the VSI tool acquiring repeat checkshot levels to TD, correlation confirmed the tool zero had been incorrectly set resulting in all checkshots acquired while running in the hole (Shots 2 to 8) being acquired 16.2m shallow to actual requested depth.
Immediate Cause:	Wireline Engineer incorrectly entered the tool zero point for the VSI toolstring.
Root Cause:	Wireline Engineer assumed an incorrect zero point and was unaware of how the software utilised that point as a reference for acquired data.
Solution Applied:	All intended repeat levels acquired while logging out of the hole were adjusted to match the depth acquired while running in the hole. As the error was noted prior to the main data acquisition set only the repeat stations needed to be adjust causing no major issues.
Impact on Operations:	Minor
Follow Up Required:	No

Tool Failure

Problem Date:	02 Oct 2021
Problem Depth:	183.00 (m)
Problem Description:	GR failed to record while logging up through casing from 183m to surface.
Immediate Cause:	Signal appeared to drop out while logging up prior to pulling out of the hole.
Root Cause:	Unclear root cause, software switch suspected to be at fault.
Solution Applied:	Continued to log out of hole and decided to splice GR over the interval 183m to surface from the second run in the hole (CMR-GR).
Impact on Operations:	Minor
Follow Up Required:	No

5. Geology

5.1 Reasons for Drilling

West Moonie-2 was drilled to continue the evaluation of the potential of the Precipice Sandstone for demonstration-scale sequestration of supercritical carbon dioxide and the long-term storage of GHG in the Precipice Sandstone commenced with the drilling of West Moonie-1 in 2020.

The primary objectives for the West Moonie-2 well were to evaluate the ultimate seal of the storage reservoir by cutting a core in the upper Evergreen Formation and to appraise the reservoir quality of the Precipice Sandstone storage reservoir.

An extensive petrophysical data acquisition programme was completed together with a substantial formation pressure survey as part of the Precipice Sandstone reservoir appraisal objective.

The well was completed for future monitoring the GHG stream injection in the adjacent West Moonie-1 well drilled in 2020. The well was also designed to allow for the option of using it as an injection well, using premium casing and premium cement across future CO_2 injection zones.

5.2 Stratigraphic Prognosis

The stratigraphic prognosis for West Moonie-2 was derived primarily from the results of drilling West Moonie-1. Given the close proximity of the well it is unsurprising that the stratigraphic sequence penetrated agreed well with the predicted section.

As may be seen from

Table 5-1 below, formation boundaries/markers were intersected within +/- 9m of the pre-drill predicted depth. Even so, this variation demonstrates the difficulty in being too prescriptive when setting criteria for operations such as casing points and core points without the additional benefit of real time log data.

At West Moonie-2 it would have been very difficult to meet the coring criteria of cutting the core across the interface of the Lower Hutton Sandstone and the Evergreen Formation with a single 9 metre core without the benefit of the LWD Gamma Ray tool data. Even with the benefit of this data the lateral variation in isopach thickness of the lithological units resulted in a core point that only met the primary objective of coring the uppermost Evergreen Formation and failed to recover any of the Lower Hutton Sandstone.

As drilling proceeded it was acknowledged that significant uncertainty remained in predicting formation boundaries ahead of the bit both because of the inherent isopach variation of the lithological units penetrated and because the gamma ray tool was located in the BHA some 22m behind the bit, increasing the uncertainty of predicted stratigraphy ahead of the bit.

That said, the inclusion of the LWD gamma ray tool in the BHA greatly assisted with the interpretation of the stratigraphy of the well as the section was drilled.

5.3 Stratigraphy

The stratigraphic section encountered in West Moonie-2 is tabulated in

Table 5-1 below. The litho-stratigraphic section penetrated is described below and is derived from the cuttings sample descriptions made at the wellsite which are included as Appendix 10.

There is no detailed field description of the core, however field photographs of the core are included as Appendix 11. A generalised Bowen / Surat stratigraphic column is provided as Figure 5-1.

Table 5-1 Formation tops

Formation Name	Predicted Depths			Actual Depths			Diff.TVT (m)	Picks Based On
	MD (m)	TVD (m)	TVD MSL (m)	MD (m)	TVD (m)	TVD MSL (m)		
Recent-Quaternary	4.2	4.2	-243.0	4.2	4.2	-243.0	0.0	Surveyed location and elevations.
Griman Creek Formation	26.0	26.0	-221.2	32.1	32.1	-215.1	6.1 Low	Cuttings and GR data
Surat Siltstone	334.0	328.0	80.8	332.9	327.4	80.2	0.6 High	Cuttings and Log Data
Wallumbilla Formation	459.0	445.0	197.8	458.5	445.7	198.5	0.7 Low	Cuttings and Log Data
Coreena Member	459.0	445.0	197.8	458.5	445.7	198.5	0.7 Low	Cuttings and Log Data
Doncaster Member	684.0	659.0	411.8	677.5	653.1	405.9	5.9 High	Cuttings and Log Data
Bungil Formation	758.0	732.0	484.8	753.1	726.5	479.3	5.5 High	Cuttings and Log Data
Mooga Sandstone	956.0	930.0	682.8	955.5	927.3	680.1	2.7 High	Cuttings and Log Data
Orallo Formation	1079.0	1053.0	805.8	1079.9	1051.7	804.5	1.3 High	Cuttings and Log Data
Gubberamunda Sandstone	1186.0	1160.0	912.8	1185.3	1157.1	909.9	2.9 High	Cuttings and Log Data
Westbourne Formation	1457.0	1431.0	1183.8	1458.5	1430.3	1183.1	0.7 High	Cuttings and Log Data
Springbok Sandstone	1555.0	1529.0	1281.8	1559.4	1531.1	1283.9	2.1 Low	Cuttings and Log Data
Walloon Coal Measures	1657.0	1631.0	1383.8	1657.9	1629.7	1382.5	1.3 High	Cuttings and Log Data
Juandah Coal Measures	1657.0	1631.0	1383.8	1657.9	1629.7	1382.5	1.3 High	Cuttings and Log Data
Tangalooma Sandstone	1786.0	1760.0	1512.8	1780.7	1752.5	1505.3	7.5 High	Cuttings and Log Data
Taroom Coal Measures	1838.0	1812.0	1564.8	1835.4	1807.2	1560.0	4.8 High	Cuttings and Log Data
Eurombah Formation	1892.0	1866.0	1618.8	1898.2	1870.0	1622.8	4.0 Low	Cuttings and Log Data
Hutton Sandstone	1912.0	1886.0	1638.8	1909.1	1880.8	1633.6	5.2 High	Cuttings and Log Data
Lower Hutton Sandstone	2060.0	2034.0	1786.8	2062.1	2033.8	1786.6	0.2 High	Cuttings and Log Data
Evergreen Formation	2131.0	2104.7	1857.5	2128.4	2100.1	1852.9	4.5 High	Cuttings and Log Data
Boxvale Sandstone Member	2179.0	2153.0	1905.8	2184.6	2156.4	1909.2	3.4 Low	Cuttings and Log Data
Precipice Sandstone	2281.0	2254.0	2006.8	2287.5	2259.3	2012.1	5.3 Low	Cuttings and Log Data
Lower Precipice Sandstone	2288.0	2261.0	2013.8	2298.2	2269.9	2022.7	8.9 Low	Cuttings and Log Data
Moolayember Formation	2366.0	2340.0	2092.8	2362.9	2334.6	2087.4	5.4 High	Cuttings and Log Data

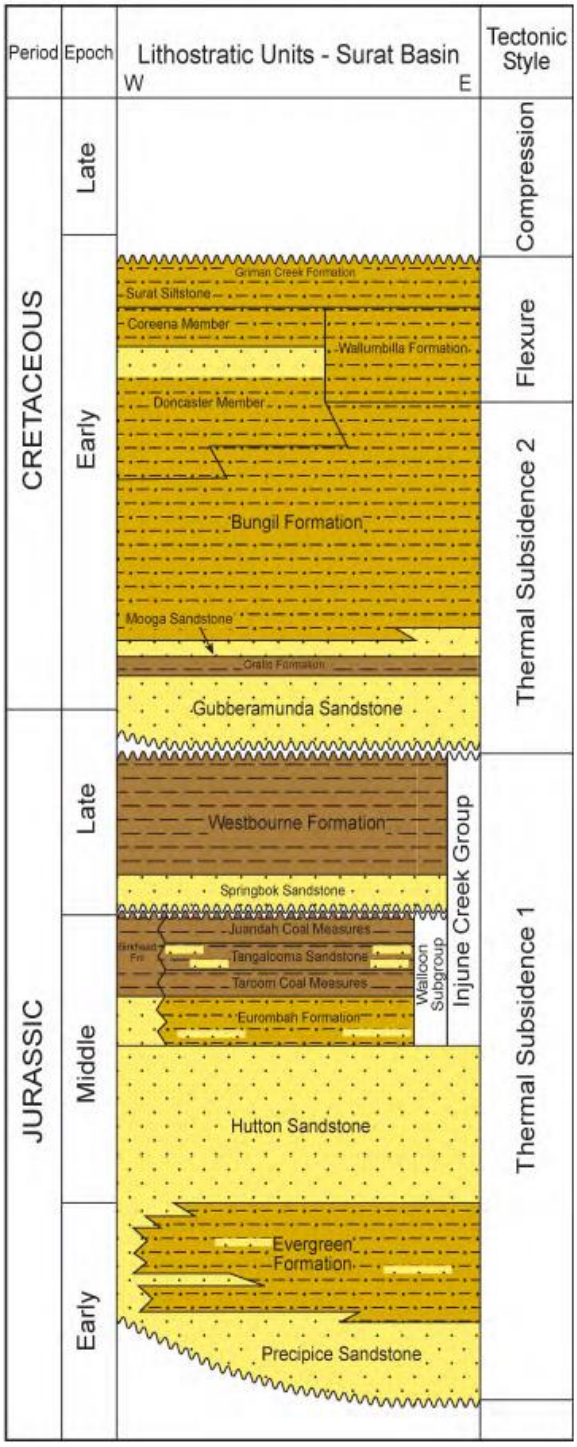


Figure 5-1 Surat Basin Stratigraphy

5.3.1 Litho-Stratigraphic Units Penetrated

Recent-Quaternary: 4.2 - 32.1 m MDRT (+243.1 - +215.0 m TVDSS, 28.1 m thick)

Interval	12.0 to 26.0 m MDRT	**ROP (Range)**	2.4 to 11.3 m/h	**Average ROP**	4.9 (m/h)

Sandstone with thin Silty Claystone interbeds.

SILTY CLAYSTONE: (5 - 45%) Dark yellowish orange to moderate reddish brown, firm to moderately hard, sub blocky, commonly silty, commonly limonitic, iron stained.

SANDSTONE: (55 - 95%) Grayish orange pink, fine to medium, occasionally coarse grained, poorly sorted, sub angular, poorly sorted, elongated, quartzose, occasional lithic grains, trace siliceous cement, trace clay matrix, excellent porosity.

Interval	26.0 to 32.1 m MDRT	**ROP (Range)**	1.3 to 72.9 m/h	**Average ROP**	48.6 (m/h)

Claystone with thin stringers of Sandstone.

CLAYSTONE: (80 - 90%) Grayish orange to very pale orange, soft, dispersive.

SANDSTONE: (10 - 20%) Pale yellowish brown, very fine to fine grained occasionally medium grained, subangular, poor to moderate sorting, slightly elongated, quartzose, common lithic grains, slight siliceous cement, clay matrix, good porosity.

Griman Creek Formation: 32.1 - 332.9 m MDRT (+215.0 - 80.2 m TVDSS, 295.2 m thick)

Interval	32.1 to 140.0 m MDRT	**ROP (Range)**	1.5 to 81.2 m/h	**Average ROP**	51.3 (m/h)

Interbedded Sandstone and Clayey Siltstone with thin stringers of low rank coal.

SANDSTONE: (30 - 70%) Very light gray to light gray, pale yellowish brown in parts, very fine to fine grained, well sorted, subangular, slightly elongated, quartzose, feldspathic, occasional glauconie, lithic grains, occasionally carbonaceous fragments, siliceous cement, fair porosity.

CLAYEY SILTSTONE: (30 - 100%) Light olive gray to pale yellowish brown, soft to firm, sub blocky.

SILTSTONE: (30 - 100%) Light gray, sub blocky, firm to moderately hard, micromicaceous in parts, rare carbonaceous fragments.

COAL: (0 - 10%) Grayish black to black, brittle, angular to sub conchoidal fracture, grades to low rank carbonaceous siltstone in parts.

Interval	140.0 to 250.0 m MDRT	**ROP (Range)**	1.5 to 74.4 m/h	**Average ROP**	47.4 (m/h)

Interbedded Sandstone, Claystone and Siltstone.

SANDSTONE: (40 - 50%) Light gray to light olive gray, very fine grained, grades to siltstone in part, well sorted, sub angular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, common clay matrix, fair porosity.

SILTSTONE: (60 - 70%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie

SILTY CLAYSTONE: (20 - 50%) Pale brown, moderately hard, sub blocky, silty in part.

CLAYSTONE: (20 - 50%) Medium dark gray, sub blocky, firm to moderately hard.

Interval	250.0 to 332.9 m MDRT	**ROP (Range)**	1.2 to 80.9 m/h	**Average ROP**	44.4 (m/h)

Interbedded Claystone and Sandstone with thin Siltstone interbeds.

CLAYSTONE: (10 - 70%) Medium dark gray, sub blocky, firm to moderately hard, occasional carbonaceous inclusions.

SANDSTONE: (20 - 70%) Light gray to light olive gray, very fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments, trace lithic grains, trace glauconie, common clay matrix, fair porosity

SILTSTONE: (10 - 50%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie.

Surat Siltstone: 332.9 - 458.5 m MDRT (80.2 – 198.4 m TVDSS, 118.2 m thick)

Interval	332.9 to 400.0 m MDRT	**ROP (Range)**	5.8 to 75.9 m/h	**Average ROP**	44.5 (m/h)

Siltstone with interbeds of Claystone and Sandstone

SILTSTONE: (20 - 70%) Light olive gray to medium grey, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie.

CLAYSTONE: (10 - 60%) Medium dark gray, sub blocky, firm to moderately hard, occasional carbonaceous inclusions.

SANDSTONE: (10 - 40%) Light gray to light olive gray, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments, common lithic grains, common clay matrix, fair porosity.

Interval	400.0 to 458.5 m MDRT	**ROP (Range)**	9.0 to 82.7 m/h	**Average ROP**	44.5 (m/h)

Interbedded Siltstone and Sandstone with thin interbeds of Claystone and stringers of Coal

SILTSTONE: (20 - 70%) Light olive gray, quartzose feldspathic, friable, common carbonaceous fragments, trace lithic grains, trace glauconie, grades to very fine grained sandstone in parts.

SANDSTONE: (15 - 60%) Light gray to light olive gray, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly elongate to slightly spherical, quartzose feldspathic, friable, occasional glauconie, common carbonaceous fragments and partings, trace lithic grains, common clay matrix, fair porosity

CLAYSTONE: (10 - 40%) Medium dark gray to olive gray, sub blocky, soft to firm occasionally moderately hard.

COAL: (5 - 5%) Grayish black to black, angular fracture, brittle, grades to low rank carbonaceous siltstone in parts.

Wallumbilla Formation: 458.5 - 753.1 m MDRT (198.4 – 479.3 m TVDSS, 280.9 m thick)

Coreena Member: 458.5 - 677.5 m MDRT (198.4 – 405.9 m TVDSS, 207.5 m thick)

Interval	458.5 to 540.0 m MDRT	**ROP (Range)**	14.5 to 68.6 m/h	**Average ROP**	43.4 (m/h)

Interbedded Claystone and Siltstone with occasional interbeds of Sandstone.

CLAYSTONE: (20 - 60%) Medium dark gray to olive gray, sub blocky firm to moderately hard.

SILTSTONE: (20 - 60%) Light olive gray, quartzose feldspathic, firm, occasionally friable, occasional carbonaceous fragments, trace lithic grains, trace to common glauconie, grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 40%) Light olive gray, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, occasional glauconie, trace lithic grains, trace calcareous cement, siliceous cement, clay matrix, fair porosity.

Interval	540.0 to 667.5 m MDRT	**ROP (Range)**	6.2 to 54.7 m/h	**Average ROP**	37.4 (m/h)

Claystone with thin interbeds of Sandstone and Siltstone.

CLAYSTONE: (40 - 90%) Medium gray to olive gray, brownish gray in part, sub blocky firm to moderately hard micromicaeous.

SANDSTONE: (5 - 40%) Olive gray to brownish grey, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, occasional glauconie, lithic grains, common carbonaceous fragments, trace pyrite, siliceous cement, trace clay matrix, fair porosity.

SILTSTONE: (10 - 30%) Olive gray, brownish gray in part, quartzose feldspathic, firm, lithic grains, trace glauconie, common carbonaceous fragments and lamellae, grades to very fine grained sandstone in parts.

Interval	667. to 677.5 m MDRT	**ROP (Range)**	35.8 to 48.0 m/h	**Average ROP**	42.0 (m/h)

Claystone with thin interbeds of Sandstone and Siltstone.

CLAYSTONE: (70%) Medium gray to olive gray, brownish gray in part, sub blocky firm to moderately hard micromicaeous.

SANDSTONE: (20%) Olive gray to brownish grey, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, occasional glauconie, lithic grains, common carbonaceous fragments, trace pyrite, siliceous cement, trace clay matrix, fair porosity.

SILTSTONE: (10%) Olive gray, brownish gray in part, quartzose feldspathic, firm, lithic grains, trace glauconie, common carbonaceous fragments and lamellae, grades to very fine grained sandstone in parts.

Doncaster Member: 677.5 - 753.1 m MDRT (405.9 – 479.3 m TVDSS, 73.4 m thick)

Interval	677.5 to 753.1 m MDRT	**ROP (Range)**	9.1 to 58.8 m/h	**Average ROP**	36.4 (m/h)

Interbedded Siltstone and Sandstone with thin interbeds of Claystone.

SILTSTONE: (20 - 60%) Medium gray to olive gray, brownish gray in part, sub blocky firm to moderately hard micromicaeous.

SANDSTONE: (10 - 30%) Olive gray to brownish grey, very fine to fine grained, grades to siltstone in part, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, occasional glauconie, lithic grains, common carbonaceous fragments, trace pyrite, siliceous cement, trace clay matrix, fair porosity.

CLAYSTONE: (30 - 40%) Medium gray to olive gray, brownish gray in part, sub blocky firm to moderately hard micromicaeous.

Bungil Formation: 753.1 - 955.5 m MDRT (479.3 – 680.1 m TVDSS, 200.8 m thick)

Interval	753.1 to 870.0 m MDRT	**ROP (Range)**	9.5 to 76.0 m/h	**Average ROP**	43.4 (m/h)

Interbedded Claystone, Sandstone and Siltstone.

CLAYSTONE: (5 - 40%) Medium gray to olive gray, brownish gray in part, sub blocky firm to moderately hard, micromicaceous, occasional lithic grains included.

SANDSTONE: (20 - 90%) Olive gray to brownish grey, very fine to fine grained, well sorted, subangular to subrounded, slightly spherical, quartzose feldspathic, friable, rare glauconie, common lithic grains, common carbonaceous fragments, siliceous cement, trace clay matrix, fair porosity.

SILTSTONE: (5 - 50%) Medium gray to olive gray, occasionally dark yellowish brown in part, sub blocky firm to moderately hard, occasional glauconie, common carbonaceous fragments, occasional lithic grains included.

Interval	870.0 to 955.5 m MDRT	**ROP (Range)**	7.3 to 70.0 m/h	**Average ROP**	33.2 (m/h)

Interbedded Sandstone and Siltstone with thin stringers of Claystone.

SANDSTONE: (30 - 80%) Medium light gray to light olive gray, very fine to medium grained, poorly to moderately well sorted, subangular to sub rounded, slightly spherical, quartzose, trace lithic grains, occasional platy lignitic carbonaceous material, common clay matrix, fair to good porosity.

SILTSTONE: (20 - 50%) Medium light gray to light olive gray, soft, generally amorphous, quartzose, common lithic grains, common lignitic carbonaceous material, grades to very fine grained sandstone in parts.

CLAYSTONE: (20 - 25%) Brownish gray, firm, occasionally moderately hard, sub blocky.

Mooga Sandstone: 955.5 - 1079.9 m MDRT (680.1 – 804.5 m TVDSS, 124.4 m thick)

Interval	955.5 to 1010.0 m MDRT	**ROP (Range)**	12.3 to 63.2 m/h	**Average ROP**	43.3 (m/h)

Sandstone with thin interbeds of Siltstone and thin stringers of Claystone.

SANDSTONE: (30 - 80%) Medium light gray to light olive grey, clear, very fine to medium grained, occasionally coarse grained, poorly sorted, subangular, slightly elongated to slightly spherical, quartzose, feldspathic, occasional lithic grains and occasional glauconie, slight siliceous cement, common clay matrix, good porosity.

SILTSTONE: (10 - 40%) Light olive gray, commonly grades to very fine grained sandstone, sub blocky, friable in parts, occasional lithic inclusions.

CLAYSTONE: (10 - 30%) Brownish gray, sub blocky, firm to moderately hard, generally amorphous.

Interval	1010.0 to 1079.9 m MDRT	**ROP (Range)**	10.5 to 70.1 m/h	**Average ROP**	43.5 (m/h)

Sandstone with interbeds of Siltstone and Claystone

SANDSTONE: (20 - 100%) Very light gray to light olive grey, clear, very fine to medium grained, occasionally coarse grained, poorly sorted, subangular, slightly elongated to slightly spherical, quartzose, feldspathic, occasional lithic grains and occasional glauconie, slight siliceous cement, common clay matrix, good porosity.

CLAYSTONE: (20 - 80%) Pale brown to olive gray, carbonaceous partings and fragments, occasional lithic grains included, sub blocky, firm to moderately hard.

SILTSTONE: (10 - 40%) Light olive gray, commonly grades to very fine grained sandstone, sub blocky, friable in parts, occasional lithic inclusions, occasional glauconie grains.

Orallo Formation: 1079.9 - 1185.3 m MDRT (804.5 – 909.9 m TVDSS, 105.4 m thick)

Interval	1079.9 to 1185.3 m MDRT	**ROP (Range)**	7.1 to 89.3 m/h	**Average ROP**	41.4 (m/h)

Interbedded Sandstone and Claystone.

SANDSTONE: (20 - 90%) Very light gray to light gray, translucent, fine to coarse grained, predominantly medium to coarse grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, siliceous cement, fair porosity.

CLAYSTONE: (10 - 80%) Pale brown to olive gray, occasional carbonaceous partings and fragments, occasional lithic grains included, sub blocky, firm to moderately hard.

Gubberamunda Sandstone: 1185.3 - 1458.5 m MDRT (909.9 – 1183.1 m TVDSS, 273.2 m thick)

Interval	1185.3 to 1360.0 m MDRT	**ROP (Range)**	1.6 to 79.0 m/h	**Average ROP**	33.6 (m/h)

Sandstone with thin interbeds of Claystone.

SANDSTONE: (90 - 100%) Very light gray to light gray, translucent, fine to coarse grained, predominantly medium to coarse grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, siliceous cement, good porosity.

CLAYSTONE: (0 - 10%) Pale brown to olive gray, occasional carbonaceous partings and fragments, occasional lithic grains included, sub blocky, firm to moderately hard.

Interval	1360.0 to 1458.5 m MDRT	**ROP (Range)**	5.3 to 49.6 m/h	**Average ROP**	22.3 (m/h)

Sandstone with thin interbeds of Claystone.

SANDSTONE: (70 - 100%) Very light gray to light gray, translucent, fine to coarse grained, predominantly medium to coarse grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, siliceous cement, good porosity.

CLAYSTONE: (5 - 30%) Pale brown to olive gray, sub blocky, occasional carbonaceous partings and fragments, occasional lithic grains included, trace pyritic nodules, firm to moderately hard, grades to siltstone in parts.

Westbourne Formation: 1458.5 - 1559.4 m MDRT (1183.1 – 1283.9 m TVDSS, 100.8 m thick)

Interval	1458.5 to 1465.0 m MDRT	**ROP (Range)**	11.3 to 31.9 m/h	**Average ROP**	19.8 (m/h)

Siltstone with interbeds of Sandstone.

SILTSTONE: (70%) Light olive gray to olive gray, sub blocky, firm to moderately hard, carbonaceous fragments, lithic grains, micromicaeous, rare disseminated pyrite, grades to very fine grained sandstone in part.

SANDSTONE: (30%) Very light gray to light gray, translucent, fine to coarse grained, predominantly fine to medium grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, siliceous cement, good porosity.

Interval	1465.0 to 1542.0 m MDRT	**ROP (Range)**	4.9 to 65.1 m/h	**Average ROP**	28.0 (m/h)

Interbedded Sandstone and Siltstone.

SANDSTONE: (20 - 80%) Very light gray to light gray, translucent, fine to coarse grained, predominantly fine to medium grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, siliceous cement, good porosity.

SILTSTONE: (20 - 80%) Light olive gray to olive gray, sub blocky, firm to moderately hard, carbonaceous fragments, lithic grains, micromicaeous, rare disseminated pyrite, grades to very fine grained sandstone in part.

Interval	1545.0 to 1559.4 m MDRT	**ROP (Range)**	7.7 to 55.8 m/h	**Average ROP**	36.1 (m/h)

Interbedded Siltstone and Sandstone.

SILTSTONE: (60%) Light olive gray to olive gray, sub blocky, firm to moderately hard, carbonaceous fragments, lithic grains, micromicaeous, rare disseminated pyrite, grades to very fine grained sandstone in part.

SANDSTONE: (40%) Very light gray to light gray, translucent, fine to coarse grained, predominantly fine to medium grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, siliceous cement, good porosity.

Springbok Sandstone: 1559.4 – 1657.9 m MDRT (1283.9 – 1382.5 m TVDSS, 98.6 m thick)

Interval	1559.4 to 1658.0 m MDRT	**ROP (Range)**	18.4 to 145.8 m/h	**Average ROP**	75.9 (m/h)

Sandstone with interbeds of Siltstone

SANDSTONE: (20 - 100%) Very light gray to light gray, translucent, fine to medium grained, occasionally medium to coarse grained, sub rounded to subangular, moderately well sorted, slightly elongated, quartzose, occasional lithic grains, rare carbonaceous flecks, argillaceous matrix, siliceous cement, fair to good porosity.

SILTSTONE: (0 - 80%) Light olive gray to olive gray, sub blocky, firm to moderately hard, carbonaceous fragments, lithic grains, micaceous (muscovite?), rare disseminated pyrite, grades to very fine grained sandstone in part.

Juandah Coal Measures: 1657.9 - 1780.7 m MDRT (1382.5 – 1505.3 m TVDSS, 122.8 m thick)

Interval	1658.0 to 1780.7 m MDRT	**ROP (Range)**	7.8 to 111.6 m/h	**Average ROP**	36.0 (m/h)

Interbedded Claystone, Siltstone and Sandstone with thin interbeds of Coal.

CLAYSTONE: (30 - 60%) Brownish gray, sub blocky, brittle, moderately hard to hard,

SILTSTONE: (20 - 60%) Medium dark gray to olive gray, soft to firm, sub blocky, lithic grains included, carbonaceous fragments included in parts, grades to very fine grained sandstone in part.

SANDSTONE: (10 - 70%) Light gray to medium light gray, very fine to fine grained, moderately well sorted, sub angular slightly elongated, quartzose, common lithic grains, occasional carbonaceous fragments, slight calcareous cement, clay matrix, poor to fair porosity.

COAL: (5 - 40%) Dark gray to grayish black, sub fissile to angular, rarely sub conchoidal fracture, dull to resinous lustre, brittle, moderately hard.

Tangalooma Sandstone: 1780.7 - 1835.4 m MDRT (1505.3 – 1560.0 m TVDSS, 54.7 m thick)

Interval	1780.7 to 1824.0 m MDRT	**ROP (Range)**	3.4 to 56.3 m/h	**Average ROP**	27.8 (m/h)

Claystone with Siltstone and Sandstone interbeds and thin stringers of Coal.

CLAYSTONE: (20 - 50%) Brownish gray, sub blocky, brittle, moderately hard to hard,

SILTSTONE: (30 - 30%) Medium dark gray to olive gray, soft to firm, sub blocky, lithic grains included, carbonaceous fragments included in parts, grades to very fine grained sandstone in part.

SANDSTONE: (10 - 30%) Light gray to medium light gray, very fine to fine grained, moderately well sorted, sub angular slightly elongated, quartzose, common lithic grains, occasional carbonaceous fragments, slight calcareous cement, clay matrix, poor to fair porosity.

COAL: (10 - 40%) Dark gray to grayish black, sub fissile to angular, rarely sub conchoidal fracture, dull to resinous lustre, brittle, moderately hard.

Interval	1824.0 to 1835.4 m MDRT	**ROP (Range)**	15.1 to 46.2 m/h	**Average ROP**	29.9 (m/h)

Claystone with Siltstone and Sandstone interbeds and thin stringers of Coal.

CLAYSTONE: (50%) Brownish gray, sub blocky, brittle, moderately hard to hard,

SILTSTONE: (30%) Medium dark gray to olive gray, soft to firm, sub blocky, lithic grains included, carbonaceous fragments included in parts, grades to very fine grained sandstone in part.

SANDSTONE: (10%) Light gray to medium light gray, very fine to fine grained, moderately well sorted, sub angular slightly elongated, quartzose, common lithic grains, occasional carbonaceous fragments, slight calcareous cement, clay matrix, poor to fair porosity.

COAL: (10%) Dark gray to grayish black, sub fissile to angular, rarely sub conchoidal fracture, dull to resinous lustre, brittle, moderately hard.

Taroom Coal Measures: 1835.4 - 1898.2 m MDRT (1560.0 – 1622.8 m TVDSS, 62.8 m thick)

Interval	1835.4 to 1898.2 m MDRT	**ROP (Range)**	8.4 to 61.2 m/h	**Average ROP**	29.7 (m/h)

Interbedded Claystone, Siltstone and Sandstone with thin stringers of Coal.

CLAYSTONE: (30 - 45%) Medium gray, sub blocky, firm to moderately hard, rare carbonaceous laminae.

SILTSTONE: (30 - 40%) Light brownish gray to light olive gray, sub blocky, moderately hard, lithic silt sized grains included.

SANDSTONE: (20 - 30%) Light gray to light olive gray, very fine to fine grained, moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, occasional carbonaceous fragments, slightly calcareous cement, clay matrix, poor to fair porosity.

COAL: (5 - 10%) Dark gray to grayish black, sub fissile to angular, rarely sub conchoidal fracture, resinous to vitreous lustre, brittle, moderately hard.

Eurombah Formation: 1898.2 - 1909.1 m MDRT (1622.8 – 1633.6 m TVDSS, 10.8 m thick)

Interval	1898.2 to 1909.1 m MDRT	**ROP (Range)**	6.7 to 67.7 m/h	**Average ROP**	35.0 (m/h)

Claystone with interbedded Sandstone and Siltstone and thin stringers of Coal.

CLAYSTONE: (45 - 50%) Medium gray, sub blocky, firm to moderately hard, rare carbonaceous laminae.

SILTSTONE: (20 - 30%) Light brownish gray to light olive gray, sub blocky, moderately hard, lithic silt sized grains included.

SANDSTONE: (10 - 20%) Light gray to light olive gray, very fine to fine grained, moderately well sorted, subangular, slightly elongate, quartzose, common lithic grains, occasional carbonaceous fragments, slightly calcareous cement, clay matrix, poor to fair porosity.

COAL: (5 - 20%) Dark gray to grayish black, sub fissile to angular, rarely sub conchoidal fracture, resinous to vitreous lustre, brittle, moderately hard.

Hutton Sandstone: 1909.1 – 2062.1 m MDRT (1633.6 – 1786.6 m TVDSS, 153.0 m thick)

Interval	1909.1 to 2062.1 m MDRT	**ROP (Range)**	4.2 to 72.9 m/h	**Average ROP**	29.2 (m/h)

Interbedded Sandstone and Siltstone with thin stringers of Claystone.

SANDSTONE: (10 - 80%) White to light gray, occasionally light gray to light olive gray, fine to medium grained, occasionally medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, fair to excellent porosity.

SILTSTONE: (10 - 70%) Light brownish gray to light olive gray, sub blocky, moderately hard, lithic silt sized grains included.

CLAYSTONE: (10 - 50%) Medium gray, sub blocky, firm to moderately hard, rare carbonaceous laminae.

Lower Hutton Sandstone: 2062.1 - 2128.4 m MDRT (1786.6 – 1852.9 m TVDSS, 66.3 m thick)

Interval	2063.0 to 2128.4 m MDRT	**ROP (Range)**	8.9 to 51.6 m/h	**Average ROP**	24.0 (m/h)

Siltstone with Sandstone interbeds.

SILTSTONE: (50 - 90%) Light brownish gray to light olive gray, sub blocky, firm, rare lithic silt sized grains included.

SANDSTONE: (10 - 50%) White to light gray, occasionally light olive gray, very fine to medium grained, occasionally medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, fair to good porosity.

Evergreen Formation: 2128.4 - 2287.5 m MDRT (1852.9 – 2012.1 m TVDSS, 159.2 m thick)

Interval	2128.4 to 2132.3 m MDRT	**ROP (Range)**	0.5 to 41.4 m/h	**Average ROP**	10.0 (m/h)

Siltstone with Sandstone and Claystone interbeds.

SILTSTONE: (50%) Light brownish gray to light olive gray, sub blocky, firm, rare lithic silt sized grains included.

CLAYSTONE: (40%) Medium gray, sub blocky, firm to moderately hard, rare carbonaceous laminae

SANDSTONE: (10%) White to light gray, occasionally light olive gray, very fine to medium grained, occasionally medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, slight clay matrix, fair to good porosity.

Interval	2132.3 to 2184.6 m MDRT	**ROP (Range)**	0.6 to 81.2 m/h	**Average ROP**	26.5 (m/h)

Claystone with interbeds of Siltstone and Sandstone with rare stingers of Coal

CLAYSTONE: (10 - 50%) Brownish gray, firm, sub block, occasional lithic grains, occasional carbonaceous laminations included, ?sideritic in part.

SILTSTONE: (10 - 48%) Light olive gray to olive gray, sub blocky, firm, rare lithic silt sized grains included, grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 80%) White to light gray, fine to medium grained, rarely medium to coarse grained, poor to moderately well sorted, subangular to sub rounded, slightly elongate to slightly spherical, quartzose, occasional lithic grains, trace siliceous cement, common clay matrix, fair porosity.

COAL: (0 - 2%) Grayish black to black, brittle, generally fissile laminations, rarely sub conchoidal fracture, resinous to vitreous lustre.

SILTSTONE: (10 - 48%) Light olive gray to olive gray, sub blocky, firm, rare lithic silt sized grains included.

Boxvale Sandstone Member: 2184.6 –2196.7 m MDRT (1909.2 – 1921.3 m TVDSS, 12.1 m thick)

Interval	2184.6 to 2196.7 m MDRT	**ROP (Range)**	9.2 to 42.0 m/h	**Average ROP**	25.7 (m/h)

Interbedded Siltstone and Sandstone with thin interbeds of Claystone

SILTSTONE: (0 - 40%) Brownish gray, firm, sub block, occasional lithic grains, occasional carbonaceous laminations included, ?sideritic in part, micromicaceous in parts, occasionally grades to very fine grained sandstone in parts.

SANDSTONE: (60 - 100%) White to light gray, brownish gray in parts, very fine to medium grained, rarely coarse grained, poorly sorted, sub angular, slightly spherical, quartzose, feldspathic, lithic grains in part, micaceous, common to abundant argillaceous matrix and slightly siliceous cement, poor to fair porosity.

CLAYSTONE: (0 - 10%) Brownish gray, firm, sub block, occasional lithic grains, occasional carbonaceous laminations included, ?sideritic in part.

Base Boxvale Sandstone Member: 2196.7 m MDRT (2259.3 m TVDSS)

Interval	2196.7 to 2287.5 m MDRT	**ROP (Range)**	15.2 to 62.0 m/h	**Average ROP**	29.7 (m/h)

Interbedded Siltstone and Sandstone with thin interbeds of Claystone

SILTSTONE: (5 - 70%) Brownish gray, firm, sub block, occasional lithic grains, occasional carbonaceous laminations included, ?sideritic in part, micromicaceous in parts, occasionally grades to very fine grained sandstone in parts.

SANDSTONE: (10 - 100%) White to light gray, brownish gray in parts, very fine to medium grained, rarely coarse grained, poorly sorted, sub angular, slightly spherical, quartzose, feldspathic, lithic grains in part, micaceous, common to abundant argillaceous matrix and slightly siliceous cement, poor to fair porosity.

CLAYSTONE: (10 - 20%) Brownish gray, firm, sub block, occasional lithic grains, occasional carbonaceous laminations included, ?sideritic in part.

Upper Precipice Sandstone: 2287.5 - 2298.2 m MDRT (2012.1 – 2022.7 m TVDSS, 10.6 m thick)

Interval	2287.5 to 2299.0 m MDRT	**ROP (Range)**	9.7 to 36.5 m/h	**Average ROP**	20.4 (m/h)

Sandstone with thin interbeds of Siltstone

SANDSTONE (95%) : White, translucent, fine to very coarse grained, predominantly medium to coarse grained, poorly sorted, sub rounded, quartzose, rare lithic grains, common siliceous cement, rare ?biotite inclusions, good porosity.

SILTSTONE (5%) : Brownish gray, firm, sub blocky, moderately hard, occasional lithic grains, occasionally micromicaeous.

Lower Precipice Sandstone: 2298.2 - 2362.9 m MDRT (2022.7 – 2087.4 m TVDSS, 64.7 m thick)

Interval	2299.0 to 2338.0 m MDRT	**ROP (Range)**	7.1 to 48.6 m/h	**Average ROP**	21.2 (m/h)

Massive Sandstone with thin stringers of Siltstone

SANDSTONE: (90 - 100%) White, translucent, fine to very coarse grained, predominantly medium to coarse grained, poorly sorted, sub rounded, quartzose, rare lithic grains, common siliceous cement, rare ?biotite inclusions, excellent porosity.

SILTSTONE: (5 - 10%) Brownish gray, firm, sub blocky, moderately hard, occasional lithic grains, occasionally micromicaeous.

Interval	2338.0 to 2362.9 m MDRT	**ROP (Range)**	10.1 to 46.7 m/h	**Average ROP**	18.3 (m/h)

Massive Sandstone with occasional stringers of Siltstone.

SANDSTONE: (50 - 100%) White, translucent, fine to very coarse grained, predominantly medium to coarse grained, poorly sorted, sub rounded, quartzose, rare lithic grains, common siliceous cement, rare ?biotite inclusions, excellent porosity.

SILTSTONE: (0 - 50%) Brownish gray, firm, sub blocky, moderately hard, occasional lithic grains, occasionally micromicaeous.

Moolayember Formation: 2362.9 – 2454.6 m MDRT (2087.4 – 2179.1 m TVDSS, 91.7+ m thick)

Interval	2362.9 to 2454.6 m MDRT	**ROP (Range)**	6.5 to 46.7 m/h	**Average ROP**	19.0 (m/h)

Interbedded Sandstone and Claystone grading to Siltstone.

SANDSTONE 1: (10 - 100%) Two Types: Type 1: (10-100%) Very light gray to light gray, fine to medium grained moderately well sorted, sub angular to sub rounded, sub elongate, quartzose, lithic grains included, slight argillaceous matrix, siliceous cement, poor to fair porosity. Type 2: (0-30%) White, translucent, medium to coarse grained, occasionally very coarse grained, poorly sorted, sub angular, slightly elongated, quartzose, siliceous cement, fair to good porosity.

CLAYSTONE: (30 - 70%) Olive gray to medium dark gray, medium light gray in part, sub blocky, moderately hard, carbonaceous fragments included in part, grades to siltstone in parts.

SILTSTONE: (5 - 50%) Medium gray to brownish gray, olive gray in parts, sub fissile to sub blocky, angular fracture in parts, moderately hard to hard, brittle, resinous lustre in parts.

5.4 Hydrocarbon Shows

Other than gas peaks from thin coal seams no significant hydrocarbon shows were recorded while drilling West Moonie-2.

6. Conclusions

While detailed analyses of the recovered core and other petrophysical data acquired at West Moonie-2 is still in progress, initial interpretation confirmed that the Precipice Sandstone reservoir properties at this location within the West Moonie-1 Project Area are well developed with good to excellent porosity and permeability within the Precipice Sandstone with the sequence from Evergreen Formation to Moolayember Formation having the required characteristics for demonstration-scale greenhouse gas sequestration.

Appendix 1 – Well Location Survey

Appendix 2 – EWG 101 Rig Specs

Appendix 3 – Daily Drilling Reports

Appendix 4 – Mud Recap Report

Appendix 5 – Casing & Cementing Reports

Appendix 6 – Tubular Running Services Report

Appendix 7 – Deviation Data

Appendix 8 – Daily Geological Reports

Appendix 9 – Mudlogging Report

Appendix 10 – Cuttings Sample Descriptions

Appendix 11 – Core Reports

Appendix 12 – Sedimentology Report

Appendix 13 – Rock Typing Report

Appendix 14 – Petrology Report

Appendix 15 – Palynology Report

Appendix 16 – Vitrinite Reflectance Report

Appendix 17 – MWD Logs

Appendix 18 – Wireline Logs

Appendix 19 – Petrophysical Interpretation

Appendix 20 – Mud Gas Isotope Analysis

Appendix 21 – Trace Metals Analysis

Appendix 22 – Geomechanics Report

Enclosure 1 – West Moonie-2 Mud Log

Enclosure 2 - Composite Well Log 1-500 scale

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