Carpentaria-2 / 2H

BASIC

Well Completion Report

EP187

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1.4 List of Abbreviations

bbl/s	Barrel/s
BHA	Bottom Hole Assembly
BOP	Blow Out Preventer
BOPE	Blow Out Preventer Equipment
BPV	Back-Pressure Valve
BTC	Buttress Thread Casing
CBL	Cement Bond Log
CCL	Casing Collar Locator
CMR	Combinable Magnetic Resonance
CRT	Casing Running Tool
DFIT	Diagnostic Fracture Injection Test
DTH	Depth
EMW	Equivalent Mud Weight
EP	Exploration Permit
FMI	Formation Micro Imager
GL	Ground Level
GR	Gamma Ray
GRS80	Geodetic Reference System 1980
HNGS	Hostile Environment Natural Gamma Ray Sonde
HRLA	High Resolution Laterolog Array
IADC	International Association of Drilling Contractors
ID	Inside Diameter
JFE	Japanese Steel Manufacturer
KCl	Potassium Chloride
kft	Thousand Feet
L	Litres
lbs	Pounds
LCM	Lost Circulation Material
LOT	Leak of Test
LTH	Length
LWD	Logging Whilst Drilling
mAHD	metres Australian Height Datum
MBU	Multi Build Up
MGA	Map Grid Australia
mGL	Metres Ground Level
mMD	Metres Measured Depth
mRT	Metres Rotary Table
mTVD	Metres True Vertical Depth
MW	Mud Weight
MWD	Measurement While Drilling
NEXT	Compensated Magnetic Resonance
NPT	Non Productive Time
NTDITT	Northern Territory Department of Industry, Tourism and Trade
NTDME	Northern Territory Department of Mines and Energy (now NT DITT)

OD	Outside Diameter
PDC	Polycrystalline Diamond Compact
PDM	Positive Displacement Motor
PEX	Platform Express
POOH	Pull Out Of Hole
ppf	Pounds per Foot
ppg	Pounds Per Gallon
psi	Pounds Per Square Inch
R U/D	Rig Up / Rig Down
RIH	Run in Hole
ROP	Rate of Penetration
RPM	Rotations Per Minute
RT	Rotary Table
SLR	Schlumberger Land Rigs
SP	Spontaneous Potential
SSCAN	Sonic Scanner
SWC	Sidewall Cores
TCI	Tungsten Carbide Insert
TD	Total Depth
TDS	Total Dissolved Solids
TFA	Total Flow Area
TQ	Torque
TRS	Tubular Running Service
VDL	Variable Density Log
VR	Valve Removal
WECATT	Wireless Torque Sub
WOB	Weight on Bit
Wt	Weight
XL	Extra Large
YP	Yield Point

2. Summary

2.1 Carpentaria-2 / 2H Well Summary

Carpentaria-2 / 2H well is the second well to be drilled within the EP187 Exploration Permit by Imperial Oil & Gas, a wholly-owned subsidiary of Empire Energy Group Limited (ASX:EEG). The EP187 Permit is located approximately 85 km south-west of Borroloola within the Beetaloo and McArthur Basin in the Northern Territory (Figure 1). Imperial acquired 2D seismic in the Western area of EP-187 in late 2019 and drilled the vertical exploration well Carpentaria-1 in late 2020. Carpentaria-1 was subsequently stimulated and flow tested in mid-2021.

Carpentaria-2 / 2H is located approximately 11km north of and on the same seismic line (2019-04) as Carpentaria-1 (Figure 2) and was designed as a vertical appraisal hole (Carpentaria-2) followed by a horizontal sidetrack appraisal well (Carpentaria-2H). The Carpentaria-2 vertical wellbore was designed to further appraise the Velkerri Formation shales, and the Carpentarai-2H horizontal section was for future fracture stimulation and production testing.

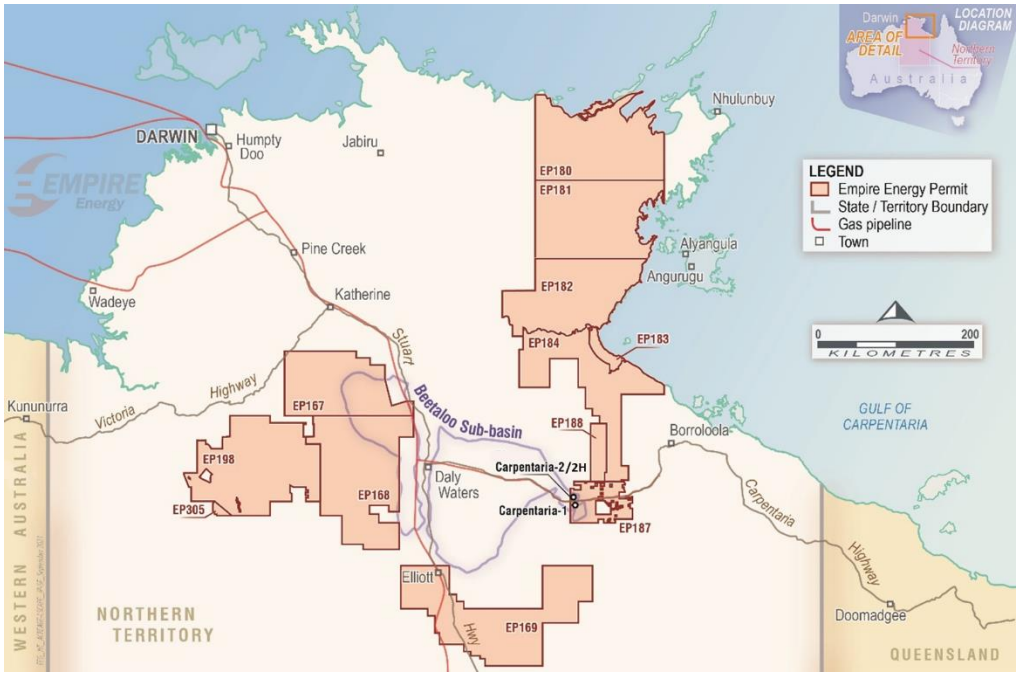


Figure 1: Carpentaria-2 / 2H location map – EP187

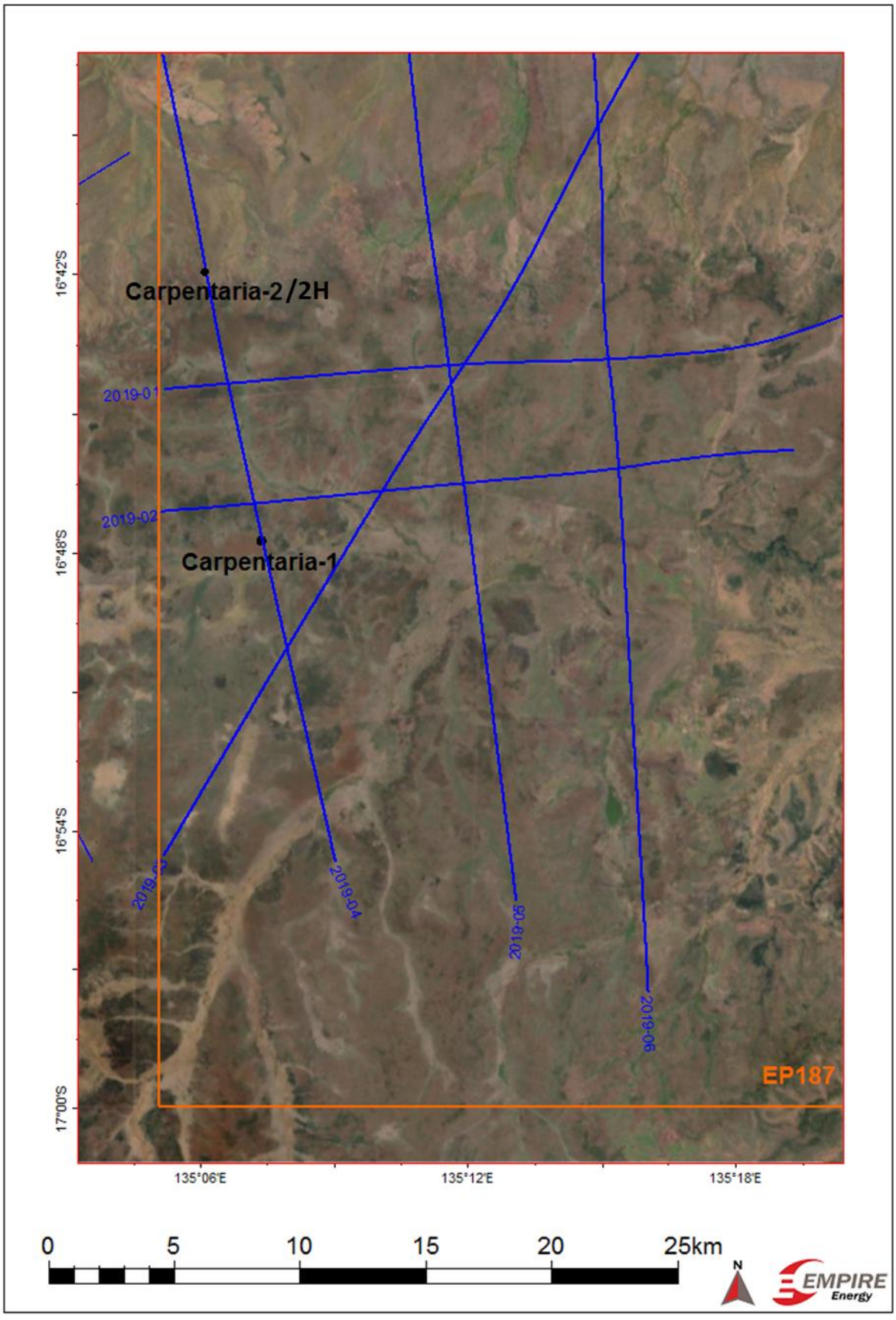


Figure 2: 2D Seismic Line 2019-04 with Carpentaria-1 and -2 / 2H

The Carpentaria-2 / 2H well objectives and the degree to which they were met are summarised below:

Primary Objectives:

- No HSE incidents and meet or exceed all requirements of the NT Code of Practice
    - *A single minor medical treatment injury was recorded during the mobilisation phase of the well.*
    - *All requirements of the NT Code of Practice were met or exceeded.*
- Execute the drilling operation on best technical limit incorporating learnings from offset wells in the basin
    - *The well was drilled in a total of 38.77 days, within time and budget estimates.*
    - *The horizontal section length of 1345m wholly placed within the Velkerri-B shale target window is the longest horizontal section drilled in the Velkerri shale sequence to date, with the horizontal section of the well taking only 5 days to complete.*

Technical Objectives – Carpentaria-2 Vertical (Pilot) Appraisal Hole Section:

- Assess and prove the presence, depth and thickness of the productive Velkerri target shales in the northern area of Imperial's EP187 permit.
- Acquire formation evaluation at a downdip location from the Carpentaria-1 well.
- Understand rock properties, hydrocarbon content, formation permeability and reservoir pressure as they relate to the ability of the shales to produce.
- Further determine stress orientation and heterogeneity in the EP187 permit.
- Gather data to be used for hydraulic stimulation planning and execution.
- Identify the target and best azimuth for the lateral hole section.
- Refine the seismic interpretation and further determine prospective hydrocarbon resource estimates.
- Provide a basis for future seismic acquisition planning, to be used in resource definition and future well planning
    - *The planned formation evaluation program was successfully undertaken.*
    - *The vertical hole supplied relevant data for targeting and executing the horizontal well section.*

Technical Objectives – Carpentaria-2H Horizontal Appraisal Hole Section:

- Drill and case a horizontal well in the Velkerri Formation shale identified from the vertical hole section.
- Execute and refine practice of horizonal drilling in the Beetaloo Sub-basin and EP187 permit.
- Provide a horizontal well section for future fracture stimulation and extended production testing
    - *At the time of drilling the well was the longest lateral section in the Velkerri Formation, drilled and cased (1345 m along hole)*

- *The Carpentaria-2 / 2H spud to rig release timeframe illustrated operational improvements over the 2020 Carpentaria-1 drilling.*
- *The Carpentaria-2H horozintal well section was successfully drilled and cased and is a future candidate for hydrualic stimulation and testing.*

Carpentaria-2 / 2H was spudded at 18:30 hrs on 7 November 2021 with Silver City Drilling Rig #40. A 14" conductor had been pre-installed at 30.8mRT during the civil construction phase. The 12-1/4" vertical surface hole was drilled with spud mud and full returns from 30.8m to 127m before total lost circulation was encountered in the Gum Ridge aquifer and the section was drilled blind (no returns) with freshwater and hi-vis sweeps from 127m to a total depth of 269m. The drill string became stuck at 213m before being worked free with up to 180 klbs of overpull; no other issues were encountered while drilling. The 12-1/4" hole was swept clean with fresh water with hi-vis sweeps and the drilling BHA pulled out of hole.

QTEQ wireline loggers were rigged up and a GR-Caliper log was run to verify the interface of the Anthony Lagoon and Gum Ridge Aquifers at 111m and identify a gauge hole interval suitable for the placement of a 9-5/8" Annulus Casing Packer (ACP) and stage cement tool at the interface of the aquifers.

After rigging down QTEQ wireline, the wellhead base plate was installed in the cellar and a 9-5/8" 36ppf K55 BTC surface casing string was run in hole with 11" 5M wellhead landed on the base plate placing the shoe at 267.40m, the 9-5/8" x 12-1/4" ACP across the interval 112.58m – 113.65m and the 9-5/8" stage cementing ports at 111.33m. First stage cement was pumped consisting of 86.4 bbls 15.8 ppg slurry, however a string pressure lock was encountered after displacing 14.6 bbls fresh water behind the first stage cement shut-off plug with top of cement inside casing at +/-54m RT.

Cement was drilled out inside the 9-5/8" casing with 8-1/2" clean-out BHA with milled tooth bit from 54m to 120m and circulation established through open stage ports at 111.33m prior to performing the 2nd stage cement job with 70 bbls 15.8 ppg slurry displaced with 25 bbls fresh water to 94m with no returns to surface throughout the job.

BOP equipment was then installed and tested before cement was drilled out inside the 9-5/8" casing from 94m to 120m. A casing integrity test was then attempted to 1000 psi without success (casing leaking at stage tool). A 10 bbl 15.8ppg balanced cement plug was then placed from 85m - 117m and 0.4 bbls cement squeezed away with up to 1000 psi through the leaking stage tool ports.

The cement plug was then drilled out from 85m to 120m and the remaining length of cement inside the 9-5/8" casing cleaned out from 120m to 264m (3.4m above base of float shoe). A 9-5/8" casing integrity test to 1050 psi was then achieved against the blind rams after pulling out of hole with the 8-1/2" clean out BHA. At this point an offline top-up cement job on the 12-1/4" x 9-5/8" annulus was also performed with 5 bbls 15.8 ppg Class G cement slurry pumped with cement returns to surface observed.

The 8-1/2" straight motor / shock sub BHA with Smith "Stingblade" 616 PDC was run in hole and the 9-5/8" shoe track and 12-1/4" rathole drilled out from 264m to 269m before displacing the well to 8.8ppg PHPA drilling fluid and drilling 3m of 8-1/2" hole from 269m to 272m in preparation for a formation integrity test. The FIT was then conducted with 1050 psi surface pressure applied over 8.8 ppg drilling fluid, or 32 ppg equivalent mud density. 8-1/2" hole was then drilled from 272m to 292m before conducting a leak-off test (LOT) from which a breakover pressure of 1942 psi was recorded, equivalent to a 51.5 ppg mud density.

The 8-1/2" vertical hole section was drilled to a total depth of 1053m where it was decided to employ the contingency option of setting the 7" casing early above the reservoir due to concerns around the surface casing integrity arising from the stage tool cementing issues. The hole was

circulated clean and the 8-1/2” drilling BHA pulled out of hole prior to rigging up QTEQ wireline and running a cement bond log (CBL) across the 9-5/8” surface casing.

After rigging down QTEQ wireline loggers, a 7” 26ppf P110 BTC intermediate casing with 2-joint shoe track was run in hole and cemented at 1049.64m with 92.2 bbls 13.5 ppg lead cement and 26.1 bbls 15.8 ppg tail cement displaced with 133 bbls 9.2 ppg drilling fluid with full returns throughout the job and 22bbls cement returns to surface. The 7” green cement casing test was not performed as the top plug was not bumped despite pumping 50% shoe track overdisplacement (1.5 bbls). The shoe track floats held on bleed-off and cementing equipment was rigged down prior to installing and testing the 7” casing hanger pack-off seal assembly to 5000 psi.

The BOP equipment was re-tested before performing a grey cement casing integrity test of the 7” intermediate casing against the BOP blind rams to 3000 psi for 10 minutes. A 6-1/8” straight motor BHA with 513 PDC bit was then run in hole and the 7” shoe track and 8-1/2” rathole drilled out to 1053m and 3m of 6-1/8” hole drilled to 1056m before attempting to perform an extended leak-off test (XLOT). No breakover was observed with 3000 psi surface pressure applied over 9.1 ppg mud, implying formation integrity of at least 25.9 ppg equivalent mud density.

The 6-1/8” vertical appraisal hole section was drilled to well total depth of 1835m in a single run with no issues. The well was circulated clean and a short wiper trip back to 1400m performed prior to spotting a logging pill across the open hole and pulling out of hole with the 6-1/8” straight motor BHA.

Schlumberger wireline rigged up and successfully executed four openhole wireline logging runs in the 6-1/8” vertical appraisal hole, including 100% recovery of 50 sidewall cores with the MSCT tool on the final run. No DFIT was conducted on Carpentaria-2 / 2H at the conclusion of the logging program.

A 2-7/8" cement stinger was run in hole to 6-1/8" vertical appraisal hole TD at 1835m. Three stacked cement plugs were placed across the 6-1/8" vertical appraisal hole from 1835m to 1110m to abandon the vertical well Carpentaria-2 and provide a kick-off plug for the horizontal sidetrack Carpentaria-2H.

After laying out the 2-7/8” cement stinger, the 6-1/8” kick-off / sidetrack BHA with 4-3/4” mud motor was run in hole to tag cement at 1110m. Cement was dressed off from 1110m and the Carpentaria-2H sidetrack initiated from 1140m. The 6-1/8” build section was drilled from 1140m to 1287m with difficulty achieving the required build rates due to erratic toolface readings and insufficient motor yield. A round trip was performed from 1287m to surface to adjust the motor bent housing setting from 1.5° to 1.83°, change out the bit from a 513 to 613 PDC to aid toolface stability in sliding mode and re-program the MWD tool for faster toolface updates. The 6-1/8” build section was then drilled from 1287m to 1324m before pulling out of hole due to MWD tool failure. On surface it was found that the MWD pulser was blocked with dry cement fragments.

The MWD tool was changed out and drilling of the 6-1/8” build section resumed from 1324m to 1325m before a repeat MWD failure occurred. On pulling out of hole the MWD tool was once again observed to be jammed with dry cement fragments which was attributed to a residual cement sheath inside the 4” drill pipe used to set the abandonment and kick-off stacked cement plugs. All pipe used in that operation was quarantined and the MWD tool swapped out once more prior to resuming drilling of the 6-1/8” build section from 1325m to the planned BHA change depth at 1750m above the selected landing point in the Velkerri B-shale.

The 6-1/8” motor BHA was pulled out of hole and a 6-1/8” rotary steerable / LWD BHA made up and run in hole to complete drilling of the 6-1/8” build section from 1750m to the landing point inside the Velkerri B-shale at 1831m. Over the course of the 6-1/8” build section the KCL-polymer mud density was increased from 9.2 ppg to 11.5 ppg and periodic precautionary LCM / wellbore strengthening sweeps with a wide distribution of particle sizes were pumped to pre-

emptively mitigate any drilling-induced wellbore instability due to bedding plane failure and / or wellbore breathing into pre-existing natural fractures.

Drilling of the 6-1/8" lateral production hole continued with the rotary steerable / LWD BHA from the horizontal landing point at 1831m within the target Velkerri B-shale. Due to a small volume of cavings observed at approximately 1800m, the mud density was increased further from 11.5 to 12 ppg, while Starglide lubricant was added to the active mud system at 1% concentration to mitigate torque and drag and precautionary LCM sweeps were continued. At 2117m in the horizontal hole section, a leak in the wash pipe occurred and the drillstring was pulled out of hole to the 7" casing shoe while the wash pipe was replaced. Drilling resumed from 2117m to 2900m, at which depth the well was circulated clean and a wiper trip performed from 2900m back to 2100m, recording torque and drag data for calibration of friction factor calculations for the 4-1/2" casing run.

Following correlation of torque and drag calculations, the decision was made to extend the well and the Carpentaria-2H 6-1/8" horizontal production hole was drilled from 2900m to a well total depth of 3150m reached at 04:45 hrs on 13 December 2021. At TD the well was circulated clean with 2 x bottoms-up circulations and the Starglide lubricant concentration in the active system increased from 1% to 3% in preparation for the 4-1/2" casing run. A short wiper trip was then performed back to the previous trip depth at 2900m before running back to TD at 3150m and circulating the well clean with a further 2 x bottoms-up circulations and hi-vis sweeps. The 6-1/8" rotary steerable / LWD BHA was pulled out of hole to surface with no overpull recorded.

A Volant Casing Running Tool (CRT) and weCAAT torque-turn recording sub was used to run a 4-1/2" 13.5 ppf P110 TP-G2 production casing in hole with a five-joint shoe track and low-friction composite centralisers installed across the entire length of the string. The production casing was landed at 3140.58m and cemented with 102 bbls of 13.5 ppg lead slurry and 153.4 bbls of 15.8 ppg tail cement slurry, displaced with 148.5 bbls 11.0 ppg inhibited Calcium Chloride suspension brine with full returns throughout the job and 47.5 bbls neat cement to surface. A green cement casing integrity test was successfully performed on bump to 4500 psi for 10 minutes prior to bleeding off with floats holding.

After rigging down the cementing and casing running equipment, the 4-1/2" casing hanger pack-off seal assembly was installed and tested to 5000 psi and a 4" BPV installed in the 4-1/2" casing hanger. The BOP stack was then nippled down and the suspension assembly consisting of the 11" 5M x 7-1/16" 10M tubing head, 7-1/16" 10M x 2-9/16" adapter flange and 2-9/16" 5M production tree was installed and tested to 5000 psi.

Silver City Rig #40 was released from Carpentaria-2 / 2H at 13:00 hours on 16 December 2021. Fracture stimulation and flowback testing of the Velkerri-B shale target within Carpentaria-2H is scheduled to be conducted in calendar Q2 2022.

2.2 Well Card

The following pages contain well card (Table 1), reservoir intersections (Table 2) casing and cement details (Table 3), cement plug details (Table 4) directional survey listing (Table 5 & Table 6); and operations team listing (Table 7).

<table>
<tr><td>Well Name</td><td colspan="2">Carpentaria-2
Carpentaria-2H</td><td>Petroleum Title</td><td>EP187</td><td>Basin</td><td>Beetaloo Sub-basin</td></tr>
<tr><td>Well Purpose</td><td colspan="2">Vertical / Horizontal Appraisal</td><td>Status</td><td>Cased and suspended</td><td>Parent Well Name, if any</td><td>Carpentaria-2</td></tr>
<tr><td>Spud Date</td><td colspan="2">7/11/2021 18:30</td><td>TD Date</td><td>13/12/2021 14:45</td><td>Rig Release Date</td><td>16/12/2021 13:00</td></tr>
<tr><td>Primary Objective</td><td colspan="4">Velkerri Formation
B-Shale</td><td>Rig(s) Name</td><td>Silver City Drilling Rig #40</td></tr>
<tr><td>Secondary Objective</td><td colspan="4">Intra A/B Shale</td><td>100K Map Sheet</td><td>OT Downs 5964</td></tr>
<tr><td rowspan="3">Total Depth</td><td colspan="2">Wellbore</td><td>Driller mMD</td><td>Driller mTVD</td><td>Logger mMD</td><td>Side-Track Kick-off Depth</td></tr>
<tr><td colspan="2">Carpentaria-2</td><td>1835m</td><td>1833.4m</td><td>1835.2</td><td>N/A</td></tr>
<tr><td colspan="2">Carpentaria-2H</td><td>3150m</td><td>1581.99m</td><td>N/A</td><td>1140m MD / 1139.5m TVD</td></tr>
<tr><td rowspan="2">Location</td><td colspan="2">Coordinates</td><td colspan="2">Surface Location</td><td colspan="2" rowspan="2">Elevation Data</td></tr>
<tr><td colspan="2"></td><td>Latitude / Easting</td><td>Longitude / Northing</td></tr>
<tr><td rowspan="3">GDA94 Datum with GRS80 Ellipsoid using MGA94 Grid</td><td colspan="2">Geographic</td><td>16° 42' 3.13"S</td><td>135° 06' 8.44"E</td><td>Datum:</td><td>Sea Level</td></tr>
<tr><td colspan="2">Cartesian</td><td>510 911.1m</td><td>8 153 532.6m</td><td rowspan="2">GL Elevation:</td><td rowspan="2">229 m</td></tr>
<tr><td colspan="2"></td><td colspan="2">Bottom Hole Location</td></tr>
<tr><td rowspan="3">Zone</td><td colspan="2">Wellbore</td><td colspan="2">Carpentaria-2</td><td rowspan="2">Rotary Table:</td><td rowspan="2">6.90 m</td></tr>
<tr><td colspan="2">Geographic</td><td>16° 42' 5.07" S</td><td>135° 06' 8.45" E</td></tr>
<tr><td colspan="2">Cartesian</td><td>510 911.3m</td><td>8 153 473.4</td><td>Drill Datum:</td><td>235.9 m</td></tr>
<tr><td rowspan="4">53</td><td colspan="2">Wellbore</td><td colspan="2">Carpentaria-2H</td><td rowspan="3">Seismic and Station</td><td rowspan="3">Empire EP187 Seismic Line 2019-04
SP 760</td></tr>
<tr><td colspan="2">Geographic</td><td>16° 42' 59.66" S</td><td>135° 06' 20.70" E</td></tr>
<tr><td colspan="2">Cartesian</td><td>511 273.3m</td><td>8 151 795.8</td></tr>
<tr><td colspan="7">Well Summary</td></tr>
<tr><td colspan="7">Carpentaria-2 is the vertical pilot wellbore, drilled and subsequently cemented back to 1140 m MD, prior to being sidetracks and the Carpentaria-2H horizontal wellbore being drilled within the Amungee Member B Shale.

Carpentaria-2 / 2H was spudded at 18:30 hrs on 7 November 2021 with Silver City Drilling Rig #40. A 14” conductor was pre-installed at 30.8mRT during the civil construction phase. The 12-1/4” vertical surface hole was drilled from 30.8m to 269m (total losses from 127m).

A GR-Caliper log was run on wireline prior to installing 9-5/8” 36ppf K55 BTC surface casing at 267.40m with 11” 5M wellhead landed on a wellhead base plate with 9-5/8” x 12-1/4” ACP from 112.58m – 113.65m and 9-5/8” stage cementing ports at 111.33m. First stage cement was pumped consisting of 86.4 bbls 15.8 ppg slurry, however a string pressure lock was encountered after displacing 14.6 bbls fresh water behind the first stage cement shut-off plug with top of cement inside casing at +/-54m RT.

Cement was drilled out inside 9-5/8” casing from 54m to 120m and circulation established through open stage ports at 111.33m prior to performing the 2nd stage cement job with 70 bbls 15.8 ppg slurry displaced with 25 bbls fresh water to 94m with no returns to surface.

Installed and tested 11” 5M BOP before squeezing 10 bbls 15.8 ppg plug across stage tool and drilling out cement inside 9-5/8” to 264m (3.4m above base of float shoe) and achieving 9-5/8” casing integrity test to 1050 psi. An offline top-up cement job was performed on the 12-1/4" x 9-5/8" annulus with 5 bbls Class G cement slurry at 15.8 ppg pumped with cement returns to surface observed.

Drilled out 9-5/8” shoe track and 3m formation to 272m with 8-1/2” BHA and conducted FIT to 32 ppg EMW. Drilled 8-1/2” hole from 272m to 292m before conducting leak-off test (LOT) to 51.5 ppg mud density.

Drilled 8-1/2” vertical hole section to total depth of 1053m and ran cement bond log (CBL) across the 9-5/8” surface casing prior to installing 7” 26ppf P110 BTC intermediate casing cemented at 1049.64m with 92.2 bbls 13.5 ppg lead cement and 26 bbls 15.8 ppg tail</td></tr>
</table>

cement displaced with 133 bbls 9.2 ppg drilling fluid with full returns throughout and 22bbls cement returns to surface (failed to bump plug).

Performed 7" CIT to 3000 psi against blind rams prior to RIH 6-1/8" BHA, drilling 7" shoe track and 6-1/8" hole to 1056m. Performed FIT to 25.9 ppg EMW. Drilled 6-1/8" vertical appraisal hole to Carpentaria-2 well TD at 1835m. Schlumberger performed 6-1/8" openhole logging program comprising four wireline logging runs including 100% recovery of 50 x sidewall cores with MSCT tool on final run. No DFIT was conducted.

A 2-7/8" cement stinger was run in hole to 6-1/8" vertical appraisal hole TD at 1835m. Three stacked cement plugs were placed across the 6-1/8" vertical appraisal hole from 1835m to 1110m to plug and abandon the vertical well Carpentaria-2 and provide a kick-off plug for the horizontal sidetrack Carpentaria-2H.

A 6-1/8" sidetrack BHA was run in hole to dress off cement from 1110m and initiate the Carpentaria-2H sidetrack from 1140m. The 6-1/8" build section was drilled from 1140m to 1750m above the selected landing point in the Velkerri B-shale. The sidetrack BHA was pulled out of hole and a 6-1/8" rotary steerable / LWD BHA run in hole to complete drilling of the 6-1/8" build section from 1750m to the landing point inside the Velkerri B-shale at 1831m and the Carpentaria-2H horizontal section within the target B-shale to well total depth of 3150m in a single run.

A Volant Casing Running Tool (CRT) and weCAAT™ torque-turn recording sub was used to install a 4-1/2" 13.5 ppf P110 TP-G2 production casing at 3140.58m with five-joint shoe track and low-friction composite centralisers installed across the entire length of the string. Production casing was cemented with 102 bbls of 13.5 ppg lead slurry and 153.4 bbls of 15.8 ppg tail cement slurry, displaced with 148.5 bbls 11.0 ppg inhibited Calcium Chloride suspension brine with full returns throughout and 47.5 bbls neat cement to surface. A green cement casing integrity test was successfully performed on bump to 4500 psi for 10 minutes.

A 4-1/2" casing hanger pack-off seal assembly was installed and tested to 5000 psi and a 4" BPV installed in the 4-1/2" casing hanger. The well was suspended with 11" 5M x 7-1/16" 10M tubing head, 7-1/16" 10M x 2-9/16" adapter flange and 2-9/16" 5M production tree installed and tested to 5000 psi.

Hole and Casing Design (Drillers Depths)						Drilling Fluid	
Type	Hole Size	Depth (mMD)	Casing Size	Shoe mMD	Shoe mTVD	Hole Size	Type
Conductor	Pre-Set		14"	30.80	30.80	14" Conductor Pre-Set	
Surface Casing	12 ¼"	269.00	9 ⅝"	267.40	267.40	12 ¼"	8.5 ppg spud mud / fresh water
Intermediate Casing	8 ½"	1053.00	7"	1049.64	1049.5	8 ½"	KCl/Polymer 8.8 – 9.2 ppg
Production Casing	6 ⅛"	3150.00	4 ½"	3140.58	1582.0	6 ⅛"	KCl / NaCl / Polymer 9.2 – 12.0 ppg

Stratigraphy – Formation Tops (Loggers Depths)				Formation Evaluation				
Carpentaria-2								
Formation	Depth (Carpentaria-2)			Suite	Run	Measurement	Depth Interval	
	mMD	mTVDRT	mTVDSS				From (mMD)	To (mMD)
Ground Level - Alluvium	7	7	229	LWD				
Gum Ridge Formation	113.4	113.4	122.6	LWD	1	GR-DIR	245	1053
Anthony Lagoon Formation	57.5	57.5	178.5	LWD	2	GR-DIR	1053	1835
Bukalara Sandstone	238.7	238.7	-2.7	WIRELINE				
Kyalla Formation	448.8	448.8	-212.8	1	1	GR-CALIPER	0	225
Intra Kyalla Sandstone	448.8	448.8	-212.8					
Basal Kyalla Shale	466.5	466.5	-230.5	2	1	CBL-VDL-GR	0	278
Moroak Sandstone	540.8	540.8	-304.8					
Velkerri Formation - Wyworrie Member	771.9	771.8	-535.8	3	1	GR-HGNS-TLD-HRLA-HNGS	1050	1835
Velkerri Formation - Amungee Member	1252.1	1251.4	-1015.6					
C-Shale	1325.9	1325.3	-1089.3	3	2	GR-FMI-SSCAN	1050	1835
Base C-Shale	1413.5	1412.8	-1176.8					
B-Shale	1564.1	1563.2	-1327.2	3	3	GR-CMR-PLUS-NEXT	1050	1835

Intra A/B Shale	1627.5	1626.5	-1390.5					
A-Shale	1732.7	1731.3	-1495.3	3	4	GR-MSCT (50 samples)	1065	1805
Kalala Member	1786.2	1784.6	-1548.6					
Total Depth	1835.2	1833.6	-1597.6					

Carpentaria-2H

Formation	Depth (Carpentaria-2H)			Suite	Run	Measurement	From (mMD)	To (mMD)
	mMD	mTVDRT	mTVDSS	LWD				
Velkerri Formation - Amungee Member	1252.4	1250.7	-1014.9	LWD	3	GR-DIR	1140	1287
C-Shale	1332.1	1327.2	-1091.2	LWD	4	GR-DIR	1287	1324
Base C-Shale	1434.1	1414.5	-1178.5	LWD	5	GR-DIR	1324	1325
B-Shale	1660.2	1549.3	-1313.3	LWD	6	GR-DIR	1325	1750
Total Depth	3150	1582.0	-1346.2	LWD	7	GR(Spectral)-Azimuthal-RSS	1750	3150

Mud Logging	Formation Testing (DST)	DFIT	Yes	No
The mud logging program was executed successfully with the exception of surface hole during which the unit was not operational due to technical issues. Refer to Appendix H for the Schlumberger Mud Logging Reports (excluding 7 – 14 Nov 2021 when the unit was not operational).	Nil	HF		X
			Yes	No
				X

Coring	Hydrocarbon Shows
Wireline Mechanical Sidewall Coring Tools (MSCT) - 50 zones / 50 recovered	Various

Completion
The well is cased and suspended for future stimulation and completion

Table 1: Well Details

Formation	Depth			Coordinates	
	mMD	mTVDRT	mTVDSS	Easting	Northing
Carpentaria 2					
C-Shale	1325.9	1325.3	-1089.3	510904	8153499
B-Shale	1564.1	1563.2	-1327.2	510906	8153491
Intra A/B Shale	1627.5	1626.5	-1390.5	510908	8153487
A-Shale	1732.7	1731.3	-1495.3	510911	8153480
Carpentaria 2H					
C-Shale	1332.1	1327.2	-1091.2	510912	8153471
B-Shale	1660.2	1549.3	-1313.3	510959	8153245

Table 2: Reservoir Intersections

Hole Details			
Type	Surface	Intermediate	Production
Size	12 ¼”	8 ½”	6 ⅛"
Depth (m MDRT)	269.0	1053.0	3150.0
Casing Details			
Interval	Surface	Intermediate	Production
OD	9 ⅝”	7”	4 ½"
Shoe (m MDRT)	267.40	1049.64	3140.58
Wt	36 ppf	26 ppf	26 ppf
Grade	K55	P110	P110
Thread	BTC	BTC	TP-G2
Cement Details			
Type	Surface (9 ⅝”)	Intermediate (7”)	Production (4 ½")
Spacer (bbls)	1St Stage: 40 bbls 9.5 ppg Gelled Spacer / 20 bbls 12.5 ppg Reactive Spacer 2nd Stage: 20 bbls 9.5 ppg Gelled Spacer / 10 bbls 12.5 ppg Reactive Spacer	60 bbls 11.5 ppg gelled spacer	60 bbls 12.7 ppg gelled spacer
Displacement Volume (bbls)	1st Stage: 14.6 bbls fresh water (prior to pressure lock) 2nd Stage: 25 bbls freshwater	133 bbls 9.2 ppg KCl Polymer mud	148.5 bbls 11.0 ppg inhibited CaCal brine
Cement Returns Volume (bbls)	No cement returns	22	47.5
Comments	No cement returns recorded to surface on primary cement jobs. Performed offline top-up job on 14/11/21 with 5 bbls 15.8 ppg slurry with cement returns to surface.	Full returns observed throughout the job.	Full returns observed throughout job.
Cemented By	Schlumberger	Schlumberger	Schlumberger
Plugs bumped	No	No	Yes
Lead Stage Details			
Class	N/A (Two-Stage, Single Slurry)	Class G	Class G
Slurry Volume (bbls)		92.2 bbls	102 bbls
Weight (ppg)		13.5ppg	13.5ppg
Additives		D020 Bentonite D047 Anti-foam D255 Fluid loss control	D020 Bentonite D047 Anti-foam D081 Retarder D255 Fluid loss control
Tail Stage Details			
Class	Class G	Class G	Class G
Slurry Volume (bbls)	1st Stage 86.4 bbls 2nd Stage 70 bbls	26.1 bbls	153.4 bbls
Weight (ppg)	15.8 ppg	15.8ppg	15.8 ppg
Additives	D047 Anti-foam	D047 Anti-foam D080 Dispersant D255 Fluid loss control	D047 Anti-foam D080 Dispersant D255 Fluid loss control

Table 3: Casing and Cement Details

Cement Plug Details			
Type	Surface Casing Plug & Squeeze	Surface Casing Top-Up	OH Abandonment Plugs / Kick-Off Plug
Size	9 ⅝” Casing	12 ¼” x 9 ⅝” Annulus	6 ⅛" Open Hole
Interval (m MDRT)	120m – 78m	+/-30m - surface	Plug A Plug B Plug C
Cement Job Details			
Type	Surface Casing Plug & Squeeze	Surface Casing Top-Up	OH Abandonment Plug
Spacer (bbls)	5 bbls freshwater	N/A	12.5 ppg gelled spacer: Plug A: 21.5 bbls Plug B: 21.7 bbls Plug C: 21.8 bbls
Displacement Volume (bbls)	2.8 bbls freshwater (bled back 0.25 bbls to balance plug)	N/A	Plug A: 8.5 bbls spacer / 38.3 bbls mud Plug B: 8.3 bbls spacer / 29.9 bbls mud Plug C: 8.2 bbls spacer / 20.2 bbls mud
Cement Returns Volume (bbls)	N/A	+/-1 bbl	N/A
Comments	Full returns observed throughout job.	Returns to surface achieved at end of job.	Full returns observed throughout job.
Cemented By	Schlumberger	Schlumberger	Schlumberger
Plugs bumped	No	No	Yes
Slurry Details			
Class	Class G	Class G	Class G
Slurry Volume (bbls)	10 bbls	5 bbls	Plug A: 32.8 bbls Plug B: 32.9 bbls Plug C: 33.4 bbls
Weight (ppg)	15.8 ppg	15.8ppg	Plug A: 15.8 ppg Plug B: 15.8 ppg Plug C: 16.5 ppg
Additives	D047 Anti-foam	D047 Anti-foam	D047 Anti-foam D080 Dispersant D255 Fluid loss control

Table 4: Cement Plug Details

Easting	Northing	Z	mMD	Inclination	Azimuth GN
510911.0	8153533.0	235.8	0.00	0.00	0.00
510911.0	8153533.0	228.9	6.90	0.00	0.00
510908.0	8153532.1	-45.5	281.39	1.31	253.71
510907.7	8153532.0	-58.0	293.82	1.21	243.95
510907.5	8153531.9	-69.4	305.28	1.24	242.50
510907.3	8153531.8	-81.9	317.75	0.95	244.67
510907.1	8153531.7	-94.8	330.65	1.00	237.09
510906.9	8153531.6	-108.1	343.95	1.02	247.62
510906.7	8153531.5	-121.0	356.87	1.18	240.12
510906.5	8153531.4	-133.4	369.23	0.90	233.56
510906.4	8153531.2	-145.1	380.94	0.99	227.41
510906.2	8153531.1	-157.9	393.83	0.92	241.37
510906.0	8153531.0	-170.4	406.28	0.81	222.51
510905.9	8153530.9	-182.9	418.77	0.84	234.64
510905.8	8153530.8	-195.3	431.22	0.73	222.96
510905.6	8153530.6	-208.1	444.03	0.93	232.93
510905.5	8153530.5	-220.5	456.36	0.69	222.14
510905.4	8153530.4	-232.8	468.67	0.75	217.62
510905.3	8153530.3	-246.3	482.18	0.68	207.43
510905.2	8153530.1	-258.3	494.20	0.81	223.98
510905.1	8153530.0	-271.5	507.35	0.81	217.83
510905.0	8153529.9	-283.9	519.81	0.63	226.31
510904.9	8153529.8	-296.1	532.00	0.83	214.46
510904.8	8153529.6	-308.9	544.78	0.89	200.89
510904.7	8153529.5	-320.7	556.63	0.69	209.45
510904.7	8153529.3	-333.1	568.95	0.85	205.06
510904.6	8153529.1	-345.8	581.66	0.71	185.88
510904.6	8153529.0	-358.4	594.33	0.93	191.51
510904.6	8153528.8	-371.3	607.24	0.75	180.85
510904.5	8153528.6	-384.2	620.14	0.82	201.47
510904.5	8153528.4	-396.5	632.40	0.79	197.88
510904.4	8153528.3	-408.3	644.18	0.71	191.07
510904.4	8153528.1	-420.9	656.82	0.73	185.12
510904.4	8153528.0	-433.1	668.99	0.86	194.33
510904.4	8153527.7	-445.8	681.69	1.18	184.70
510904.3	8153527.5	-458.2	694.13	1.36	194.18
510904.2	8153527.2	-471.8	707.74	1.23	196.73
510904.2	8153526.9	-484.3	720.25	1.28	196.61
510904.1	8153526.6	-497.1	733.02	1.63	192.17
510904.0	8153526.3	-509.2	745.08	1.39	191.79
510903.9	8153526.0	-521.1	757.07	1.53	193.03
510903.9	8153525.6	-534.6	770.55	1.89	183.99
510903.9	8153525.2	-545.8	781.70	1.98	177.26
510903.9	8153524.8	-558.3	794.23	2.02	183.78
510903.9	8153524.3	-571.1	807.06	2.15	179.46
510903.9	8153523.8	-583.6	819.61	2.58	180.89
510903.9	8153523.2	-596.2	832.14	2.67	181.20
510903.8	8153522.6	-608.5	844.46	3.04	182.18
510903.8	8153521.9	-621.8	857.82	3.16	185.26
510903.7	8153521.2	-634.4	870.48	3.19	181.03
510903.7	8153520.5	-646.6	882.67	3.32	184.72
510903.7	8153519.8	-659.1	895.22	3.46	184.42
510903.6	8153519.0	-671.6	907.73	3.56	181.90
510903.6	8153518.2	-684.2	920.29	3.67	183.39
510903.6	8153517.4	-696.6	932.80	3.74	179.97

510903.6	8153516.6	-709.1	945.28	3.44	176.51
510903.6	8153515.9	-721.6	957.77	3.14	172.71
510903.7	8153515.3	-733.0	969.18	2.91	170.04
510903.8	8153514.7	-745.6	981.88	2.59	173.20
510903.9	8153514.1	-758.2	994.43	2.58	178.19
510903.9	8153513.6	-770.5	1006.72	2.42	175.08
510904.0	8153512.7	-791.7	1027.96	2.38	173.12
510904.1	8153511.6	-819.5	1055.83	2.38	178.33
510904.1	8153511.1	-832.1	1068.44	2.41	183.80
510904.0	8153510.5	-844.9	1081.19	2.59	186.73
510903.9	8153510.0	-856.5	1092.82	2.49	186.40
510903.9	8153509.4	-869.1	1105.44	2.47	188.66
510903.8	8153508.9	-881.4	1117.72	2.65	189.55
510903.7	8153508.3	-894.1	1130.46	2.88	189.51
510903.6	8153507.7	-906.1	1142.53	3.11	191.61
510903.4	8153507.0	-919.1	1155.47	3.27	189.42
510903.4	8153506.3	-931.2	1167.66	3.21	185.85
510903.3	8153505.6	-943.7	1180.15	3.27	181.32
510903.3	8153504.9	-956.5	1192.95	3.19	183.00
510903.2	8153504.2	-968.7	1205.19	3.24	182.63
510903.3	8153503.4	-982.0	1218.49	3.13	175.23
510903.4	8153502.8	-994.4	1230.92	2.87	168.01
510903.5	8153502.2	-1006.9	1243.40	2.69	154.02
510903.8	8153501.7	-1019.3	1255.89	2.54	146.44
510904.3	8153500.8	-1046.9	1283.48	1.90	168.35
510904.3	8153500.5	-1056.9	1293.50	1.80	182.93
510904.2	8153500.1	-1069.2	1305.78	1.79	194.09
510904.1	8153499.7	-1081.6	1318.22	1.81	200.88
510903.8	8153498.9	-1106.8	1343.39	1.96	203.55
510903.6	8153498.6	-1118.4	1354.98	1.80	203.85
510903.5	8153498.2	-1131.2	1367.85	1.62	202.06
510903.4	8153497.9	-1143.3	1379.96	1.63	201.59
510903.2	8153497.6	-1156.2	1392.84	1.39	199.67
510903.2	8153497.4	-1168.4	1405.07	0.95	192.91
510903.1	8153497.2	-1181.5	1418.14	0.96	186.54
510903.1	8153496.9	-1193.4	1429.99	1.16	179.33
510903.1	8153496.7	-1206.0	1442.60	1.37	176.86
510903.2	8153496.3	-1218.5	1455.12	1.74	173.46
510903.2	8153495.9	-1231.1	1467.75	2.01	168.96
510903.5	8153494.9	-1256.1	1492.76	2.90	159.45
510903.8	8153494.3	-1268.6	1505.25	3.26	155.69
510904.1	8153493.6	-1280.8	1517.54	3.89	154.98
510904.5	8153492.8	-1293.7	1530.40	4.21	152.17
510905.0	8153491.9	-1306.5	1543.30	4.12	151.59
510905.4	8153491.1	-1319.1	1555.87	4.07	151.19
510905.8	8153490.4	-1331.7	1568.51	4.18	147.95
510906.3	8153489.6	-1344.4	1581.24	4.27	148.23
510906.8	8153488.8	-1356.7	1593.58	4.26	147.47
510907.3	8153488.0	-1369.2	1606.17	4.38	147.65
510907.8	8153487.2	-1381.5	1618.47	4.33	147.14
510908.4	8153486.4	-1393.9	1630.93	4.40	147.65
510909.3	8153484.8	-1419.1	1656.14	4.22	150.42
510910.2	8153483.2	-1444.0	1681.14	4.05	155.15
510910.5	8153482.4	-1456.1	1693.31	3.81	156.31
510911.5	8153479.3	-1506.2	1743.47	3.78	168.26
510911.7	8153478.5	-1518.4	1755.70	3.89	170.51
510911.8	8153477.7	-1530.9	1768.28	3.71	172.47

510911.8	8153476.9	-1543.4	1780.79	3.45	176.90
510911.9	8153476.1	-1556.2	1793.54	3.23	182.53
510911.8	8153475.4	-1568.4	1805.81	3.41	188.57
510911.6	8153474.8	-1579.6	1817.02	3.39	196.59
510911.2	8153473.8	-1597.5	1835.00	3.39	209.50

Table 5: Carpentaria-2 Directional Survey Listing

Easting	Northing	Z	mMD	Inclination	Azimuth GN
511186.37	8152207.45	235.8	0.00	0.00	0.00
511189.26	8152193.80	228.9	6.90	0.00	0.00
511191.97	8152180.89	-45.5	281.39	1.31	253.71
511194.34	8152169.41	-58.0	293.82	1.21	243.95
511196.83	8152157.45	-69.4	305.28	1.24	242.50
511199.39	8152145.24	-81.9	317.75	0.95	244.67
511202.02	8152132.68	-94.8	330.65	1.00	237.09
511204.49	8152120.73	-108.1	343.95	1.02	247.62
511206.99	8152108.34	-121.0	356.87	1.18	240.12
511208.86	8152099.09	-133.4	369.23	0.90	233.56
511211.97	8152083.40	-145.1	380.94	0.99	227.41
511214.35	8152071.31	-157.9	393.83	0.92	241.37
511216.86	8152059.09	-170.4	406.28	0.81	222.51
511219.07	8152048.70	-182.9	418.77	0.84	234.64
511221.98	8152035.06	-195.3	431.22	0.73	222.96
511224.82	8152022.03	-208.1	444.03	0.93	232.93
511227.44	8152010.09	-220.5	456.36	0.69	222.14
511230.07	8151997.85	-232.8	468.67	0.75	217.62
511232.73	8151985.42	-246.3	482.18	0.68	207.43
511235.36	8151973.24	-258.3	494.20	0.81	223.98
511238.05	8151960.69	-271.5	507.35	0.81	217.83
511240.50	8151948.94	-283.9	519.81	0.63	226.31
511242.98	8151936.92	-296.1	532.00	0.83	214.46
511245.57	8151924.69	-308.9	544.78	0.89	200.89
511248.24	8151912.24	-320.7	556.63	0.69	209.45
511250.82	8151900.17	-333.1	568.95	0.85	205.06
511253.49	8151887.84	-345.8	581.66	0.71	185.88
511256.12	8151875.66	-358.4	594.33	0.93	191.51
511258.61	8151864.08	-371.3	607.24	0.75	180.85
511261.26	8151851.91	-384.2	620.14	0.82	201.47
511263.93	8151839.58	-396.5	632.40	0.79	197.88
511266.86	8151826.03	-408.3	644.18	0.71	191.07
511269.49	8151813.83	-420.9	656.82	0.73	185.12
511270.94	8151806.92	-433.1	668.99	0.86	194.33
511273.17	8151796.24	-445.8	681.69	1.18	184.70
511186.37	8152207.45	-458.2	694.13	1.36	194.18
511189.26	8152193.80	-471.8	707.74	1.23	196.73
511191.97	8152180.89	-484.3	720.25	1.28	196.61
511194.34	8152169.41	-497.1	733.02	1.63	192.17
511196.83	8152157.45	-509.2	745.08	1.39	191.79
511199.39	8152145.24	-521.1	757.07	1.53	193.03
511202.02	8152132.68	-534.6	770.55	1.89	183.99
511204.49	8152120.73	-545.8	781.70	1.98	177.26
511206.99	8152108.34	-558.3	794.23	2.02	183.78
511208.86	8152099.09	-571.1	807.06	2.15	179.46
511211.97	8152083.40	-583.6	819.61	2.58	180.89

511214.35	8152071.31	-596.2	832.14	2.67	181.20
511216.86	8152059.09	-608.5	844.46	3.04	182.18
511219.07	8152048.70	-621.8	857.82	3.16	185.26
511221.98	8152035.06	-634.4	870.48	3.19	181.03
511224.82	8152022.03	-646.6	882.67	3.32	184.72
511227.44	8152010.09	-659.1	895.22	3.46	184.42
511230.07	8151997.85	-671.6	907.73	3.56	181.90
511232.73	8151985.42	-684.2	920.29	3.67	183.39
511235.36	8151973.24	-696.6	932.80	3.74	179.97
511238.05	8151960.69	-709.1	945.28	3.44	176.51
511240.50	8151948.94	-721.6	957.77	3.14	172.71
511242.98	8151936.92	-733.0	969.18	2.91	170.04
511245.57	8151924.69	-745.6	981.88	2.59	173.20
511248.24	8151912.24	-758.2	994.43	2.58	178.19
511250.82	8151900.17	-770.5	1006.72	2.42	175.08
511253.49	8151887.84	-791.7	1027.96	2.38	173.12
511256.12	8151875.66	-819.5	1055.83	2.38	178.33
511258.61	8151864.08	-832.1	1068.44	2.41	183.80
511261.26	8151851.91	-844.9	1081.19	2.59	186.73
511263.93	8151839.58	-856.5	1092.82	2.49	186.40
511266.86	8151826.03	-869.1	1105.44	2.47	188.66
511269.49	8151813.83	-881.4	1117.72	2.65	189.55
511270.94	8151806.92	-894.1	1130.46	2.88	189.51
511273.17	8151796.24	-903.6	1140.00	3.06	191.20
511186.37	8152207.45	-920.0	1156.44	7.60	172.97
511189.26	8152193.80	-932.0	1168.54	7.77	170.66
511191.97	8152180.89	-943.8	1180.50	7.11	169.97
511194.34	8152169.41	-956.4	1193.13	7.21	171.42
511196.83	8152157.45	-969.1	1205.95	7.44	168.49
511199.39	8152145.24	-981.3	1218.26	7.87	159.35
511202.02	8152132.68	-993.4	1230.56	9.04	152.87
511204.49	8152120.73	-1005.7	1243.04	10.90	152.60
511206.99	8152108.34	-1018.6	1256.13	11.71	158.65
511208.86	8152099.09	-1030.7	1268.55	12.82	167.44
511211.97	8152083.40	-1043.3	1281.46	14.75	172.25
511214.35	8152071.31	-1054.8	1293.46	17.15	174.59
511216.86	8152059.09	-1066.3	1305.55	18.64	172.07
511219.07	8152048.70	-1072.0	1311.62	19.80	170.33
511221.98	8152035.06	-1083.9	1324.35	21.78	167.19
511224.82	8152022.03	-1095.5	1336.89	23.05	164.23
511227.44	8152010.09	-1107.2	1349.61	24.51	165.62
511230.07	8151997.85	-1118.4	1362.11	26.90	167.85
511232.73	8151985.42	-1129.6	1374.77	29.46	170.20
511235.36	8151973.24	-1140.2	1387.15	31.64	173.41
511238.05	8151960.69	-1150.8	1399.69	33.60	174.79
511240.50	8151948.94	-1161.0	1412.11	35.70	173.76
511242.98	8151936.92	-1171.0	1424.64	38.26	172.00
511245.57	8151924.69	-1180.7	1437.07	39.15	168.95
511248.24	8151912.24	-1190.4	1449.75	40.97	166.96
511250.82	8151900.17	-1199.7	1462.11	42.41	167.10
511253.49	8151887.84	-1208.5	1474.11	43.44	167.56
511256.12	8151875.66	-1217.4	1486.57	45.08	167.02
511258.61	8151864.08	-1226.2	1499.28	46.40	167.77
511261.26	8151851.91	-1234.6	1511.55	48.31	166.83
511263.93	8151839.58	-1242.8	1524.19	50.02	165.88
511266.86	8151826.03	-1250.7	1536.63	51.48	166.38

511269.49	8151813.83	-1258.2	1548.95	52.90	166.58
511270.94	8151806.92	-1265.7	1561.52	53.99	166.44
511273.17	8151796.24	-1273.2	1574.48	55.77	167.15
511186.37	8152207.45	-1279.9	1587.01	59.17	168.52
511189.26	8152193.80	-1286.0	1599.41	61.80	168.50
511191.97	8152180.89	-1291.9	1612.03	62.57	168.28
511194.34	8152169.41	-1297.6	1624.51	63.06	168.30
511196.83	8152157.45	-1303.2	1637.04	63.64	168.29
511199.39	8152145.24	-1308.7	1649.42	64.32	167.93
511202.02	8152132.68	-1313.9	1661.72	65.87	167.96
511204.49	8152120.73	-1318.9	1674.40	67.16	167.28
511206.99	8152108.34	-1323.4	1686.52	68.84	166.62
511208.86	8152099.09	-1327.7	1698.86	70.88	166.50
511211.97	8152083.40	-1331.6	1711.09	71.45	165.92
511214.35	8152071.31	-1335.5	1723.69	72.88	165.99
511216.86	8152059.09	-1337.8	1731.65	73.75	166.21
511219.07	8152048.70	-1341.3	1744.24	74.22	166.10
511221.98	8152035.06	-1344.4	1756.67	76.13	165.50
511224.82	8152022.03	-1347.2	1769.05	78.42	164.95
511227.44	8152010.09	-1349.4	1781.86	81.10	164.25
511230.07	8151997.85	-1351.1	1794.33	83.71	163.90
511232.73	8151985.42	-1352.2	1806.99	85.96	164.52
511235.36	8151973.24	-1352.8	1819.07	88.43	165.16
511238.05	8151960.69	-1353.0	1831.71	90.39	165.79
511240.50	8151948.94	-1352.9	1844.09	90.50	166.01
511242.98	8151936.92	-1352.7	1857.25	90.62	166.54
511245.57	8151924.69	-1352.7	1869.38	90.11	166.67
511248.24	8151912.24	-1352.6	1881.78	90.06	167.06
511250.82	8151900.17	-1352.6	1894.34	89.89	167.38
511253.49	8151887.84	-1352.7	1906.70	89.94	167.83
511256.12	8151875.66	-1352.7	1919.12	90.06	168.25
511258.61	8151864.08	-1352.7	1931.72	89.89	169.03
511261.26	8151851.91	-1352.7	1944.06	89.72	168.35
511263.93	8151839.58	-1352.8	1956.57	89.83	168.37
511266.86	8151826.03	-1352.9	1969.38	89.21	168.01
511269.49	8151813.83	-1353.3	1994.14	88.60	168.22
511270.94	8151806.92	-1353.6	2006.59	88.71	168.39
511273.17	8151796.24	-1353.9	2018.93	88.71	168.09
511186.37	8152207.45	-1354.2	2031.20	88.71	168.10
511189.26	8152193.80	-1354.5	2043.95	88.54	168.34
511191.97	8152180.89	-1355.0	2069.12	89.27	168.24
511194.34	8152169.41	-1355.2	2081.70	89.05	168.23
511196.83	8152157.45	-1355.3	2093.78	89.27	168.70
511199.39	8152145.24	-1355.5	2106.60	89.21	168.17
511202.02	8152132.68	-1355.7	2118.90	89.16	168.39
511204.49	8152120.73	-1355.9	2131.45	89.21	167.99
511206.99	8152108.34	-1356.0	2143.79	89.10	167.94
511208.86	8152099.09	-1356.2	2156.52	89.10	168.08
511211.97	8152083.40	-1356.4	2168.75	89.05	167.90
511214.35	8152071.31	-1356.6	2181.39	89.50	168.11
511216.86	8152059.09	-1356.7	2193.92	89.22	168.39
511219.07	8152048.70	-1356.9	2206.47	89.16	168.28
511221.98	8152035.06	-1357.1	2218.94	89.22	167.98
511224.82	8152022.03	-1357.3	2231.32	89.16	168.14
511227.44	8152010.09	-1357.4	2243.70	89.16	168.28
511230.07	8151997.85	-1357.6	2256.32	89.16	167.83

511232.73	8151985.42	-1357.8	2268.79	89.27	167.89
511235.36	8151973.24	-1357.9	2281.26	89.66	167.63
511238.05	8151960.69	-1358.0	2293.92	89.66	167.79
511240.50	8151948.94	-1358.1	2306.37	89.72	167.97
511242.98	8151936.92	-1358.1	2319.24	89.72	168.39
511245.57	8151924.69	-1358.2	2331.26	89.78	168.24
511248.24	8151912.24	-1358.2	2344.05	89.66	168.32
511250.82	8151900.17	-1358.3	2356.54	89.66	168.14
511253.49	8151887.84	-1358.4	2368.64	89.72	168.08
511256.12	8151875.66	-1358.4	2381.21	90.17	168.06
511258.61	8151864.08	-1358.3	2393.85	90.28	167.85
511261.26	8151851.91	-1358.2	2406.60	91.23	167.63
511263.93	8151839.58	-1357.9	2419.07	91.18	167.75
511266.86	8151826.03	-1357.6	2431.69	91.23	167.95
511269.49	8151813.83	-1357.4	2444.03	91.18	168.19
511270.94	8151806.92	-1357.1	2456.23	91.18	167.92
511273.17	8151796.24	-1356.9	2468.65	91.12	167.90
511186.37	8152207.45	-1356.7	2481.37	90.73	167.95
511189.26	8152193.80	-1356.5	2493.56	90.73	168.08
511191.97	8152180.89	-1356.4	2505.94	90.73	168.25
511194.34	8152169.41	-1356.2	2518.57	90.73	168.30
511196.83	8152157.45	-1355.9	2543.25	90.67	167.97
511199.39	8152145.24	-1355.8	2555.76	90.62	167.80
511202.02	8152132.68	-1355.6	2568.44	90.67	168.12
511204.49	8152120.73	-1355.5	2580.92	90.67	168.22
511206.99	8152108.34	-1355.3	2592.67	90.67	168.10
511208.86	8152099.09	-1355.2	2605.85	90.73	168.26
511211.97	8152083.40	-1355.0	2618.31	90.67	167.95
511214.35	8152071.31	-1354.9	2630.80	90.79	168.02
511216.86	8152059.09	-1354.7	2643.72	90.67	168.25
511219.07	8152048.70	-1354.6	2655.89	90.73	168.41
511221.98	8152035.06	-1354.3	2668.00	91.29	168.05
511224.82	8152022.03	-1354.1	2680.61	91.18	167.93
511227.44	8152010.09	-1353.8	2692.95	91.18	167.85
511230.07	8151997.85	-1353.6	2705.01	91.23	167.96
511232.73	8151985.42	-1353.3	2716.75	91.18	168.11
511235.36	8151973.24	-1353.0	2729.47	91.74	168.17
511238.05	8151960.69	-1352.6	2743.44	91.79	167.92
511240.50	8151948.94	-1352.2	2756.64	91.68	168.40
511242.98	8151936.92	-1351.8	2768.37	91.80	168.24
511245.57	8151924.69	-1351.4	2780.60	91.74	168.23
511248.24	8151912.24	-1351.0	2793.09	91.79	168.17
511250.82	8151900.17	-1350.6	2805.93	91.68	168.14
511253.49	8151887.84	-1350.3	2818.14	91.74	168.53
511256.12	8151875.66	-1350.0	2830.79	91.07	168.61
511258.61	8151864.08	-1349.8	2840.23	91.01	168.56
511261.26	8151851.91	-1349.6	2856.24	90.50	168.98
511263.93	8151839.58	-1349.6	2868.56	89.83	168.80
511266.86	8151826.03	-1349.6	2881.05	89.72	167.96
511269.49	8151813.83	-1349.7	2891.67	89.78	168.03
511270.94	8151806.92	-1349.7	2905.62	90.22	167.87
511273.17	8151796.24	-1349.6	2918.97	90.17	167.56
511186.37	8152207.45	-1349.6	2931.19	90.11	167.69
511189.26	8152193.80	-1349.5	2943.72	90.34	168.06
511191.97	8152180.89	-1349.4	2956.44	90.67	167.76
511194.34	8152169.41	-1349.3	2968.90	90.62	167.84

511196.83	8152157.45	-1349.1	2981.74	90.73	168.04
511199.39	8152145.24	-1349.0	2993.75	90.78	168.36
511202.02	8152132.68	-1348.8	3006.03	90.73	168.37
511204.49	8152120.73	-1348.7	3018.54	90.45	167.65
511206.99	8152108.34	-1348.5	3031.28	91.35	168.14
511208.86	8152099.09	-1348.2	3043.63	91.07	167.80
511211.97	8152083.40	-1348.0	3056.25	91.18	167.71
511214.35	8152071.31	-1347.7	3068.72	91.18	167.89
511216.86	8152059.09	-1347.4	3080.57	91.35	167.83
511219.07	8152048.70	-1347.2	3093.04	91.18	167.67
511221.98	8152035.06	-1346.9	3105.66	91.35	167.87
511224.82	8152022.03	-1346.6	3119.53	91.18	167.69
511227.44	8152010.09	-1346.4	3132.02	90.78	168.03
511230.07	8151997.85	-1346.3	3139.08	90.67	168.24
511232.73	8151985.42	-1346.2	3150.00	90.67	168.24

Table 6: Carpentaria-2H Directional Survey Listing

2.3 Carpentaria-2 / 2H Operations Team

Empire Energy CEO	Alex Underwood	Empire Energy
Chief Geoscientist	Alex Bruce	Empire Energy
Drilling Manager	Jordan Bunning	inGauge
Project Manager	Jon Bennett	inGauge
Senior Well Engineer	John Grehan	inGauge
Wellsite Geologist	Paul Elliott	inGauge
Drilling Supervisor(s)	Scott Hobday / Dave Ryan	inGauge
Operations Manager	Jeremy Wardle	SCD
Rig Superintendent	Troy Slapp	SCD
Rig Managers	Daniel McAnelly / Jamie Roberts	SCD

Table 7: Carpentaria-2 / 2H Operations Team

3. Geological

3.1 Summary

The stratigraphic prognosis for Carpentaria-2 / 2H was undertaken using the results from the offset well Carpentaria-1 and other petroleum exploration wells within the Beetaloo Sub-basin and the interpretation of the EP187 2019 Seismic Survey. The pre- and post-drill (post-wireline) prognosis is shown in Table 8.

3.2 Formation Tops

Formation Tops	Actual		Prognosed		Difference
	mRT	mTVDss	mRT	mTVDss	m
Carpentaria-2					
Ground Level - Alluvium	7	-229	7	-229	0
Anthony Lagoon Formation	57.5	-178.5	55	-178	-2.5
Gum Ridge Formation	113.4	-122.6	110	-123	-3.4
Bukalara Sandstone	238.7	2.7	239	6	0.3
Kyalla Formation	448.8	212.8	300	64	-148.8
Intra Kyalla Sandstone	448.8	212.8	444	208	-4.8
Basal Kyalla Shale	466.5	230.5	474	238	7.5
Moroak Sandstone	540.8	304.8	544	308	3.2
Velkerri Formation - Wyworrie Member	771.9	535.8	744	508	-27.9
Velkerri Formation - Amungee Member	1252.1	1015.6	1194	958	-57.6
C-Shale	1367.5	1130.7	1324	1088	-43.5
Base C-Shale	1402.9	1166.1	1395	1158	-7.9
B-Shale	1560.8	1323.9	1552	1316	-8.8
Intra-A/B Shale	1620.5	1383.4	1608	1372	-12.5
A-Shale	1734.9	1497.5	1722	1486	-12.9
Kalala Member	1786.2	1548.6	1774	1538	-12.2
Total Depth	1835.2	1597.6	1809	1573	-26.2
Carpentaria-2H					
Velkerri Formation - Amungee Member	1252.4	1014.9	Section Not Prognosed Lateral Section Designed Post Carpentaria-2	1015.6	-0.7
C-Shale	1375.6	1130.3		1131.5	-1.2
Base C-Shale	1417.9	1165.7		1166.9	-1.2
B-Shale	1658.3	1312.4		1324.8	-12.4
Total Depth	3150	1346.2			

Table 8: Carpentaria-2 Formation Tops

3.3 Hydrocarbon Indicators and Flow Potential

No oil shows were observed during the drilling of the well.

Gas peaks were observed and are tabulated in Table 9.

Due to the formations that had gas peaks being shales, the flow potential is to be determined by future hydraulic stimulation and extended production testing.

Gas Peaks (Liberated)										
Formation	**mMDRT**	**Peaks (%)**	**Back-ground (%)**	**C1**	**C2**	**C3**	**iC4**	**nC4**	**iC5**	**nC5**
Wyworrie Member	997	8.3	<1	26936	10097	5103	555	2712	755	1310
	1020	6.1	<1	16460	7057	3857	351	1747	464	826
	1041	6.2	<1	14685	6622	3878	405	2012	530	936
	1050	6.6	1	22433	8164	4024	396	1914	468	811
	1062	5.6	1.5	15028	7685	4401	439	2069	505	848
	1069	4.5	1.5	16596	7294	3875	375	1759	439	727
	1082	4.6	1.5	14868	7728	4614	451	2075	495	792
	1200	8.3	1	25493	13377	7154	727	3229	833	1320
Amungee Member	1262	4	1	9580	5444	2719	229	1141	270	453
	1362	5.2	1.5	17421	7946	3176	235	1145	218	382
B Shale	1580	5.1	1	37667	7779	1027	41	127	21	26
B Shale	1591	6.1	1	46563	10084	1339	61	171	23	29
B Shale	1603	5.8	1.5	41599	8588	1149	50	148	22	27
Intra A/B	1659	4.9	1.5	35299	7194	1006	43	133	21	28
Intra A/B	1730	5.5	1.5	43652	9323	1234	42	114	12	13

Table 9. Carpentaria-2 Vertical Well Gas Peaks

3.4 Cuttings Summary

Refer to The Geological Daily Reports in Appendix A for cuttings descriptions.

Cuttings were collected as summarised in Table 10. Samples were collected and packed plastic bags supplied by Schlumberger and annotated with foil tags. Isotube samples were acquired as per Table 12, discrete isojar sampling was also undertaken in the laeral hole section. Dispatch of samples was as summarised in Table 13.

Sample Rate	Interval (mMDRT)	Description/Preserved Sample	Quantity / Type
20 m	30-50	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
10 m	50-120	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
7 m	120-127	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
3 m	127-130	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
10 m	130-270	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
2 m	270 – 272	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
8 m	272 – 280	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
10 m	280 – 1200	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
6 m	1200– 1320	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
3 m	1320– 1833	Washed & Dried: NTDITT Empire Energy	250-500 g 200g
2 m	1833– 1835	Washed & Dried: NTDITT Empire Energy	250-500 g 200g

Table 10: Carpentaria-2 Sampling Intervals

Sample Rate	Interval	Description /Preserved Sample	Quanitiy Type
3m	1140 – 1161m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
6m	1161 – 1491m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
9m	1491– 1500m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
6m	1500 –1698 m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
3m	1698 – 1770m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
6m	1770 – 2034m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
9m	2034 – 2142m	Washed & Dried: NTDITT Empire Energy	250-500g 200g
6m	2142 – 3150m	Washed & Dried: NTDITT Empire Energy	250-500g 200g

Table 11: Carpentaria-2H Sampling Intervals

Depth Interval (mRT)	Isotubes	Peak Gas Sampling
780-1200	Every 60m	At gas peaks ~ 10 times background
1200-1825	Every 25m	At gas peaks ~ 5 times background

Table 12: Isotube Sampling Intervals

The sample sets, types, and final destinations are listed below:

Sample Set	Volume	Treatment	Delivery
Northern Territory Government	250-500g	Washed and Dried (W & D)	Core Facility Manager, Darwin Department of Industry, Tourism and Trade 38 Farrell Crescent, Winnellie NT 0820 Ph: +61 8 8984 3036 Email: darryl.stacey@nt.gov.au
Imperial Energy	200g Zip locked plastic bag	Washed and Dried (W & D)	C/O Alex Bruce, Empire Energy Level 19, 20 Bond St Sydney, 2000 Email: abruce@empiregp.net
Chemo stratigraphy set	20+g Zip locked plastic bag	Washed and Dried (W & D)	C/O Alex Bruce, Empire Energy Level 19, 20 Bond St Sydney, 2000 Email: abruce@empiregp.net
Isotubes			C/O Alex Bruce, Empire Energy Level 19, 20 Bond St Sydney, 2000 Email: abruce@empiregp.net

Table 13: Distribution of Samples

3.5 Mud Logging Summary

Schlumberger mud logging (GeoServices) was contracted for the duration of the well program. The following parameters and information were recorded at the wellsite by the 24-hour mud logging crew:

- Weight on Bit
- ROP
- Total Gas
- Gas Chromatography
- Well Measured Depth
- Lithology %
- Interpreted Lithology
- Formation Details
- BHA data

The mud logging program was executed successfully with the exception of surface hole during which the unit was not operational due to technical issues with the Geoservices equipment. Refer to Appendix H for the Geoservices Mud Logging Reports (excluding 7 – 14 Nov 2021 when the unit was not operational).

3.6 Logging Whilst Drilling

Basic logging whilst drilling (LWD) was acquired in the Carpentaria-2 vertical hole section consisting of gamma ray and directional (Table 14). The same basic (LWD) suite was acquired in the Carpentaria-2H well to the horizontal landing point. At that time spectral and azimuthal gamma ray were added (Table 15).

Run	Measurement	Depth Interval	
		From (mMD)	To (mMD)
1	GR-DIR	245	1053
2	GR-DIR	1053	1835

Table 14. Carpentaria-2 MWD and LWD

Run	Measurement	Depth Interval	
		From (mMD)	To (mMD)
3	GR-DIR	1140	1287
4	GR-DIR	1287	1324
5	GR-DIR	1324	1325
6	GR-DIR	1325	1750
7	GR(Spectral)-Azimuthal-RSS	1750	3150

Table 15. Carpentaria-2H MWD and LWD

3.7 Wireline Logging Summary

The wireline logging program undertaken on Carpentaria-2 is summarised in Table 16 below. Wireline was only undertaken on the vertical hole section. No wireline was undertaken on the horizontal well section.

	Suite	Services	Hole Size	Depth Intervals (From - To mRT)
QTEQ	Suite 1	Run 1: GR-CALIPER	12 ¼" OH	0 – 225m
	Suite 2	Run 1: CBL-VDL-GR	9 ⅝" Casing	0 – 277.98m
SCHLUMBERGER	Suite 3	Run 1: GR-HGNS-TLD-HRLA-HNGS	6 ⅛" OH	6-1/8" TD to 7" Casing Shoe w/ GR-HGNS-TLD through casing to surface
		Run 2: GR-FMI-SSCAN		6-1/8" TD to 7" Casing Shoe w/ SSCAN through casing to surface
		Run 3: GR-CMR-PLUS-NEXT		6-1/8" TD to 7" Casing Shoe w/ LithoScanner through casing to surface
		Run 4: GR-MSCT		Stations advised by Wellsite Geo

Table 16: Carpentaria-2 Wireline Summary

3.8 Side Wall Rotary Coring Summary

Schlumberger wireline was contracted to provide rotary sidewall coring services in the 6 ⅛" openhole section using the MSCT (Mechanical Sidewall Coring Tool).

- Total Recovery was 50 sidewall cores (100% recovery)

3.9 DFIT Summary

For operational reasons, no DFIT was conducted on Carpentaria-2 / 2H.

4. Drilling Data

4.1 Primary Contractors and Service Providers

Service	Provider
Drilling Rig	Silver City Drilling (SCD) Rig 40
Rig Camp	OICS
Rig Transport	Neil Mansell Transport
Well Engineering, Project Management & Site Supervision	inGauge Energy
Wireline logging (12-1/4" Open Hole / 9-5/8" CBL)	QTEQ
Wireline logging (6-1/8" Open Hole)	Schlumberger
Mud Engineering & Mud Material Supply	MI Swaco
Cementing	Schlumberger Well Services
Casing Accessories	Oil Baron / GPOT
Drilling tools, stabilisers, etc.	Tango / NOV
Drill bits	Ulterra / Smith
Mud Logging	Schlumberger GeoServices
Tubular Running Services (TRS)	DrillQuip
Wellhead	Cactus Wellheads
Casing Supply	Sinopec
Rig and Camp Waste Disposal (Solids / Sewerage)	S&D Haulage (SDH) / SCD
Potable Water Supply	JKH Transport (Hi-Way Inn)
Transport / Logistics	Neil Mansell Transport
Water Cartage and Pre-Well Logistics	SDH / Neil Mansell Transport

Table 17: Primary Contractors

4.2 Operational Summary

4.2.1 Main Reports

- Cuttings Descriptions Reports are included in Appendix A
- Rig SCD 40 Specs are included in Appendix B.
- Daily Drilling Reports for Carpentaria-2 / 2H are included in Appendix C.
- Daily Geological Reports are included in Appendix D.
- The Cementing Reports and Casing Tallies (9-5/8", 7" & 4-1/2") are included in Appendix E.
- The Mud Recap is included in Appendix F.
- The Tubular Running Services is included in Appendix G.
- The Mud Logging Reports are included in Appendix H.
- The Samples Manifest included in Appendix I.
- The MWD Report is included in Appendix J.
- The Survey Report is included in Appendix K.
- Mudlog Enclosures and Data are included in Appendix L.
- LWD and MWD Enclosures and Data are included in Appendix M.
- Wireline Enclosures and Data are included in Appendix N.

4.2.2 Drilling

4.2.2.1 Mobilisation/Rig Move

Silver City Rig #40 was mobilised from the Origin Energy / Velkerri-76 wellsite which was located approximately 400 km by road from the Carpentaria-2 / 2H location. The first loads began arriving on 17 October 2021, transported by Neil Mansell Transport (NMT). The specifications of SCD Rig #40 can be found in Appendix B. After a 22-day rain-delayed mobilisation period, the full drilling crew was mobilised to site and an Icebreaker was conducted on 7 November 2021 at the rig site with both sets of crews.

4.2.2.2 Conductor / Stove Pipe

A 14" conductor / stove pipe was pre-installed together with the cellar during lease preparations by a civil contractor in October 2020. The 14" conductor was run to 30.8mRT and grouted in place. The cellar and conductor were surveyed by Fyfe prior to spud.

4.2.2.3 12-1/4'' Surface Hole

Following rig pre-acceptance checks, Carpentaria-2 / 2H was spudded at 18:30 hrs on 7 November 2021.

The 12-1/4" vertical surface hole was drilled with an Ulterra 12-1/4" CF716M PDC bit with TFA 0.706 in^2 made up to a stiff, packed BHA comprised of a 12-1/4" near-bit stabiliser below 8" shock sub and two 12-1/8" string stabilisers separated by 8" drill collars. The section was spudded with 8.5 ppg gel spud mud and drilled with full returns from 30.8m to 127m before total lost circulation was encountered in the Gum Ridge aquifer. The rest of the section was drilled blind with freshwater and hi-vis sweeps from 127m to a total depth of 269m. The drill string became stuck at 213m before being worked free with up to 180 klbs of overpull; no other issues were encountered while drilling. At TD the 12-1/4" hole was swept clean with fresh water with hi-vis sweeps and the drilling BHA pulled out of hole. On surface the 12-1/4" 616 PDC bit was graded 1-2-CT-N-X-IN-WT-TD. Average on-bottom ROP achieved over the section was 16.6 metres per hour.

QTEQ wireline loggers were rigged up and a GR-Caliper log was run to verify the interface of the Anthony Lagoon and Gum Ridge Aquifers at 111m and identify a gauge hole interval suitable for the placement of a 9-5/8" Annulus Casing Packer (ACP) and stage cement tool to isolate the 12-1/4" x 9-5/8" annulus at the interface of the aquifers.

4.2.2.4 9-5/8" Surface Casing and Cementing

After rigging down QTEQ wireline, the wellhead base plate was installed in the cellar and a 9-5/8" 36ppf K55 BTC surface casing string was run in hole with Cactus 11" 5M wellhead landed on the base plate placing the 9-5/8" shoe at 267.40m, the 9-5/8" x 12-1/4" ACP across the interval 112.58m – 113.65m and the 9-5/8" stage cementing ports at 111.33m. First stage cement was pumped consisting of 86.4 bbls 15.8 ppg slurry, however a string pressure lock was encountered after displacing 14.6 bbls fresh water behind the first stage cement shut-off plug, thereby preventing further cement displacement and leaving the top of cement inside the casing at +/-54m RT.

At the time of the pressure lock, the pressure inside the casing increased to approximately 1600 psi, significantly exceeding the ACP opening pressure of 1150 psi. Pressure of up to 2900 psi was subsequently applied with the cement pump attempting to open the stage tool without success before bleeding off. The scale of the pressure applied inside the casing and analysis of the cement unit displacement pressure plot indicates that the ACP had set successfully with the ingress of cementing slurry into the inflation ports at the time of the pressure-lock incident.

The cementing equipment was rigged down and and 9-5/8" landing joint laid out before a drill-out BHA with an Ulterra 8-1/2" MS-X IADC216 milled tooth bit was made up and run in hole to drill out the cement inside the 9-5/8" casing from 54m to 120m. While drilling out cement through the stage tool, multiple attempts were made to squat down weight to ensure closure of the stage tool, with no indication of stage tool sleeve closure observed.

The 8-1/2" drill-out BHA was then pulled out of hole to surface and the 9-5/8" landing joint re-installed with casing swedge to attempt a pressure test of the 9-5/8" casing against the stage tool ports and top of cement at 120m. Upon commencement of the test, pressure bled off after reaching 558 psi and injectivity was subsequently established through the stage tool ports at up to 3 bbls/min at 665 psi, with a total of 30 bbls circulated via the stage tool ports and 22.4 bbls of returns noted in the cellar. This provided further confidence that the ACP had set successfully and isolated the total loss zone in the Gum Ridge aquifer.

With injectivity established via the stage tool cementing ports, it was decided to proceed with the 2nd stage cementing job. The 9-5/8" swedge was rigged down and the 9-5/8" cement head re-installed with pre-loaded top cement plug. After rigging up cementing lines, circulation was re-

established through the cementing stage tool ports at 111.33m with 20 bbls 9.5 ppg gelled spacer and 10 bbls 12.5 ppg reactive spacer prior to pumping the 2nd stage cement with 70 bbls 15.8 ppg slurry, dropping the top plug and displacing cement with 25 bbls fresh water to approximately 94m. After minimal returns initially when breaking circulation, no further returns to surface were noted throughout the job.

After waiting on cement (due to no floats preventing backflow), the cement head and landing joint were rigged down and the 11" 5M BOP installed and tested. The 8-1/2" drill out BHA was run in hole again to drill out cement inside the 9-5/8" casing from 94m to 120m. The string was shut in on the BOP and a casing integrity test was then attempted to 1000 psi against the stage tool and cement at 120m without success, with the casing still leaking via the stage tool ports.

The 8-1/2" drill-out BHA was pulled out of hole and 4" open-ended drill pipe run in hole to 117m. A 10 bbl 15.8ppg balanced cement plug was then placed across the interval from 85m - 117m before pulling the 4" drill pipe up to 60m and circulating clean. The 4" drill pipe was then pulled out of hole and the casing shut in on the blind rams to perform a limit squeeze on the balanced plug across the leaking stage tool ports. A total of 0.4 bbls cement was squeezed away over 20 mins with up to 1000 psi through the leaking stage tool ports.

After waiting on the cement plug to reach 500 psi compressive strength, the 8-1/2" drill-out BHA was run back in hole and the balanced cement plug drilled out from 85m to 120m. A successful casing integrity test was then performed to 1050 psi for 10 minutes. The remaining length of cement inside the 9-5/8" casing cleaned out from 120m to 264m (3.4m above base of float shoe) and the casing circulated clean before pulling out of hole with the 8-1/2" drill-out BHA.

The well was then shut in against the blind rams and a casing integrity test of the full length of the 9-5/8" casing above the float collar was performed successfully to 1050 psi for 10 minutes.

Prior to picking up the 8-1/2" straight motor / shock sub / GR-MWD BHA, an offline top-up cement job on the 12-1/4" x 9-5/8" annulus was also performed with 5 bbls 15.8 ppg Class G cement slurry pumped with cement returns to surface observed.

Refer to Appendix E for further details in the Schlumberger Well Services End-of-Job Cement Reports.

4.2.2.5 8-1/2" Intermediate Hole

The 8-1/2" straight motor / shock sub / GR-MWD BHA with Smith "Stingblade" Z616 PDC with 0.663in^2 TFA was run in hole and the 9-5/8" shoe track and 12-1/4" rathole drilled out from 264m to 269m before displacing the well to 8.8ppg PHPA drilling fluid and drilling 3m of 8-1/2" hole from 269m to 272m in preparation for a formation integrity test. The FIT was then conducted with 1050 psi surface pressure applied over 8.8 ppg drilling fluid, or 32 ppg equivalent mud density. 8-1/2" hole was then drilled from 272m to 292m before conducting a leak-off test (LOT) from which a breakover pressure of 1942 psi was recorded, equivalent to a 51.5 ppg mud density.

The 8-1/2" vertical hole section was drilled to a total depth of 1053m in a single run where it was decided to employ the contingency option of setting the 7" casing early above the reservoir due to concerns around the surface casing integrity arising from the stage tool cementing issues.

Issues were encountered with shakers blinding from the start of the 8-1/2" section until reaching the basal Kyalla shale at +/- 474m RT, at which point the issue abated (see mud recap in Appendix F). At 614m a severe leak was observed at the top drive swivel packing; the well was circulated clean and the drillstring tripped back to the 9-5/8" casing shoe to repair the leaking seal before drilling resumed from 614m. No other issues were encountered while drilling

The 8-1/2" section TD of 1053m in the Wyworrie member of the Velkerri formation was reached at 16:15 hrs on 20 November 2021. The hole was circulated clean and a 10 bbl hi-vis pill spotted

on bottom prior to pulling the 8-1/2" drilling BHA out of hole. On surface the Smith Z616 Stingblade was graded 1-1-CT-A-X-IN-ER-TD after drilling 784m in 8.8 hrs on bottom for an average ROP of 8.8 m/hr over the section. QTEQ wireline was then rigged up and a cement bond log (CBL) was run across the 9-5/8" surface casing.

After rigging down QTEQ wireline loggers, a 7" 26ppf P110 BTC intermediate casing with 2-joint shoe track was run in hole and cemented at 1049.64m with 92.2 bbls 13.5 ppg lead cement and 26.1 bbls 15.8 ppg tail cement displaced with 133 bbls 9.2 ppg drilling fluid with full returns throughout the job and 22bbls cement returns to surface. The 7" green cement casing test was not performed as the top plug was not bumped despite pumping 50% shoe track overdisplacement (1.5 bbls). The shoe track floats held on bleed-off and cementing equipment was rigged down prior to installing and testing the 7" casing hanger pack-off seal assembly to 5000 psi.

4.2.2.6 6-1/8" Vertical Appraisal Hole

The BOP equipment was re-tested to 5000 psi before successfully performing a grey cement casing integrity test of the 7" intermediate casing against the BOP blind rams to 3000 psi for 10 minutes. A 6-1/8" straight motor BHA with Ulterra 513 PDC bit with 0.552in^2 TFA was then run in hole and the 7" shoe track and 8-1/2" rathole drilled out to 1053m and 3m of 6-1/8" hole drilled to 1056m before attempting to perform an extended leak-off test (XLOT). No breakover was observed with 3000 psi surface pressure applied over 9.1 ppg mud, implying formation integrity of at least 25.9 ppg equivalent mud density.

The 6-1/8" vertical appraisal hole section was drilled to well total depth of 1835m in a single run with no issues. The well was circulated clean and a short wiper trip back to 1400m performed prior to spotting a logging pill across the open hole and pulling out of hole with the 6-1/8" straight motor BHA with no overpull recorded. On surface the Ulterrra 6-1/8" 513 PDC bit was graded 0-0-NO-A-X-IN-NO-TD after drilling 782m in 31.3 hrs on bottom for an average ROP of 25 m/hr over the section.

4.2.2.7 6-1/8" Openhole Wireline Logging

Schlumberger wireline rigged up and successfully executed four openhole wireline logging runs in the 6-1/8" vertical appraisal hole, including 100% recovery of 50 sidewall cores with the MSCT tool on the final run. No DFIT was conducted on Carpentaria-2 / 2H at the conclusion of the logging program.

The wireline logging suites run in the Carpentaria-2 vertical appraisal hole are summarised in Table 16.

4.2.2.8 6-1/8" Stacked Cement Plugs

A 2-7/8" cement stinger was run in hole to 6-1/8" vertical appraisal hole TD at 1835m. Three stacked cement plugs were placed across the 6-1/8" vertical appraisal hole from 1835m to 1110m to abandon the vertical well Carpentaria-2 and provide a kick-off plug for the horizontal sidetrack Carpentaria-2H.

The cement plug details are summarised in Table 4.

4.2.2.9 6-1/8" Build Section and Production Hole

After laying out the 2-7/8" cement stinger, the 6-1/8" kick-off / sidetrack BHA with 4-3/4" mud motor was run in hole with the re-run 6-1/8" Ulterra 513 PDC bit to tag cement at 1110m. Cement was dressed off from 1110m and the Carpentaria-2H sidetrack initiated from 1140m. The 6-1/8" build section was drilled from 1140m to 1287m with difficulty achieving the required build rates due to erratic toolface readings and insufficient motor yield. A round trip was performed from 1287m to surface to adjust the motor bent housing setting from 1.5° to 1.83°,

change out the bit from 513 to an Ulterra 613 PDC to aid toolface stability in sliding mode and re-program the MWD tool for faster toolface updates. The 6-1/8" build section was then drilled from 1287m to 1324m before pulling out of hole due to MWD tool failure. On surface it was found that the MWD pulser was blocked with dry cement fragments.

The MWD tool was changed out and drilling of the 6-1/8" build section resumed from 1324m to 1325m before a repeat MWD failure occurred. On pulling out of hole the MWD tool was once again found to be jammed with dry cement fragments which was then attributed to a residual cement sheath inside the 4" drill pipe used to set the abandonment and kick-off stacked cement plugs. All pipe used in that operation was quarantined and the MWD tool swapped out once more prior to resuming drilling of the 6-1/8" build section from 1325m to the planned BHA change depth at 1750m above the selected landing point in the Velkerri B-shale.

The 6-1/8" motor BHA was pulled out of hole and a 6-1/8" rotary steerable / LWD BHA made up and run in hole to complete drilling of the 6-1/8" build section from 1750m to the landing point inside the Velkerri B-shale at 1831m. Over the course of the 6-1/8" build section the KCL-polymer mud density was increased from 9.2 ppg to 11.5 ppg and periodic precautionary LCM / wellbore strengthening sweeps with a wide distribution of particle sizes were pumped to pre-emptively mitigate any drilling-induced wellbore instability due to bedding plane failure and / or wellbore breathing into pre-existing natural fractures.

Drilling of the 6-1/8" lateral production hole continued with the rotary steerable / LWD BHA from the horizontal landing point at 1831m within the target Velkerri B-shale. Due to a small volume of cavings observed at approximately 1800m, the mud density was increased further from 11.5 to 12 ppg, while Starglide lubricant was added to the active mud system at 1% concentration to mitigate torque and drag and precautionary LCM sweeps were continued. At 2117m in the horizontal hole section, a leak in the wash pipe occurred and the drillstring was pulled out of hole to the 7" casing shoe while the wash pipe was replaced. Drilling resumed from 2117m to 2900m, at which depth the well was circulated clean and a wiper trip performed from 2900m back to 2100m, recording torque and drag data for calibration of friction factor calculations for the 4-1/2" casing run.

Following correlation of torque and drag calculations, the decision was made to extend the well and the Carpentaria-2H 6-1/8" horizontal production hole was drilled from 2900m to a well total depth of 3150m reached at 04:45 hrs on 13 December 2021. At TD the well was circulated clean with 2 x bottoms-up circulations and the Starglide lubricant concentration in the active system increased from 1% to 3% in preparation for the 4-1/2" casing run. A short wiper trip was then performed back to the previous trip depth at 2900m before running back in hole to TD at 3150m and circulating the well clean with a further 2 x bottoms-up circulations and hi-vis sweeps. The 6-1/8" rotary steerable / LWD BHA was pulled out of hole to surface with no overpull recorded. On surface the Ulterrra 6-1/8" 613 PDC bit was graded 1-0-CT-C-X-IN-NO-TD having drilled a total of 1863m in 95.73 hrs on bottom for an average overall ROP of 19.46 m/hr over the 6-1/8" build and horizontal production hole section.

4.2.2.10 4-1/2" Production Casing & Cementing

A Volant Casing Running Tool (CRT) and weCAAT torque-turn recording sub was used to run a 4-1/2" 13.5 ppf P110 TP-G2 production casing in hole with a five-joint shoe track and low-friction composite centralisers installed across the entire length of the string. The production casing was landed at 3140.58m and cemented with 102 bbls of 13.5 ppg lead slurry and 153.4 bbls of 15.8 ppg tail cement slurry, displaced with 148.5 bbls 11.0 ppg inhibited Calcium Chloride suspension brine with full returns throughout the job and 47.5 bbls neat cement to surface. A

green cement casing integrity test was successfully performed on bump to 4500 psi for 10 minutes prior to bleeding off with floats holding.

4.2.2.11 Well Suspension and Rig Release

After rigging down the cementing and casing running equipment, the 4-1/2" casing hanger pack-off seal assembly was installed, pressure tested to 5000 psi and pull tested to 40 klbs prior to installing a 4" BPV in the 4-1/2" casing hanger. The BOP stack was then nippled down and the suspension assembly consisting of the 11" 5M x 7-1/16" 10M tubing head, 7-1/16" 10M x 2-9/16" adapter flange and 2-9/16" 5M production tree assembly was then installed after being shell-pressure tested offline to 5000 psi. The 7-1/16" 10M tubing head x 4-1/2" casing hanger secondary seal void was tested to 10,000 psi and the 11" 5M casing head x 11" 5M x 7-1/16" tubing head flange connection tested to 5000 psi.

Silver City Rig #40 was released from Carpentaria-2 / 2H at 13:00 hours on 16 December 2021. Fracture stimulation and flowback testing of the Velkerri-B shale target within Carpentaria-2H is scheduled to be conducted in calendar Q2 2022.

4.3 Time Depth Curve

The Carpentaria-2 / 2H drilling scope took 38.77 days from spud to rig release. A total of 195 hours of Non-Productive Time (NPT) were incurred (including 25.25 hrs of rig repair and 169.75 hrs of other NPT) as detailed below. Of the total NPT, 108.25 hours or 55.5% were attributed to the pressure lock encountered during the 9-5/8" 1st stage cement job.

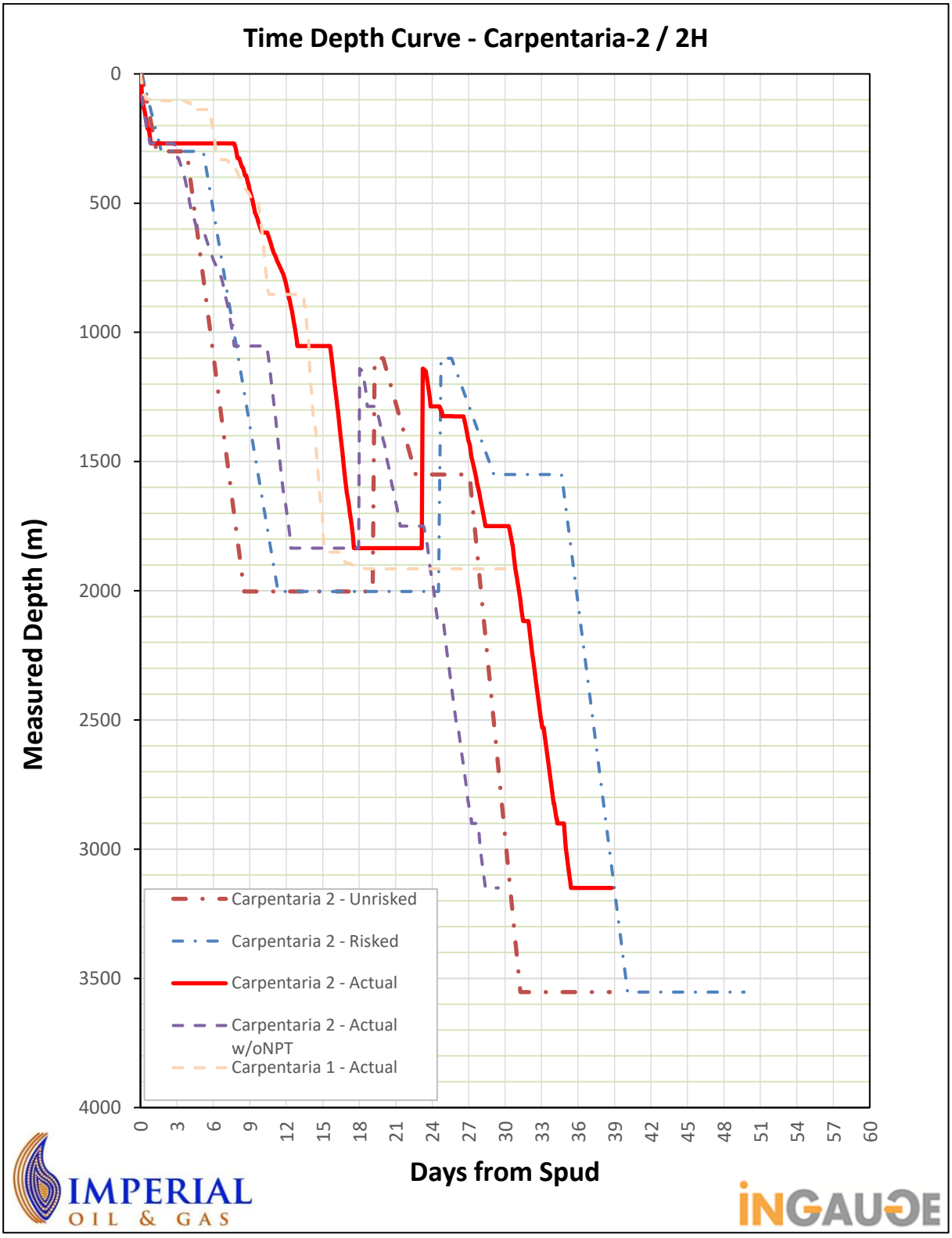


Figure 3: Carpentaria-2 / 2H Time Depth Curve

4.3.1 Time Breakdown

The time breakdown for Carpentaria-2 / 2H is as follows:

Operation	Total Time (Hrs)	Total Time (Days)	Percentage (%)

BHA Handling	19.50	0.81	2.10%
BOP - R U/D	17.75	0.74	1.91%
BOP Drill	1.25	0.05	0.13%
Casing R U/D equip	4.25	0.18	0.46%
Casing Running	48.00	2.00	5.16%
Cementing	13.25	0.55	1.42%
Circulating	24.25	1.01	2.61%
Drill Cement	10.75	0.45	1.16%
Drilling	331.00	13.79	35.57%
Flow check	3.00	0.13	0.32%
Logging	88.25	3.68	9.48%
LOT / FIT / DST / DFIT	1.75	0.07	0.19%
Pressure Test	21.75	0.91	2.34%
Rig Repair	25.25	1.05	2.71%
Rig Service	4.00	0.17	0.43%
Safety Meeting	4.75	0.20	0.51%
NPT	169.75	7.07	18.24%
Tripping	125.25	5.22	13.46%
Wash / Ream	5.75	0.24	0.62%
Wellhead	11.00	0.46	1.18%
Total	**930.50**	**38.77**	**100.00%**

Table 18: Carpentaria-2 / 2H Time Breakdown

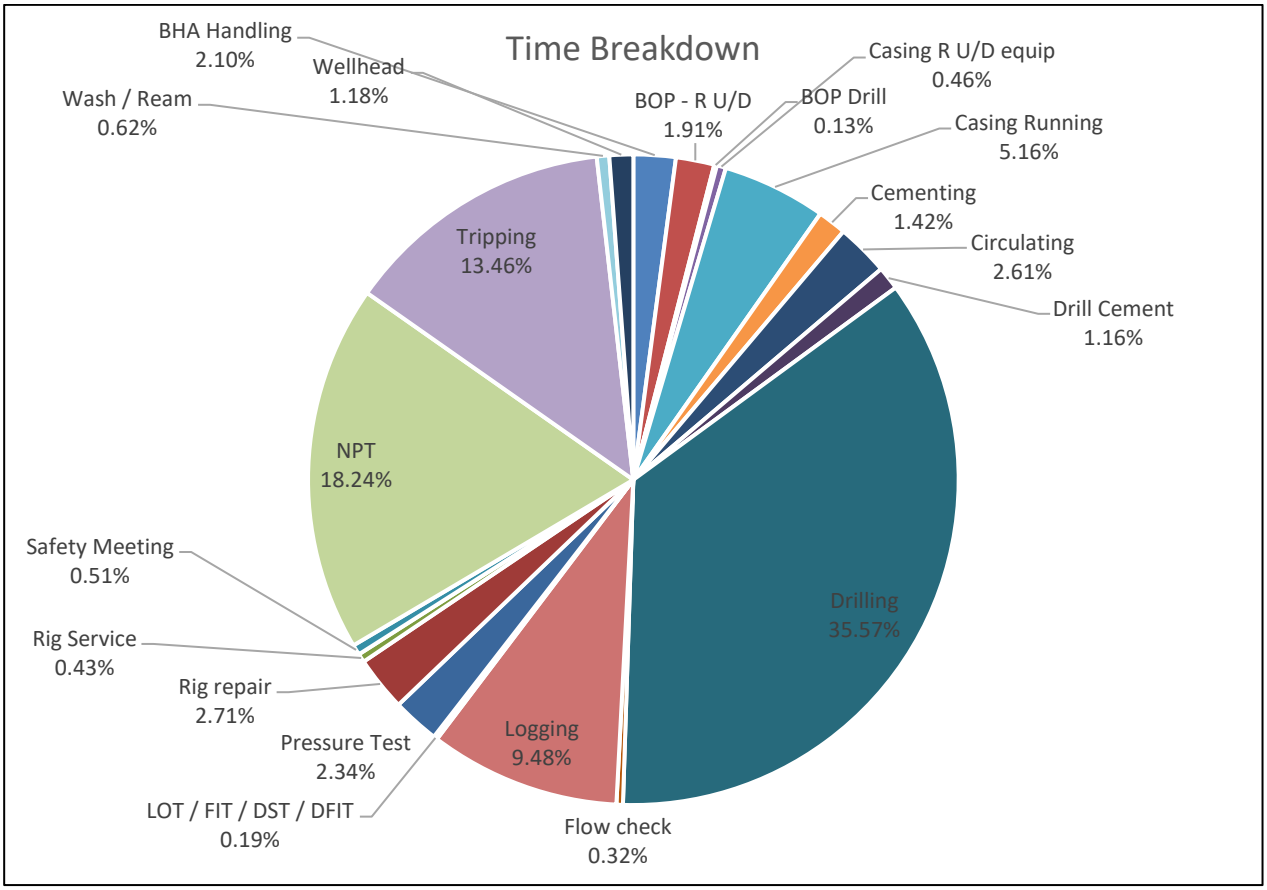


Figure 4: Carpentaria-2 / 2H Time Breakdown

4.3.2 NPT Breakdown

The NPT breakdown is as follows:

NPT Item	Total Time (Hrs)	Total Time (Days)	Percentage (%)
Possum belly blockage	0.75	0.03	0.38%
Stuck pipe in 12-1/4" hole	1	0.04	0.51%
Cement equipment failure (9-5/8")	6.5	0.27	3.33%
9-5/8" 1st stage cement pressure lock	108.25	4.51	55.51%
Adjust SLB motor bend (8-1/2" hole)	1.75	0.07	0.90%
Blinding shakers (8-1/2" hole)	6.5	0.27	3.33%
MWD Cement Blockage (6-1/8" build)	43.5	1.81	22.31%
MWD Signal Issues (6-1/8" production)	0.75	0.03	0.38%
Snagged single joint elevators (4-1/2")	0.75	0.03	0.38%
Rig Repair	25.25	1.05	12.95%
Total	**195**	**8.13**	**100.00%**

Table 19: Carpentaria-2 / 2H NPT Breakdown

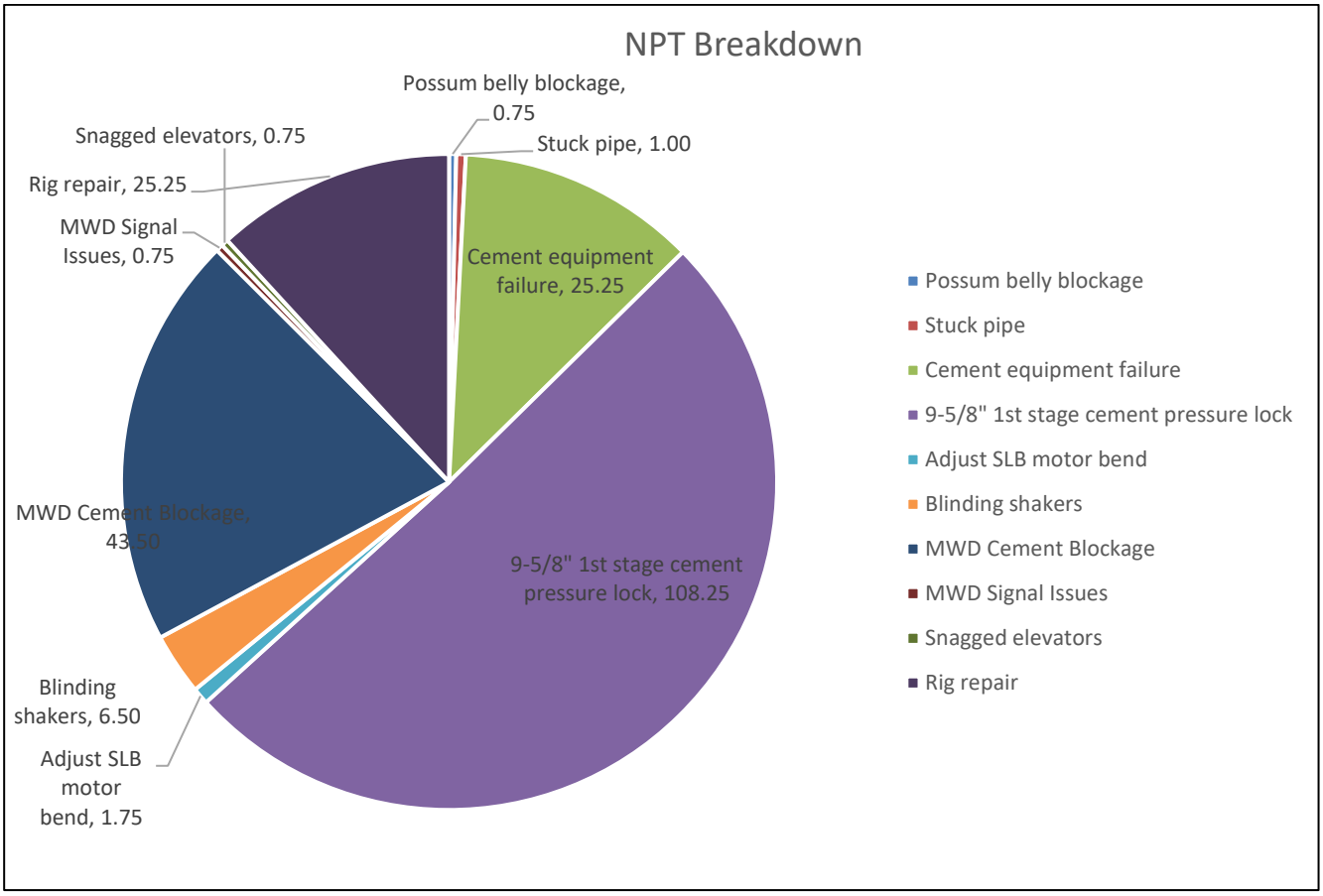


Figure 5: Carpentaria-2 / 2H NPT Breakdown

4.4 Bit Run Data

Bit run data from all drilling runs is presented below:

NUMBER	1	2	3RR1	4RR2
SIZE, in.	12¼"	8½"	8½"	8½"
TYPE	Ulterra CF716M U02822	Ulterra MS-X IADC216	Ulterra MS-X IADC216	Ulterra MS-X IADC216
SERIAL No.	48935	86185-T	86185-T	86185-T
TFA	0.706	0.920	0.920	0.920
W.O.B (Klbs)	8 – 12	5 – 10	5 – 10	5 – 10
R.P.M	90 – 110	50 – 60	50 – 60	50 – 60
DEPTH OUT, m	269	269	269	269
DEPTH IN, m	30.8	269	269	269
METERAGE	238.2	-	-	-
HOURS On Btm	14.3	-	-	-
ROP (m/hr)	16.7	-	-	-
CONDITION	1-2-CT-N-X-IN-WT-TD	1-1-NO-A-0-IN-NO-BHA	1-1-NO-A-0-IN-NO-BHA	1-1-NO-A-0-IN-NO-BHA

Table 20: Bit Run History – Part 1

NUMBER	5RR3	6	7	8RR1
SIZE, in.	8½"	8½"	6 ⅛"	6 ⅛"
TYPE	Ulterra MS-X IADC216	Smith Z616	Ulterra RPS513S U04089	Ulterra RPS513S U04089
SERIAL No.	86185-T	JN8652	57603	57603
TFA (in^2)	0.920	0.663	0.552	0.552
W.O.B (Klbs)	5 – 12	10 – 38	5 – 12	2 - 12
R.P.M	40 – 60	50 - 90	80 – 100	40 - 60
DEPTH OUT, m	269	269	1835	1287
DEPTH IN, m	269	1053	1053	1140
METERAGE	-	784	782	147
HOURS On Btm	-	85.9	31.3	13.2
ROP (m/hr)	-	9.1	25.0	11.1
CONDITION	1-1-NO-A-0-IN-NO-BHA	1-1-CT-A-X-IN-ER-TD	0-0-NO-A-X-IN-NO-TD	0-0-ER-A-X-IN-NO-BHA

Table 21: Bit Run History – Part 2

NUMBER	9	10RR1	11RR2	12RR3
SIZE, in.	6 ⅛"	6 ⅛"	6 ⅛"	6 ⅛"
TYPE	Ulterra 613RPS U04135	Ulterra 613RPS U04135	Ulterra 613RPS U04135	Ulterra 613RPS U04135
SERIAL No.	57602	57602	57602	57602
TFA (in^2)	0.557	0.557	0.557	0.557
W.O.B (Klbs)	10 – 12	5 – 8	8 – 15	10 - 20
R.P.M.	40	40	40	90 - 130
DEPTH OUT, m	1324	1325	1750	3150
DEPTH IN, m	1287	1324	1325	1750
METERAGE	37	1	425	1400
HOURS on btm	3.6	0.2	29.23	62.7
ROP (m/hr)	10.3	5.0	14.5	22.3
CONDITION	0-0-NO-A-AX-IN-NO-BHA	0-0-NO-A-AX-IN-NO-BHA	0-0-NO-A-AX-IN-NO-BHA	1-0-CT-C-X-IN-NO-TD

Table 22: Bit Run History – Part 3

5. Well Integrity

5.1 Surface Casing and Cement

The 9-5/8” 36ppf K55 BTC surface casing string was installed with 11” 5M wellhead landed on the base plate placing the shoe at 267.40m, the 9-5/8” x 12-1/4” ACP across the interval 112.58m – 113.65m and the 9-5/8” stage cementing ports at 111.33m. Bow spring centralisers were run on every joint of casing (including 2 x centralisers on the shoe joint) to provide calculated stand-off of approximately 80%. Two 9-5/8” x 12-1/4” cement baskets were also installed evenly spaced between the annulus casing packer and the surface. First stage cement was pumped consisting of 86.4 bbls 15.8 ppg slurry, however a string pressure lock was encountered after displacing 14.6 bbls fresh water behind the first stage cement shut-off plug with top of cement inside casing at +/- 54m RT.

Cement was drilled out inside the 9-5/8” casing with 8-1/2” clean-out BHA with milled tooth bit from 54m to 120m and circulation established through open stage ports at 111.33m prior to performing the 2nd stage cement job with 70 bbls 15.8 ppg slurry displaced with 25 bbls fresh water to 94m with no returns to surface throughout the job.

BOP equipment was then installed and tested before cement was drilled out inside the 9-5/8” casing from 94m to 120m. A casing integrity test was then attempted to 1000 psi without success (casing leaking at stage tool). A 10 bbl 15.8ppg balanced cement plug was then placed from 85m - 117m and 0.4 bbls cement squeezed away with up to 1000 psi through the leaking stage tool ports.

The cement plug was then drilled out from 85m to 120m and the remaining length of cement inside the 9-5/8” casing cleaned out from 120m to 264m (3.4m above base of float shoe). A 9-5/8” casing integrity test to 1050 psi was then achieved against the blind rams after pulling out of hole with the 8-1/2” clean out BHA. At this point an offline top-up cement job on the 12-1/4" x 9-5/8" annulus was also performed with 5 bbls 15.8 ppg Class G cement slurry pumped with cement returns to surface observed.

The 9-5/8” shoe track and 12-1/4” rathole was drilled out from 264m to 269m before displacing the well to 8.8ppg KCl-PHPA drilling fluid and drilling 3m of 8-1/2” hole from 269m to 272m in preparation for a formation integrity test. The FIT was then conducted with 1050 psi surface pressure applied over 8.8 ppg drilling fluid, or 32 ppg equivalent mud density. 8-1/2” hole was then drilled from 272m to 292m before conducting a leak-off test (LOT) from which a breakover pressure of 1942 psi was recorded, equivalent to a 51.5 ppg mud density.

A cement bond log (CBL) of the 9-5/8” surface casing was performed by QTEQ wireline on 21-November-2021 prior to running the 7” casing. The CBL confirmed isolation of the 12-1/4” x 9-5/8” annulus around the 9-5/8” shoe, above the 9-5/8” x 12-1/4” annulus casing packer placed at the interface of the adjacent Anthony Lagoon and Gum Ridge aquifers, and between the surface and the upper Anthony Lagoon aquifer.

5.2 Intermediate Casing and Cement

A 7” 26ppf P110 BTC intermediate casing with 2-joint shoe track was cemented at 1049.64m with 60 bbls 11.5 ppg gelled spacer ahead of 92.2 bbls 13.5 ppg lead cement and 26.1 bbls 15.8 ppg tail cement displaced with 133 bbls 9.2 ppg drilling fluid with full returns throughout the job and 22bbls cement returns to surface. Bow spring centralisers were run along the length of the casing to provide calculated stand-off > 70%. A top and bottom plug were run to provide separation between the fluids ahead and behind the cement slurry.

The 7” green cement casing test was not performed as the top plug was not bumped despite pumping 50% shoe track overdisplacement (1.5 bbls). The shoe track floats held on bleed-off and cementing equipment was rigged down prior to installing and testing the 7” casing hanger pack-off seal assembly to 5000 psi.

The BOP equipment was re-tested to 5000 psi before successfully performing a grey cement casing integrity test of the 7” intermediate casing against the BOP blind rams to 3000 psi for 10 minutes. The 7” shoe track and 8-1/2” rathole was drilled out to 1053m and 3m of 6-1/8” hole drilled to 1056m before attempting to perform an extended leak-off test (XLOT) at the 7” casing shoe. No breakover was observed with 3000 psi surface pressure applied over 9.1 ppg mud, implying formation integrity of at least 25.9 ppg equivalent mud density at the 7” shoe.

No cement bond log of the 7” intermediate casing was performed as it did not meet the criteria for a CBL being required as per Section B4.7 of the Code of Practice: Onshore Petroleum Activities in the Northern Territory.

5.3 Production Casing and Cement

A Volant Casing Running Tool (CRT) and weCAAT torque-turn recording sub was used to run a 4-1/2” 13.5 ppf P110 TP-G2 production casing in hole with a five-joint shoe track and 5-7/8” x 4-1/2” low-friction composite centralisers installed across the entire length of the string to provide >70% calculated stand-off. The production casing was landed at 3140.58m and cemented with 102 bbls of 13.5 ppg lead slurry and 153.4 bbls of 15.8 ppg API Gas-Tight tail cement slurry, displaced with 148.5 bbls 11.0 ppg inhibited Calcium Chloride suspension brine with full returns throughout the job and 47.5 bbls neat cement to surface.

A 60 bbl 12.7 ppg gelled spacer was run ahead of the lead slurry to air in mud removal ahead of the cement and top and bottom plugs were run to provide separation between the fluids ahead of and behind the cement slurry.

A green cement casing integrity test was successfully performed on bump to 4500 psi for 10 minutes prior to bleeding off with floats holding. A cement bond log and casing integrity test to up to 10,000 psi (the maximum fracture stimulation treating pressure) will be performed to re-confirm integrity of the 4-1/2” casing prior to commencing fracture stimulation of the well through the 4-1/2” production casing.

Cementing details are included in Table 3 and Appendix E.

5.4 Wellhead Pressure Testing

The wellhead provided by Cactus Group was rated and tested to 5,000 psi for the drilling and production components and 10,000 psi for the components that will be exposed to fracture stimulation pressure.

#	Test	Pressure (psi)	Time (S)
1	Casing Head Companion Flange against VR Plug	5,000	900
2	11" x 7" Mandrel Pack-Off Seal Void – Test 1	5,000	700
3	11" x 7" Mandrel Pack-Off Seal Void – Test 2	5,000	800
4	11" x 4-1/2" Mandrel Pack-off Seal Void – Test 1	5,000	1,000
5	11" x 4-1/2" Mandrel Pack-off Seal Void – Test 2	5,000	850
6	9" x 7-5/8" Secondary Seal Void	10,000	850
7	11" 5M x Casing Housing x 11" 5M x 7-1/16" Tubing Head Flange Connection	5,000	850
8	Offline shell test of 11" 5M x 7-1/16" 10M Tubing Head, 7-1/16" 10M x 2-9/16" 5M Tubing Head Adapter Flange and 2-9/16" 5M Production Tree Assembly	5,000	1,800

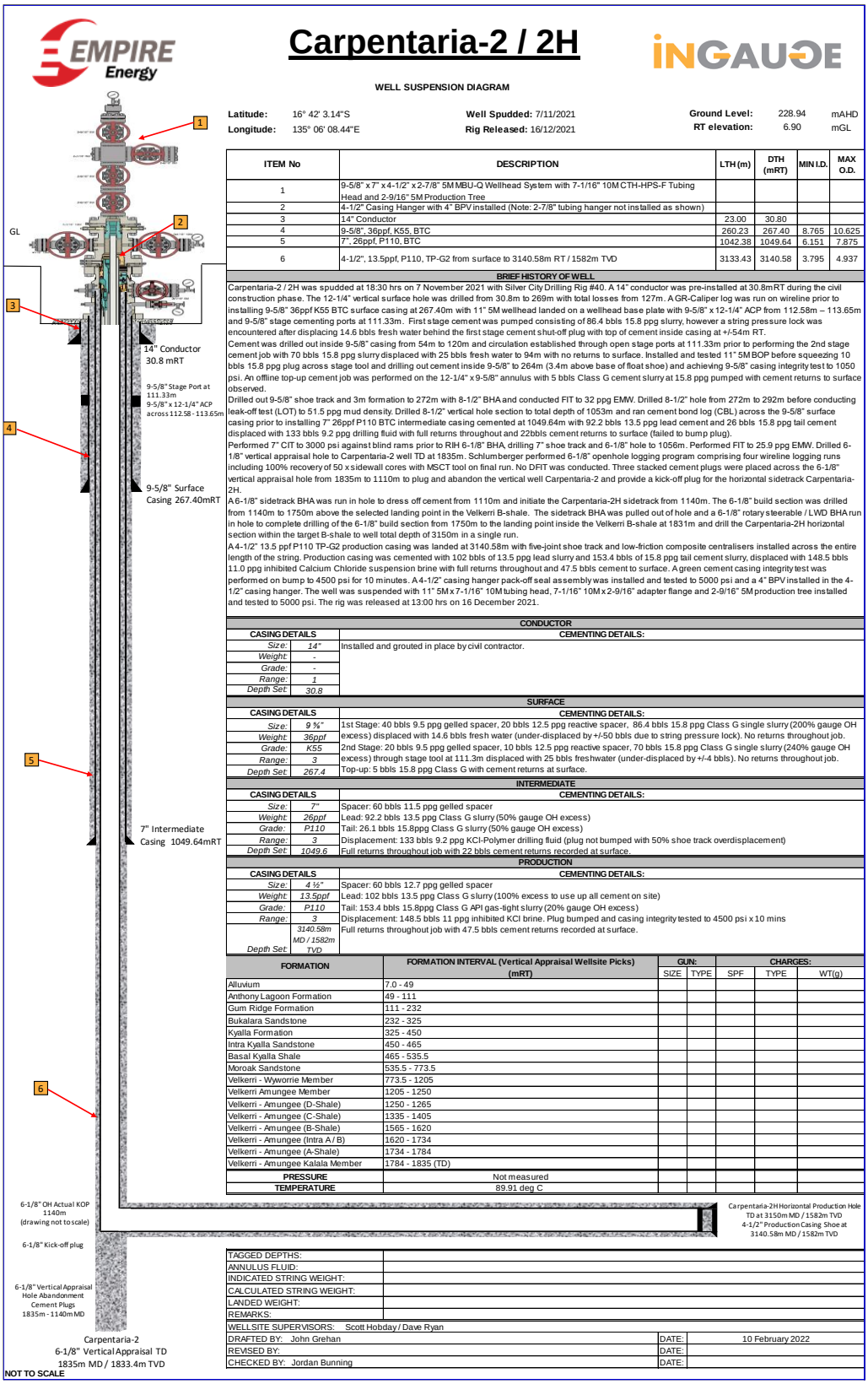
Table 23: Wellhead Pressure Testing

5.5 HSE Overview

A single minor medical treatment injury was recorded during the mobilisation phase of the well.

Based on the daily rig POB record, there were approximately 19,080 hours worked during the drilling phase of the project.

5.6 Downhole Diagram



ITEM No	DESCRIPTION	LTH (m)	DTH (mRT)	MIN I.D.	MAX O.D.
1	9-5/8" x 7" x 4-1/2" x 2-7/8" 5M MBU-Q Wellhead System with 7-1/16" 10M CTH-HPS-F Tubing Head and 2-9/16" 5M Production Tree				
2	4-1/2" Casing Hanger with 4" BPV installed (Note: 2-7/8" tubing hanger not installed as shown)				
3	14" Conductor	23.00	30.80		
4	9-5/8", 36ppf, K55, BTC	260.23	267.40	8.765	10.625
5	7", 26ppf, P110, BTC	1042.38	1049.64	6.151	7.875
6	4-1/2", 13.5ppf, P110, TP-G2 from surface to 3140.58m RT / 1582m TVD	3133.43	3140.58	3.795	4.937

BRIEF HISTORY OF WELL

Carpentaria-2 / 2H was spudded at 18:30 hrs on 7 November 2021 with Silver City Drilling Rig #40. A 14" conductor was pre-installed at 30.8mRT during the civil construction phase. The 12-1/4" vertical surface hole was drilled from 30.8m to 269m with total losses from 127m. A GR-Caliper log was run on wireline prior to installing 9-5/8" 36ppf K55 BTC surface casing at 267.40m with 11" 5M wellhead landed on a wellhead base plate with 9-5/8" x 12-1/4" ACP from 112.58m – 113.65m and 9-5/8" stage cementing ports at 111.33m. First stage cement was pumped consisting of 86.4 bbls 15.8 ppg slurry, however a string pressure lock was encountered after displacing 14.6 bbls fresh water behind the first stage cement shut-off plug with top of cement inside casing at +/-54m RT.
Cement was drilled out inside 9-5/8" casing from 54m to 120m and circulation established through open stage ports at 111.33m prior to performing the 2nd stage cement job with 70 bbls 15.8 ppg slurry displaced with 25 bbls fresh water to 94m with no returns to surface. Installed and tested 11" 5M BOP before squeezing 10 bbls 15.8 ppg plug across stage tool and drilling out cement inside 9-5/8" to 264m (3.4m above base of float shoe) and achieving 9-5/8" casing integrity test to 1050 psi. An offline top-up cement job was performed on the 12-1/4" x 9-5/8" annulus with 5 bbls Class G cement slurry at 15.8 ppg pumped with cement returns to surface observed.
Drilled out 9-5/8" shoe track and 3m formation to 272m with 8-1/2" BHA and conducted FIT to 32 ppg EMW. Drilled 8-1/2" hole from 272m to 292m before conducting leak-off test (LOT) to 51.5 ppg mud density. Drilled 8-1/2" vertical hole section to total depth of 1053m and ran cement bond log (CBL) across the 9-5/8" surface casing prior to installing 7" 26ppf P110 BTC intermediate casing cemented at 1049.64m with 92.2 bbls 13.5 ppg lead cement and 26 bbls 15.8 ppg tail cement displaced with 133 bbls 9.2 ppg drilling fluid with full returns throughout and 22bbls cement returns to surface (failed to bump plug).
Performed 7" CIT to 3000 psi against blind rams prior to RIH 6-1/8" BHA, drilling 7" shoe track and 6-1/8" hole to 1056m. Performed FIT to 25.9 ppg EMW. Drilled 6-1/8" vertical appraisal hole to Carpentaria-2 well TD at 1835m. Schlumberger performed 6-1/8" openhole logging program comprising four wireline logging runs including 100% recovery of 50 x sidewall cores with MSCT tool on final run. No DFIT was conducted. Three stacked cement plugs were placed across the 6-1/8" vertical appraisal hole from 1835m to 1110m to plug and abandon the vertical well Carpentaria-2 and provide a kick-off plug for the horizontal sidetrack Carpentaria-2H.
A 6-1/8" sidetrack BHA was run in hole to dress off cement from 1110m and initiate the Carpentaria-2H sidetrack from 1140m. The 6-1/8" build section was drilled from 1140m to 1750m above the selected landing point in the Velkerri B-shale. The sidetrack BHA was pulled out of hole and a 6-1/8" rotary steerable / LWD BHA run in hole to complete drilling of the 6-1/8" build section from 1750m to the landing point inside the Velkerri B-shale at 1831m and drill the Carpentaria-2H horizontal section within the target B-shale to well total depth of 3150m in a single run.
A 4-1/2" 13.5 ppf P110 TP-G2 production casing was landed at 3140.58m with five-joint shoe track and low-friction composite centralisers installed across the entire length of the string. Production casing was cemented with 102 bbls of 13.5 ppg lead slurry and 153.4 bbls of 15.8 ppg tail cement slurry, displaced with 148.5 bbls 11.0 ppg inhibited Calcium Chloride suspension brine with full returns throughout and 47.5 bbls cement to surface. A green cement casing integrity test was performed on bump to 4500 psi for 10 minutes. A 4-1/2" casing hanger pack-off seal assembly was installed and tested to 5000 psi and a 4" BPV installed in the 4-1/2" casing hanger. The well was suspended with 11" 5M x 7-1/16" 10M tubing head, 7-1/16" 10M x 2-9/16" adapter flange and 2-9/16" 5M production tree installed and tested to 5000 psi. The rig was released at 13:00 hrs on 16 December 2021.

CONDUCTOR

CASING DETAILS		CEMENTING DETAILS:
Size:	14"	Installed and grouted in place by civil contractor.
Weight:	-	
Grade:	-	
Range:	1	
Depth Set:	30.8	

SURFACE

CASING DETAILS		CEMENTING DETAILS:
Size:	9 ⅝"	1st Stage: 40 bbls 9.5 ppg gelled spacer, 20 bbls 12.5 ppg reactive spacer, 86.4 bbls 15.8 ppg Class G single slurry (200% gauge OH excess) displaced with 14.6 bbls fresh water (under-displaced by +/-50 bbls due to string pressure lock). No returns throughout job.
Weight:	36ppf	2nd Stage: 20 bbls 9.5 ppg gelled spacer, 10 bbls 12.5 ppg reactive spacer, 70 bbls 15.8 ppg Class G single slurry (240% gauge OH excess) through stage tool at 111.3m displaced with 25 bbls freshwater (under-displaced by +/-4 bbls). No returns throughout job.
Grade:	K55	Top-up: 5 bbls 15.8 ppg Class G with cement returns at surface.
Range:	3	
Depth Set:	267.4	

INTERMEDIATE

CASING DETAILS		CEMENTING DETAILS:
Size:	7"	Spacer: 60 bbls 11.5 ppg gelled spacer
Weight:	26ppf	Lead: 92.2 bbls 13.5 ppg Class G slurry (50% gauge OH excess)
Grade:	P110	Tail: 26.1 bbls 15.8ppg Class G slurry (50% gauge OH excess)
Range:	3	Displacement: 133 bbls 9.2 ppg KCl-Polymer drilling fluid (plug not bumped with 50% shoe track overdisplacement)
Depth Set:	1049.6	Full returns throughout job with 22 bbls cement returns recorded at surface.

PRODUCTION

CASING DETAILS		CEMENTING DETAILS:
Size:	4 ½"	Spacer: 60 bbls 12.7 ppg gelled spacer
Weight:	13.5ppf	Lead: 102 bbls 13.5 ppg Class G slurry (100% excess to use up all cement on site)
Grade:	P110	Tail: 153.4 bbls 15.8ppg Class G API gas-tight slurry (20% gauge OH excess)
Range:	3	Displacement: 148.5 bbls 11 ppg inhibited KCl brine. Plug bumped and casing integrity tested to 4500 psi x 10 mins
Depth Set:	3140.58m MD / 1582m TVD	Full returns throughout job with 47.5 bbls cement returns recorded at surface.

FORMATION	FORMATION INTERVAL (Vertical Appraisal Wellsite Picks) (mRT)	GUN: SIZE	GUN: TYPE	CHARGES: SPF	CHARGES: TYPE	CHARGES: WT(g)
Alluvium	7.0 - 49					
Anthony Lagoon Formation	49 - 111					
Gum Ridge Formation	111 - 232					
Bukalara Sandstone	232 - 325					
Kyalla Formation	325 - 450					
Intra Kyalla Sandstone	450 - 465					
Basal Kyalla Shale	465 - 535.5					
Moroak Sandstone	535.5 - 773.5					
Velkerri - Wyworrie Member	773.5 - 1205					
Velkerri Amungee Member	1205 - 1250					
Velkerri - Amungee (D-Shale)	1250 - 1265					
Velkerri - Amungee (C-Shale)	1335 - 1405					
Velkerri - Amungee (B-Shale)	1565 - 1620					
Velkerri - Amungee (Intra A / B)	1620 - 1734					
Velkerri - Amungee (A-Shale)	1734 - 1784					
Velkerri - Amungee Kalala Member	1784 - 1835 (TD)					
PRESSURE	Not measured					
TEMPERATURE	89.91 deg C					

TAGGED DEPTHS:	
ANNULUS FLUID:	
INDICATED STRING WEIGHT:	
CALCULATED STRING WEIGHT:	
LANDED WEIGHT:	
REMARKS:	

WELLSITE SUPERVISORS: Scott Hobday / Dave Ryan

DRAFTED BY: John Grehan	DATE:	10 February 2022
REVISED BY:	DATE:	
CHECKED BY: Jordan Bunning	DATE:	

Figure 6: Carpentaria-2 / 2H Downhole Diagram

5.7 Post Drilling Wellhead Diagram

Refer to Cactus IP1305 for a full list of wellhead components. The well was suspended with the tubing head and production tree installed with 4” BPV landed inside the 4-1/2” casing hanger.

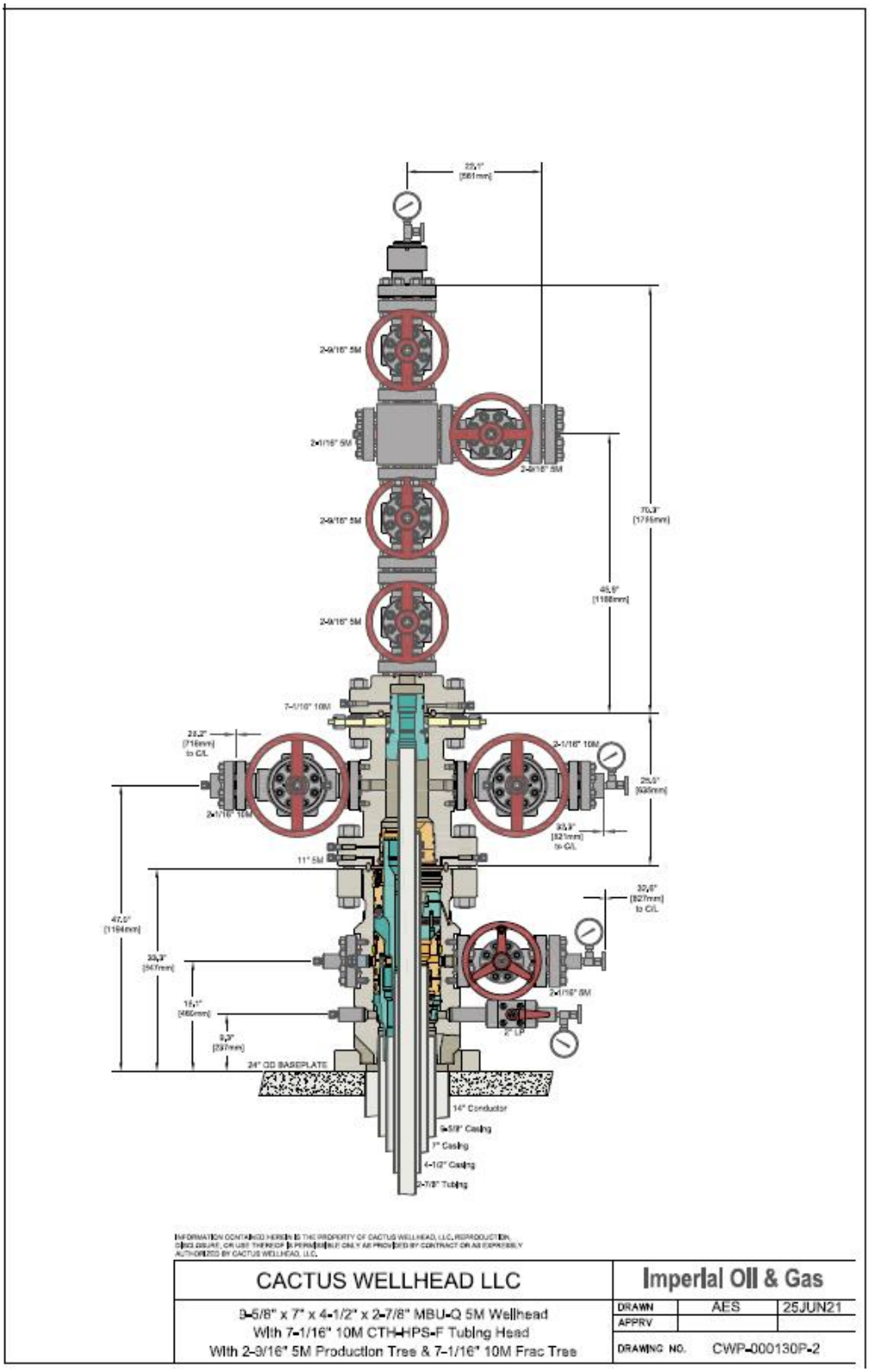


Figure 7: Wellhead Diagram

6. Appendices and Enclosures

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A. Cuttings Descriptions

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B. Silver City Rig 40 Specs

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C. Daily Drilling Reports

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D. Daily Geological Reports

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E. Casing and Cementing Reports

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F. Mud Recap

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G. Tubular Running Services Report

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H. Mud Logging Reports

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I. Sample Manifest

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J. DD / MWD / LWD Reports

[Page Intentionally Left Blank]

K. Survey Report

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L. Mudlog Enclosures and Data

Mudlog Enclosures

Carpentaria-2_1835mMD_Mudlog_1-200 FINAL_FmTop.pdf
Carpentaria-2H_3150mMD_Mudlog_1-200 FINAL_FmTop.pdf

Mudlog Data

Carpentaria-2_1835mMD_Drill_Gas_25112021.asc
Carpentaria-2_1835mMD_Litho_Ascii_26112021.asc
Carpentaria-2H_3150mMD_Drill_Gas_13122021.asc
Carpentaria-2H_3150mMD_Litho_Ascii_13122021.asc

M. LWD and MWD Enclosures and Data

Logging Whilst Drilling Enclosures

Carpentaria_2_LWD_Run1_REC_GR-DIR_200MD_245MD-1053MD.pdf
Carpentaria_2_LWD_Run1_RT_GR-DIR_200MD_250MD-1023MD.pdf
Carpentaria_2_LWD_Run2_REC_GR-DIR_200MD_245MD-1835MD.pdf
Carpentaria_2_LWD_Run2_RT_GR-DIR_200MD_245MD-1835MD.pdf
Carpentaria_2H_LWD_Run3-7_REC_GR-DIR_200MD_250MD-3150MD_FINAL_FIELD_COMBINED.pdf
Carpentaria_2H_LWD_Run3-7_RT_GR-DIR_200MD_1105MD-3150MD.pdf

LWD and MWD Data

Carpentaria_2_LWD_Run1_REC_GR-DIR_245MD-1053MD.las
Carpentaria_2_LWD_Run1_RT_GR-DIR_250MD-1053MD.las
Carpentaria_2_LWD_Run2_REC_GR-DIR_245MD-1835MD.las
Carpentaria_2_LWD_Run2_RT_GR-DIR_245MD-1835MD.las
Carpentaria_2H_LWD_Run3-7_REC_GR-DIR_250MD-3150MD_0.2m interval_COMBINED.las
Carpentaria_2H_LWD_Run3-7_RT_GR-DIR_1105MD-3150MD.las
Imperial_Carpentaria 2_Directional.xlsx
Imperial_Carpentaria 2H_Directional.xlsx

N. Wireline Enclosures and Data

Wireline Enclosures

Carpentaria-2_WLS1R1_GR_CAL_FLUID_RES_TEMPERATURE.pdf
Carpentaria-2_WLS1R1_GR-Cal_Main_Field_200_08112021.pdf
Carpentaria-2_WLS1R1_GR-Cal_Repeat_Field-200-08112021.pdf
Carpentaria-2_WLS2R1_9.625in CBL.pdf
Carpentaria-2_WLS3R1_CompositeLog_200_Main_Final.Pdf
Carpentaria-2_WLS3R1_CompositeLog_500_Main_Final.Pdf
Carpentaria-2_WLS3R1_HNGS-GR_200_Main_Final.Pdf
Carpentaria-2_WLS3R1_HNGS-GR_500_Main_Final.Pdf
Carpentaria-2_WLS3R1_HRLA-PEX-SP-GR_200_Main_Final.Pdf
Carpentaria-2_WLS3R1_HRLA-PEX-SP-GR_500_Main_Final.Pdf
Carpentaria-2_WLS3R2_CementVolumeLog_200_Main_Field.pdf
Carpentaria-2_WLS3R2_FMI-GR_40_Main_Final.Pdf
Carpentaria-2_WLS3R2_SonicLog_200_Casedhole_Field.Pdf
Carpentaria-2_WLS3R2_SonicLog_200_Main_Final.Pdf
Carpentaria-2_WLS3R3_CMR-GR_200_Main_Final.Pdf
Carpentaria-2_WLS3R3_CMR-GR_500_Main_Final.Pdf
Carpentaria-2_WLS3R3_NEXT-GR_200_Main_Final.Pdf
Carpentaria-2_WLS3R4_MSCT-GR_Main_Final.Pdf
Carpenteria-2_WL_S3R2_Cement-Bond-Log_200_Main_Field.pdf
Carpenteria-2_WLS3R1_HNGS-GR_200_Main_Field.pdf
Carpenteria-2_WLS3R1_HRLA-PEX-SP-GR_200_Main_Field.pdf

Wireline Data

Carpentaria-2_WLS1R1_GR_CAL_FLUID_RES_TEMPERATURE.LAS
Carpentaria-2_WLS1R1_GR-Cal_Main_Field_08112021.LAS
Carpentaria-2_WLS1R1_GR-Cal_Repeat_Field_08112021.LAS
Carpentaria-2_WLS1R1_Logging_QC_Report_08112021.xls
Carpentaria-2_WLS2R1_CBL.LAS
Carpentaria-2_WLS3R1_CompositeLog_Main_Final.dlis
Carpentaria-2_WLS3R1_CompositeLog_Main_Final.las
Carpentaria-2_WLS3R1_CompositeLog_Repeat_Final.dlis
Carpentaria-2_WLS3R1_CompositeLog_Repeat_Final.las
Carpentaria-2_WLS3R1_HRLA-PEX-HNGS-SP-GR_Main_Final.dlis
Carpentaria-2_WLS3R1_HRLA-PEX-HNGS-SP-GR_Main_Final.las
Carpentaria-2_WLS3R1_HRLA-PEX-HNGS-SP-GR_Repeat_Final.dlis
Carpentaria-2_WLS3R1_HRLA-PEX-HNGS-SP-GR_Repeat_Final.las
Carpentaria-2_WLS3R1_PEX-HNGS-GR_Cased Hole_Field.dlis
Carpentaria-2_WLS3R1_PEX-HNGS-GR_Cased Hole_Field.las
Carpentaria-2_WLS3R1_CaliperWireline_Field_27Nov21_080526.las
Carpentaria-2_WLS3R2_FMI-PPC-SSCAN-PPC-GR_Main_Final.dlis
Carpentaria-2_WLS3R2_FMI-PPC-SSCAN-PPC-GR_Main_Final.las
Carpentaria-2_WLS3R2_FMI-PPC-SSCAN-PPC-GR_Repeat_Final.dlis
Carpentaria-2_WLS3R2_FMI-PPC-SSCAN-PPC-GR_Repeat_Final.las
Carpentaria-2_WLS3R2_GPIT_MAIN_FIELD_SurveyList_Full.csv
Carpentaria-2_WLS3R2_SonicLog_Casedhole_Field.dlis
Carpentaria-2_WLS3R2_SonicLog_Casedhole_Field.las
Carpentaria-2_WLS3R3_CMR-NEXT-GR_Main_Final.dlis
Carpentaria-2_WLS3R3_CMR-NEXT-GR_Main_Final.las
Carpentaria-2_WLS3R3_CMR-NEXT-GR_Repeat_Final.dlis
Carpentaria-2_WLS3R3_CMR-NEXT-GR_Repeat_Final.las
Carpentaria-2_WLS3R3_NEXT-GR_Casedhole_Field.dlis
Carpentaria-2_WLS3R3_NEXT-GR_Casedhole_Field.las