BASSGAS PROJECT

YOLLA 3 DRILLING PROGRAMME

BR1155-D-223

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B	April 2004	Issued for Project Review	W. Curry		J. Bauer		M. Mussared	
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Year Of Currency	**March 2004 – March 2005**			
	Name	**Title**	**Signature**	**Date**
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10	CalEnergy Gas (Australia) Ltd	Elliot Yearsley
11	Wandoo Petroleum Pty Ltd	Chris Hodge

PREFACE

BassGas Project

Origin Energy Resources Ltd (Origin Energy) proposes to drill two development wells in license T/L1 (Yolla 3 & 4 Wells – BassGas Project) located in Commonwealth waters of Bass Strait approximately half way between Victoria and Tasmania. The Tasmanian Department of Infrastructure, Energy and Resources (TDIER) is the Designated Authority (DA) pursuant to the Petroleum (Submerged Lands) Act. A Departmental Division of Mineral Resources Tasmania (MRT) is responsible for the administration of the Permit, with managerial assistance being provided by the Victoria Department of Primary Industries (VDPI) for the Yolla-A platform drilling campaign. All subsequent references to the DA will mean the VDPI on behalf of the TDIER MRT. Australian Drilling Associates (ADA) provides drilling project management services for Origin Energy. The operations are managed from the Origin Energy offices and ADA offices in Melbourne Victoria.

Application to Drill – P(SL)A Schedule

This document shall be used as the primary document for the formal submission by Origin Energy of the Application for Approval to drill a new development well – Yolla 3, as part of the BassGas (Yolla-A) development.

This formal submission is made to the Designated Authority pursuant to the Petroleum (Submerged Lands) Act Schedule – Specific Requirements as to Offshore Petroleum Exploration and Production.

The Petroleum (Submerged Lands) Act, Schedule - Specific Requirements as to Offshore Petroleum Exploration and Production Part V- Drilling, require that the drilling operation shall not commence without prior DA approval.

This document provides the technical data and information to the Designated Authorities to gain approval for Origin Energy to drill the Yolla 3 well.

This document supplements the Origin Energy Application to Drill (letter and well data) submitted to the DA in September 2003, pursuant to Clause 501 Part V- Drilling Part V of the P (SL) A, Schedule - Specific Requirements as to Offshore Petroleum Exploration and Production.

Yolla Well Design

Origin Energy is responsible for the design of the Yolla development wells and the design and management of the contributing services such as cementing, testing, and logging.

Drilling Management

The detailed roles and responsibilities for all drilling management team members is provided in the Origin Energy Drilling Operations Emergency Response Plan, document number BR1155-D-203.

The Australian Drilling Associates (ADA) Drilling Superintendent is the designated Origin Energy drilling representative and has the authority of Origin Energy for the day to day management of the Yolla drilling Programme, supported by the drilling operations management team.

The ADA Principal Drilling Engineer has designed the Yolla development wells based upon the geological data provided by Origin Energy.

The ADA Drilling Supervisors (day and night) are the designated representative on the MODU ENSCO 102 for Origin Energy and have the authority of Origin Energy.

Drilling Operations

ENSCO Australia is responsible for operating the Mobile Offshore Drilling Unit (MODU) known as the ENSCO 102 rig whilst carrying out the Yolla development wells drilling programme and interfacing with service contractors and all other personnel at the drilling operations level. This is to ensure that well design integrity is maintained throughout the drilling programme.

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ABBREVIATIONS

ADA	**Australian Drilling Associates**
BOP	**Blow Out Preventer**
MDRT	**Measured Depth, from Drill Rig Rotary Table**
MDSS	**Measured Depth, from Sea Level**
MODU	**Mobile Offshore Drilling Unit**
MRT	**Mineral Resources Tasmania**
OIM	**Offshore Installation Manager**
TDIER	**Tasmania Department of Infrastructure, Energy and Resources**
TDPIWE	**Tasmania Department of Primary Industries, Water and Environment**
TVDRT	**True Vertical Depth, from Drill Rig Rotary Table**
TVDSS	**True Vertical Depth, from Sea Level**
VDPI	**Victoria Department of Natural Resources and Environment**

REFERENCES

Origin Energy Yolla-A Drilling Operations Principal Safety Case Bridging Document, BR1155-D-201.

Origin Energy Yolla-A Drilling Operations Principal Safety Case Bridging Document Addendum, BR1155-D-202.

Origin Energy Drilling Operations Emergency Response Plan, BR1155-D-203.

Origin Energy, Yolla 3 & Yolla 4 WELL PROPOSAL, T/L 1 Bass Basin, Tasmania, August, 2003 (Authors: S.Tye, D.Brooks, R.Taylor & J.Parvar)

ENSCO 102 Vessel Safety Case, SC-ASIA-E102-001.

ENSCO Emergency Procedures Manual, MA-ASIA-EP-001.

ENSCO 102 Well Control Manual, MA-ASIA-WC-001.

Origin Energy BassGas Project Emergency Response Plan, BR1155-G-053.

1 EXECUTIVE SUMMARY

Origin Energy Resources Ltd. (Origin Energy) proposes to drill directionally and complete the Yolla 3 development well, the second of two development wells (Yolla 4 being the other well) to be drilled during this phase of the field development. Both wells will be drilled using the ENSCO 102 jack up drilling rig, which will be temporarily cantilevered over the top of the Yolla (BassGas) permanent production/wellhead platform located in Production License T/L1 in the Bass Strait, approximately half way between Victoria and Tasmania. The Yolla 3 and Yolla 4 wells will be the only source of initial production for the Origin Energy BassGas Project, which will supply natural gas to the Victorian domestic market.

This document shall be used as the primary document for providing technical data and information to the Designated Authorities in support of the Origin Energy Yolla 3 well Application to Drill. The objective of this document is to describe the Origin Energy Yolla 3 development well program sufficiently to the DA for the Application to Drill to be approved.

This document supplements the Origin Energy Application to Drill submitted to the DA in September 2003, pursuant to Clause 501 of the P (SL) A, Schedule Part V.

2 YOLLA FIELD DESCRIPTION

The Yolla gas field is located in Tasmanian Production Licence 1 (T/L1) in the Bass Basin, 120 kilometres offshore from Tasmania and 220 kilometres south south-east of Melbourne in water depths of approximately 80 meters.

The Yolla field contains an estimated (proven and probable) 256 petajoules of sales gas, 13.7 million barrels of condensate (light oil) and 1.0 million tonnes of liquefied petroleum gas (LPG). The Yolla Joint Venture Partners (Table 2.1) propose to supply gas at a rate of 20 petajoules per annum, 1.2 million barrels of condensate per annum and 80,000 tonnes of LPG per annum.

The Yolla Field is a large northwest - southwest trending fault bounded structure. The structure of the reservoir is shown in Figure 2.1.

The details of the Yolla Field development plan and sales market are contained in the Origin Energy Environment Effects Statement/Environment Impact Statement previously submitted to the DA.

Table 2.1 Yolla Joint Venture Partners

Name	Interest Holder %	Description
Origin Energy Petroleum Pty Ltd.	32.50%	JVP and Operator.
Origin Energy Northwest Pty Ltd.	5.00%	JVP.
AWE Petroleum Pty Ltd.	30.00%	JVP.
CalEnergy Gas (Australia) Ltd.	20.00%	JVP.
Wandoo Petroleum Pty Ltd.	12.50%	JVP.

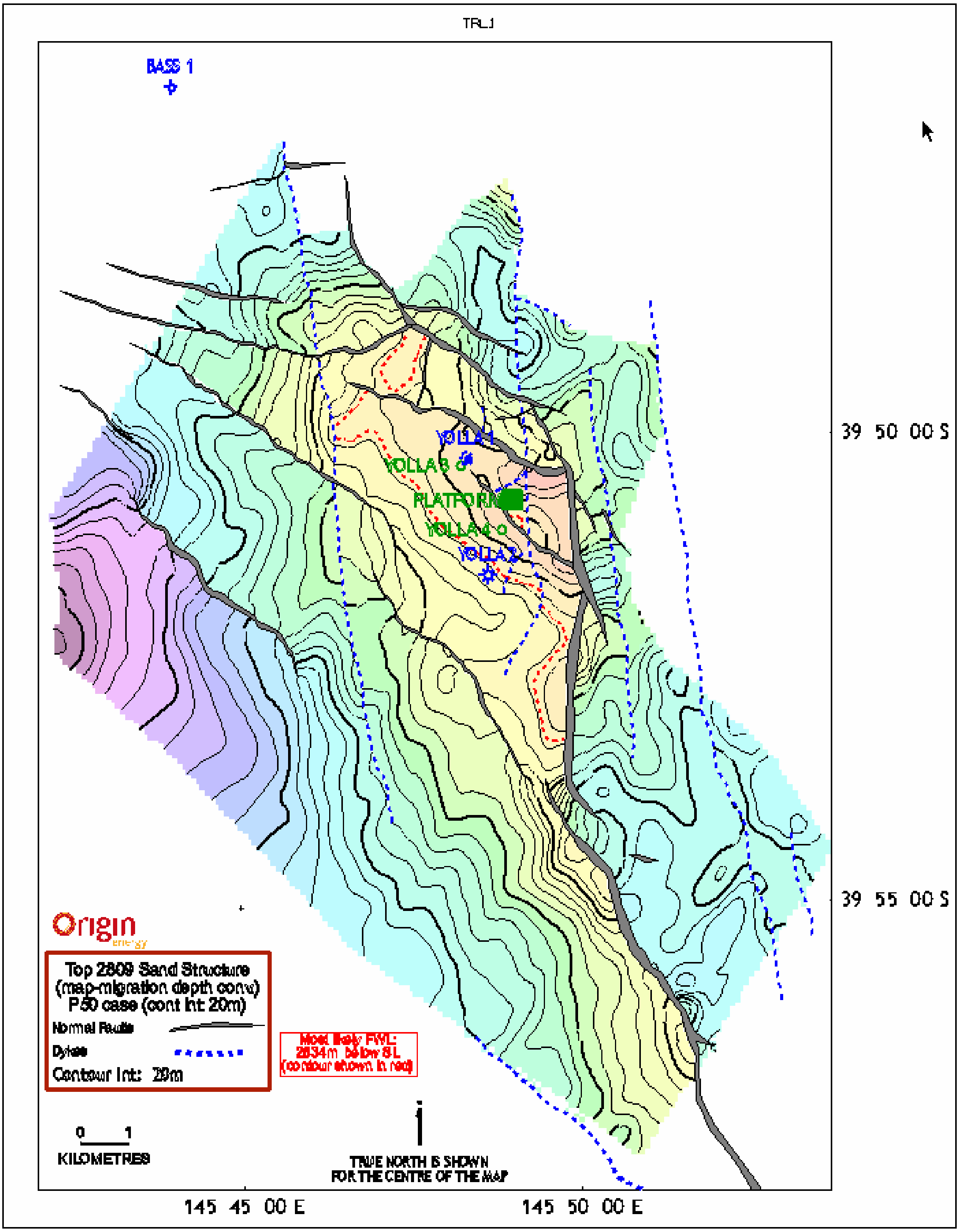


Figure 2.1: Yolla Field Depth Structure at top 2809 sand.

3 WELL DATA SUMMARY

The following data is provided and referenced to the Petroleum (Submerged Lands) Act Schedule - Specific Requirements as to Offshore Petroleum Exploration and Production Part V Drilling.

Table 3.1 Well Data Summary

Clause 501-(2) Ref:	Schedule Item	Details.
A	Well Name.	Yolla 3
B	Location.	T/L1 Production License Offshore Bass Basin (120km offshore) Tasmania (location map attached). SURFACE LOCATION (Yolla-A Platform location) Latitude 39º 50' 40.578" South, Longitude 145º 49' 06.186" East 5,588,822N, 398,908E (GDA94 Zone 55) WELL SLOT LOCATION 5,588,825.22N, 398,905.69E (GDA 94 Zone 55) TARGET HOLE LOCATIONS (Top TEV4) 5,589,373.77N, 398,015.38E (GDA 94 Zone 55) (Top 2809 Sand) 5,589,510N, 397,865E (GDA 94 Zone 55)
	Water Depth.	Approximately 80.80 metres with bathymetric data indicating a predominantly flat and featureless topography.
C	Programmed Depth.	3,065mSS, ~3499mMDRT (~40m into Basalt).
D	Estimated Spud-in Date.	Approximately 25 June, 2004. Pre-Spud meeting to be held approximate two weeks prior to Y4 Spud-in date.
E	Estimated Duration.	38.5 days.
F	Number & Type of Attendant Marine Craft.	3 Total: 2 x Tidewater AHTS (long term charter): Ray J Hope & Invincible Tide. 1x Spot Charter Vessel (TBA).
	Number & Type of Attendant Air Craft.	1 plus temporary back-up. Bell 412 and Sikorsky S-76A++ operated by CHC HELICOPTERS, Essendon Airport Victoria.
G	Drilling Contractor.	ENSCO Australia Pty Ltd, Level 2, 470 Collins Street, Melbourne Victoria 3000. Rig Manager: Barry Todd, Email: contact@enscous.com.au

Clause 501-(2) Ref:	Schedule Item	Details.
H	Rig Type & BOP	RIG: MODU Jack Up – ENSCO 102. Design:KFELS Enhanced Mod V "A". 400ft (122m) Water Depth Rating. Built 2002. BOP (Diverter): 49 ½" Nominal, 2000psi (137.9 bar), ABB Vecto Type KFDJ, Twin 14" straight run outlets w/Trunnion remote operated ball valve on each outlet. BOP (Annular): 18 ¾" 10,000psi (689.6 bar), Shaffer Spherical BOP, H2S trim. BOP (Ram): 18 ¾" Shaffer NXT Double Ram (x2, 4 total rams) with Ultralocks and boltless doors, 15,000psi (1034.5 bar), with 4 x 3 1/16" 15 000 psi WP studded side outlets. CHOKE & KILL VALVES: 4 Hyd Operated 3 1/16" 15,000psi Shaffer DB Hyd plus 4 Manual 3 1/16" 15,000psi Shaffer B. CHOKE MANIFOLD: Shaffer 3 1/16" 15,000psi w/4 chokes, 1xTAP, 1xSSTC, 2xSSTC Hydraulic.
I	Details of other Contractors Involved.	Table attached.
J	Details of Drilling Programme.	See Drilling Programme Overview in this document & data referenced herein.
K	Origin Energy Contact Person.	Mark Mussared, Subsurface Manager, BassGas Level 6, 1 King William Street ADELAIDE SA 5001 GPO Box 2576 ADELAIDE SA 5001 Phone – (08) 8217 5750 Fax – (08) 8217 5799 Mob: 0417 664 754 Email – **mark.mussared@upstream.originenergy.com.au**
	Australian Drilling Associates Contact Persons.	Michael Lanzer, Drilling Superintendent, Bill Curry, Drilling Engineer, 470 Collins Street, Melbourne Victoria 3000. 03-8610-3000 (03-8610-3030 fax) Mob: 0419 360 635 & 0409 960 161. Email – **m.lanzer@australiandrilling.com.au**. Email – **w.curry@australiandrilling.com.au**.
L	Deviation Program	Yolla 3: Kick off ~252mVDSS to ~41deg max deviation & hold till 1645mVDSS, where well angle will start to drop until vertical at well TD. Vertical section ~1292m at TD, 301.374 deg Azimuth.
M	Drilling Procedure.	The Detailed Drilling Procedure will be finalised two weeks before spud.
N	Geological Prognosis and Objectives	See Geological Prognosis included within this document.

Clause 501-(2) Ref:	Schedule Item	Details.
O	Pollution Control Measures.	The method for control and mitigation of pollution is provided as applicable in the following: ENSCO 102 Vessel Safety Case SC-ASIA-E102-001. Origin Energy T/RL1 Yolla Drilling Operations Environment Plan BR1155-D-204. Oil Spill Response provided in Origin Energy T/RL1 Yolla Drilling Operations Oil Spill Response Plan BR1155-D-205. Well Control procedures provided in ENSCO 102 Operations Manual. Well Programme, casing design, cementing and drilling fluids programmes as outlined in this document. The well will be drilled with water based mud.
P	Other Information as Director requests.	Other than the day to day clarifications that have taken place between the Designated Authorities and the BassGas Project Team, no other specific Director requests have been issued. Any clarifications have been included in the P(SL)A submission documents submitted by Origin Energy pursuant to the P(SL)A Schedule Applications.

4 GEOLOGICAL PROGNOSIS

4.1 Summary

The proposed Yolla 3 well is located in T/L1 in the northern part of the Yolla Gas Field within the Bass Basin (see Fig 4.1 below). The license is located 120km from the northern Tasmanian coast and 220km south-southeast of Melbourne. Yolla 3 is designed as a deviated well from the platform location.

A stratigraphic column for the area is included below as Figure 4.2, and a composite seismic line showing well trajectory is included as Figure 4.3.

The well will intersect the top EVCM 480m south east of Yolla-1 (Seismic inline 522 CDP 1000) and the top of the 2809 reservoir 150m south-southwest of Yolla-1 (seismic inline 530 CDP 1000). The well has a total horizontal reach of 1292m from the platform location, platform reference point 398908E, 5588822N. The well path coincides with seismic crossline 1000.

The primary objectives for the well are the Paleocene reservoirs (2718, 2755, 2809 and 2973 sand units) previously intersected and tested in Yolla 1 and 2. The well will intersect the 2755 unit at 2733.5mTVDSS (3167mMDRT) and the 2809 unit at 2795m TVDSS (3229mMDRT). The 2755 & 2809 sands are predicted to be intersected 2m and 3m respectively, updip of Yolla 1.

The secondary objective for the well is the Upper EVCM which flowed gas and oil in Yolla-1. Yolla 3 is predicted to intersect the Upper EVCM at 1817mTVDSS which is 13m above the interpreted OWC seen in Yolla 1. Further evaluation of this zone is required and Yolla 3 is designed to achieve this via a detailed logging and coring programme.

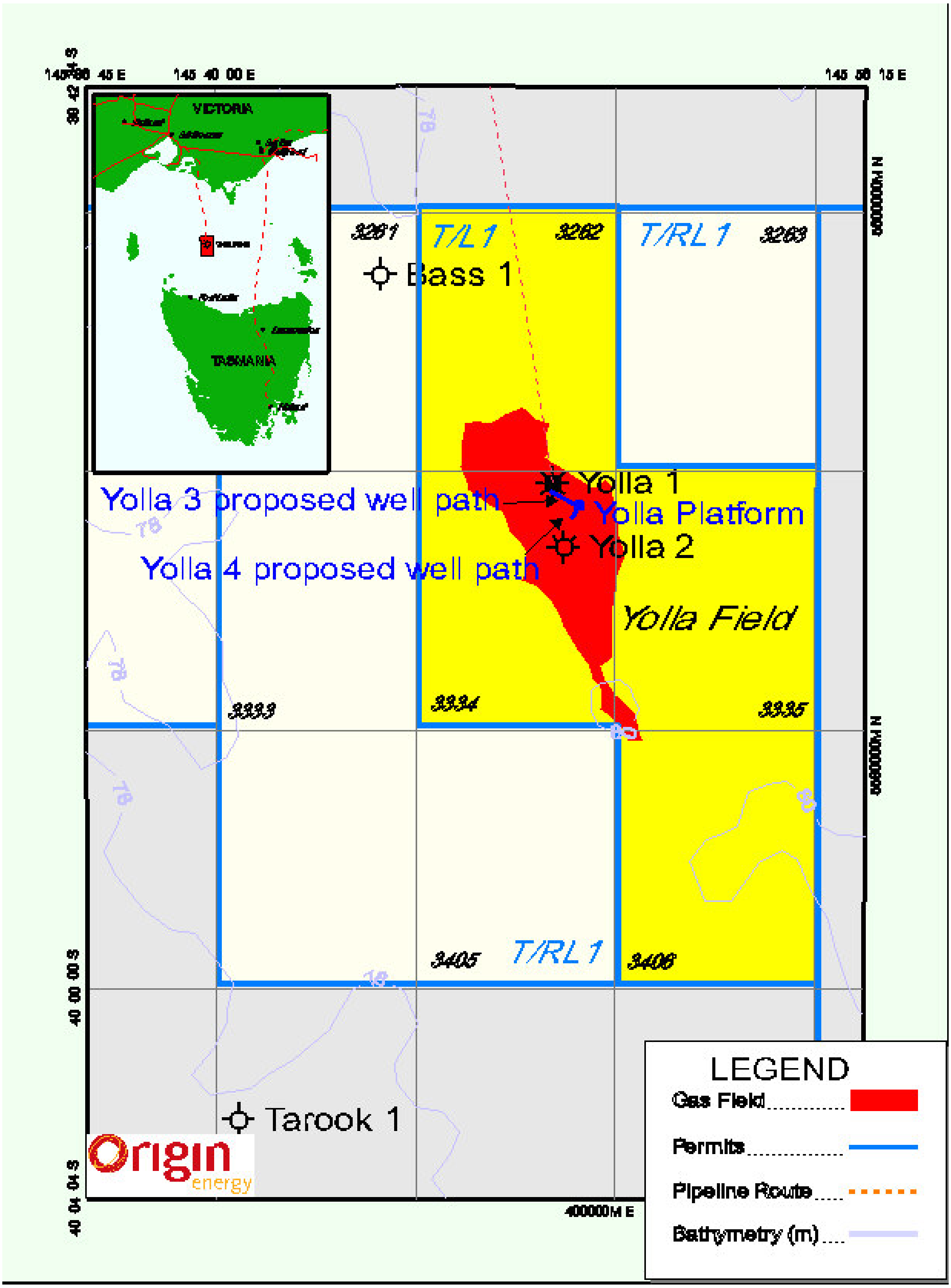


Figure 4.1 - Location Map

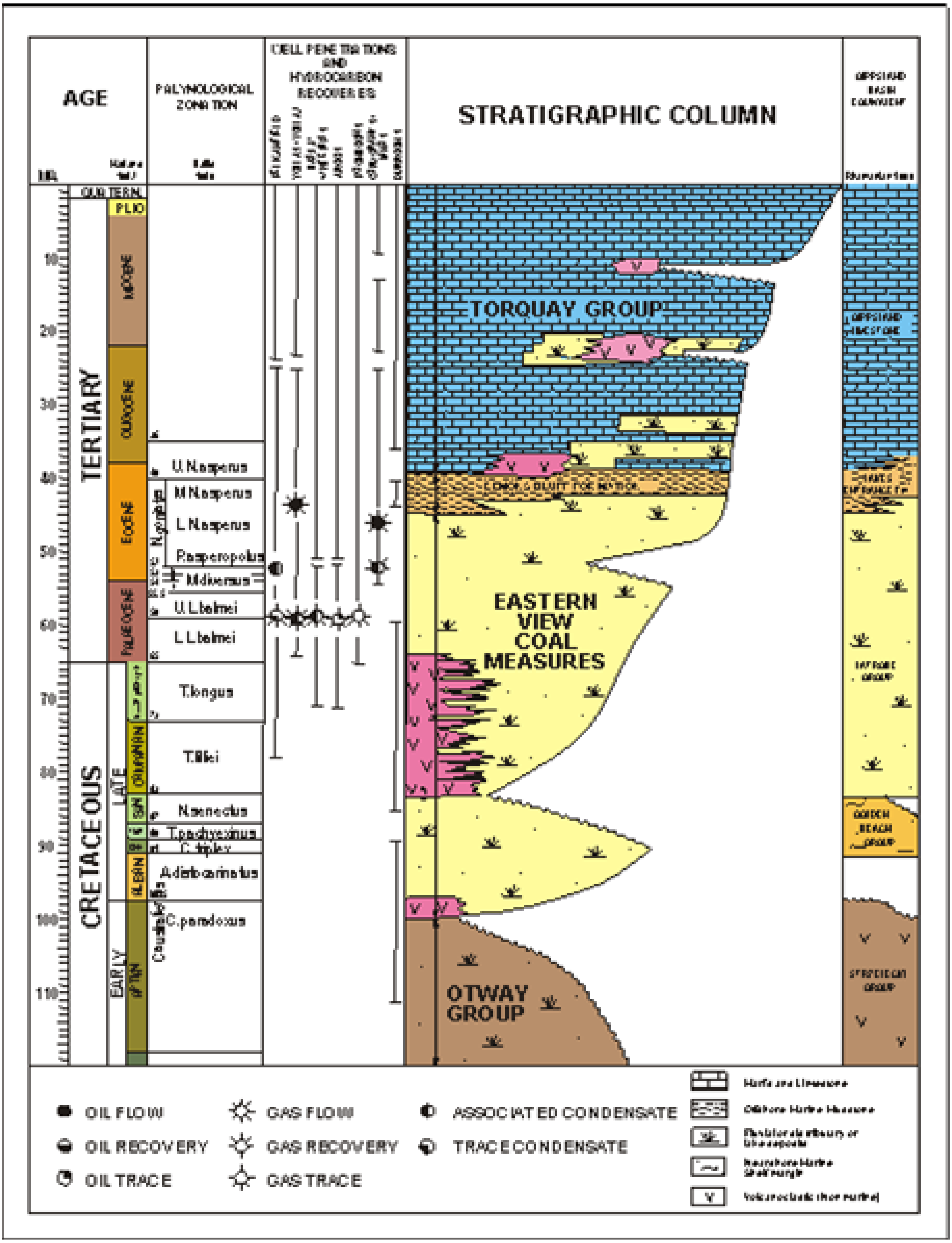


Figure 4.2 – Bass Basin Stratigraphic Column

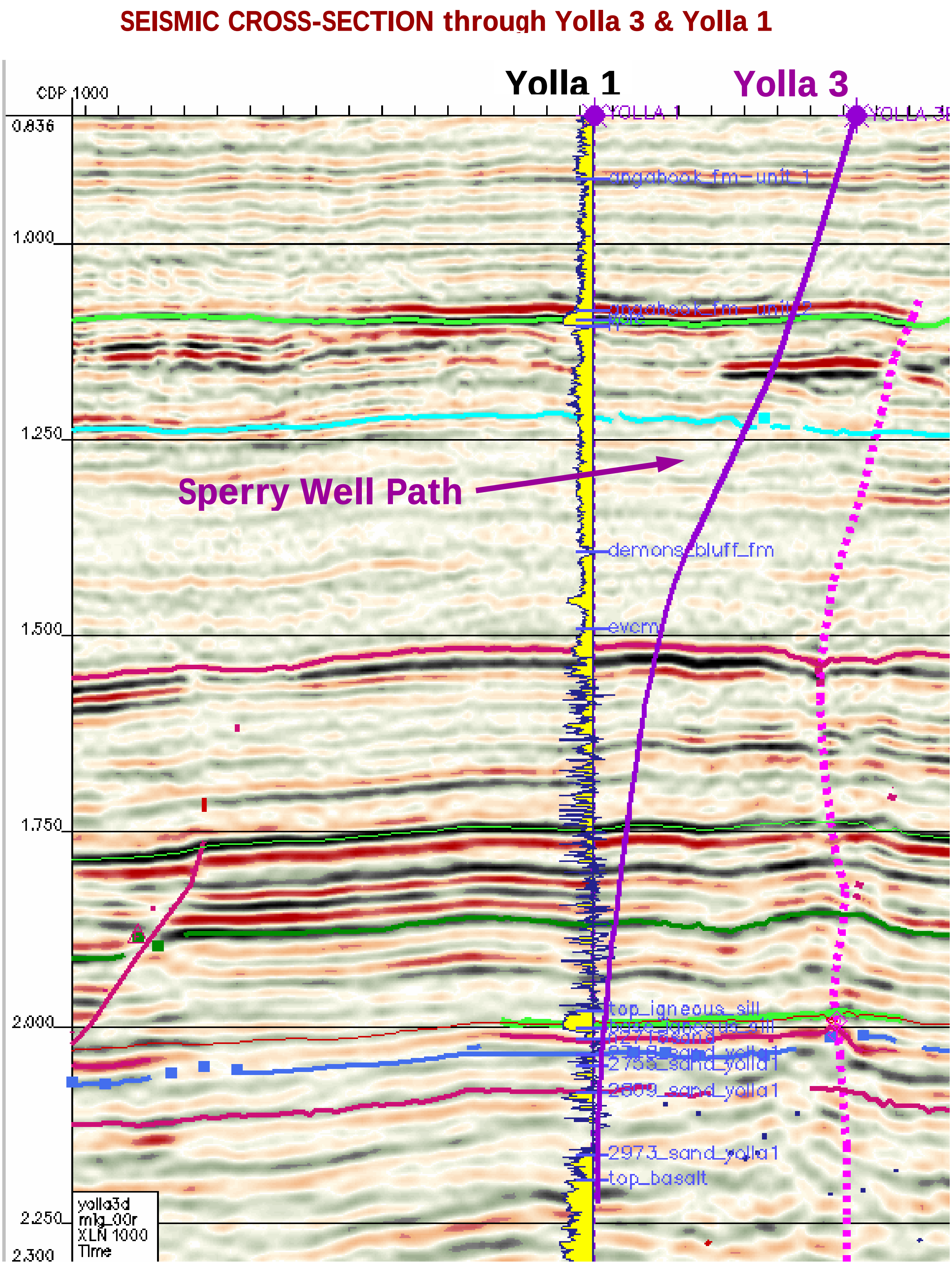


Figure 4.3 - Composite Seismic Line between Yolla 3 and Yolla 1

4.2 Permit Summary

A retention lease was first awarded over the Yolla Field in 1991 and was subsequently renewed twice in 1996 and again in 2001. The companies of the Yolla Joint Venture gave financial approval for the BassGas Project for the development of Yolla to proceed, and executed an EPIC contract with Clough Engineering Ltd in June 2002 for delivery of the necessary production facilities. The Yolla Joint Venture subsequently applied for a production license from the Joint Authority in September 2003.

Of the 9 graticules within T/RL1, 4 blocks (3262, 3334, 3335 and 3407) were awarded in April 2003 as part of the new Production License, T/L1 (Fig. 4.1). After a series of farm-in agreements, withdrawals and company name changes, the current permit joint venture partners are:

Origin Energy Petroleum Ltd	32.5%, Operator
Origin Energy Northwest Pty Ltd	5.0%
AWE Petroleum Pty Ltd	30.0%
CalEnergy Gas (Australia) Ltd	20.0%
Wandoo Petroleum Pty Ltd	12.5%.

Two wells have been drilled in the Yolla Field. Yolla 1 (Fig. 4.1) was drilled in June 1985 by AMOCO Ltd. Gas Pay was encountered in 5 separate zones within the Intra-EVCM, and these provide the main reserves for the BassGas development. A small oil leg was intersected within the Upper-EVCM at approximately 1830mRT. The Yolla 2 appraisal well was drilled in April and May 1998. The well was drilled 2.35km SSE of Yolla 1, and approximately 45m down-dip at the intra-EVCM reservoir level. The well demonstrated good correlation to the sands intersected in Yolla 1, although many were intersected below the gas-water contact due to the low structural location of the well.

A 3D seismic survey was acquired over the Yolla Field in mid 1994 with the aim of enabling more accurate depth mapping for the purpose of reserves estimation and appraisal/development planning. These data were subsequently reprocessed in early 2000. Updated depth maps were produced in December 2000 and January 2001 and form the basis for the latest field review and basis for the development plan issued in September 2002.

4.3 Regional Geology

The Bass Basin is located offshore in south-eastern Australia between Victoria and Tasmania. It is one of a series of sedimentary basins that were formed in response to rifting during the Late Jurassic to Early Cretaceous between Australia and Antarctica (Williamson et al, 1987). The Bass Basin covers approximately 65,000 km^2 and water depths range from 30 to 90 m.

The Bass Basin is a failed intra-cratonic rift basin with structural features which highlight three separate phases of evolution:

1) initial northeast-southwest extension during the early Cretaceous,

2) Late Cretaceous to Pliocene thermal subsidence and

3) Miocene compression.

The rifting created a series of northwest-southeast oriented grabens offset by associated east-west wrench movement. The Pelican, Yolla and Cormorant Troughs comprise the major depocentres in the Bass Basin. The Yolla Field is located on the flank of the Yolla and Cormorant Troughs. These depocentres are fault-bounded half-grabens that progressively developed via growth faulting during the active rifting and thermal subsidence phases of basin evolution. The dominant structural trend in the basin is northwest-southeast, highlighted by the orientation of the major faults and troughs.

The stratigraphic succession in the Bass Basin comprises sediments ranging in age from Early Cretaceous to Recent (Fig. 4.2). The reservoir zones of the Yolla Field are the Paleocene sands of the Lower EVCM. This interval has been intersected in numerous wells in the basin, identifying it as a continuous sequence of late low-stand sediments grading through a transgressive systems tract and finally capped by high-stand sediments. Environments are gradational both laterally and temporally from alluvial through fluvio-deltaic and nearshore to deeper restricted lacustrine. Primary sediment input to the basin was from the southeast with minor localised input also deposited transversely from the flanks of the troughs. Extensive coal measures dominate the sedimentary sequence in the southeast of the basin (Pelican Trough) with increasingly thicker homogeneous shale units occurring through the Yolla and Cormorant Troughs.

The Eocene upper EVCM was then deposited under a regime of slower subsidence, resulting in more widespread, highly variable facies development. Fluctuating conditions of alluvial, fluvio-deltaic and shallow marine processes resulted with more extensive deposition of coal measure sediments. A regional marine transgression then occurred, resulting in the basin-wide deposition of the Late Eocene Demons Bluff. The Demon's Bluff Formation provides a regional top seal to hydrocarbons reservoired in the top-most sandstone units of the EVCM as demonstrated in Yolla 1.

The Demon's Bluff Formation is overlain by the Late Eocene to Pliocene age Torquay Group which broadly consists of a basal sequence of marls and calcareous shales which grade upwards into a succession of bioclastic limestones. Large-scale extrusives (volcanoes) are observable on the seismic data with extensive sill and dyke networks also resulting from these events including within the Yolla Field.

4.4 Field Description

The Yolla Gas Field is a large northwest-southeast trending fault bounded structure which has been compartmentalised by major faults.

The field is fault-bounded over a prominent Early Cretaceous ridge on the flank of the Cormorant Trough. The Field has been compartmentalised into 4 main areas termed Yolla Main, Yolla North, Yolla Northwest and Yolla South.

Reprocessing of the Yolla 3D seismic data in 2000 formed the basis for the subsequent field review and final development plan issued in September 2002.

The Yolla region is intersected by a number of prominent dykes and several smaller ones that disrupt the stratigraphy. The dykes are interpreted to be the primary source of the mid-Tertiary volcanism and also to be the source of a number of sills that have intruded the Eastern View Coal Measure sequence. Several smaller dykes are interpreted to intersect the fault block containing the gas reservoirs. These may be partial barriers to the transmissibility of gas and have therefore been included in the interpretation and subsequent reservoir modelling.

Four main reservoir units are targeted for production. These units are termed the 2718, 2755, 2809 and 2973 sand units based on the depth of intersection in the Yolla 1 discovery well. The 2755, 2809 and 2973 units are fluvial sandstone reservoirs based on core and formation imaging data. Intervening shaly and sandy sections are variously interpreted as lacustrine and fluvio-lacustine facies. A core taken from the 2973 unit in Yolla 2 showed that the reservoir comprised excellent reservoir quality within pebbly sandstone. Porosity in excess of 20% with permeability in the multi-darcy range were encountered. The seal for the gas accumulations is provided by intra-formational shales and by shale gouge along the Yolla bounding faults.

4.5 Well Location

The proposed Yolla 3 well is a deviated well from the platform location targeting gas in the northern part of the Yolla Field (see Directional Drilling Program in Attachments).

4.6 Reservoir Pressure

4.6.1 Upper EVCM Reservoir.

This section is expected to be normally pressured with an equivalent mud weight of 8.6ppg (1.03sg).

This interval in Yolla 3 is expected to intersect hydrocarbons as seen in Yolla 1. At Yolla 1, gas and oil flowed to surface with flow rates up to 11.8MMscfd and 892stbpd. Water also flowed to surface in DST 2 which was interpreted to be due to a poor cement job. The Yolla 1 RFT data are ambiguous due to supercharging and tight sampling points and any precise determination of fluid contacts is extremely difficult. The GOC has been interpreted at 1832.9mKB. This estimate is based on the high gas flow on DST 3 and the apparent presence of gas at the 1832.5m KB sampling point. Petrophysical analysis defines the OWC contact at 1831.1m SS (1842.2m KB Yolla 1). No evidence for a gas cap is evident in this log analysis. In Yolla 3, MDT is planned to be acquired over the reservoir interval and will involve pre-tests and be configured to enable sampling if required.

4.6.2 Intra-EVCM Reservoirs.

This section is expected to be normally pressured with an equivalent mud weight of 8.6ppg (1.03sg). RFT data was obtained on Yolla 1; MDT was obtained from Yolla 2. In the intra-EVCM, three gas contacts have been determined to date which are summarised in the following table 2.

A gas gradient of 0.323 psi/m gas leg (0.227sg), water grad 1.442psi/m (1.015sg) is expected within the intra-EVCM reservoirs.

In Yolla 1, a DST was carried out over the Yolla 1 2809 sand (2809.1-2824.6mMDRT) and flowed gas at 15.1mmcfd and condensate at 580bpd.

Table 2: Most Likely contacts for each reservoir unit.

Reservoir	Most Likely Contact	Interpretation
2718	2727m SS	1 RFT point to define gas gradient. 2 MDT points from Yolla 2 probably indicate separate water gradient. Possibility of supercharging could lower contact to 2822m SS if common water gradient is assumed
2755, 2809	2834m SS	Defined using multiple MDT points. Well defined.
2952, 2973	2997m SS	Range of possible contact levels. Minimum at 2990.5mSS and a maximum at 3004.7m SS. Most likely level between these 2 points.

4.7 Predicted Stratigraphic Sequence

A summary of the depth prognosis and predicted stratigraphy for Yolla 3 is included in Figure 4.4. The lithological descriptions are based mainly on data from Yolla 1 and Yolla 2. Given the proximity of these wells to the proposed development wells, the predicted stratigraphy is likely to be very similar. Note that all depths are in metres referenced to true vertical depth sub sea (mTVDSS) and metres measured depth referenced to an assumed rotary table elevation of 43m.

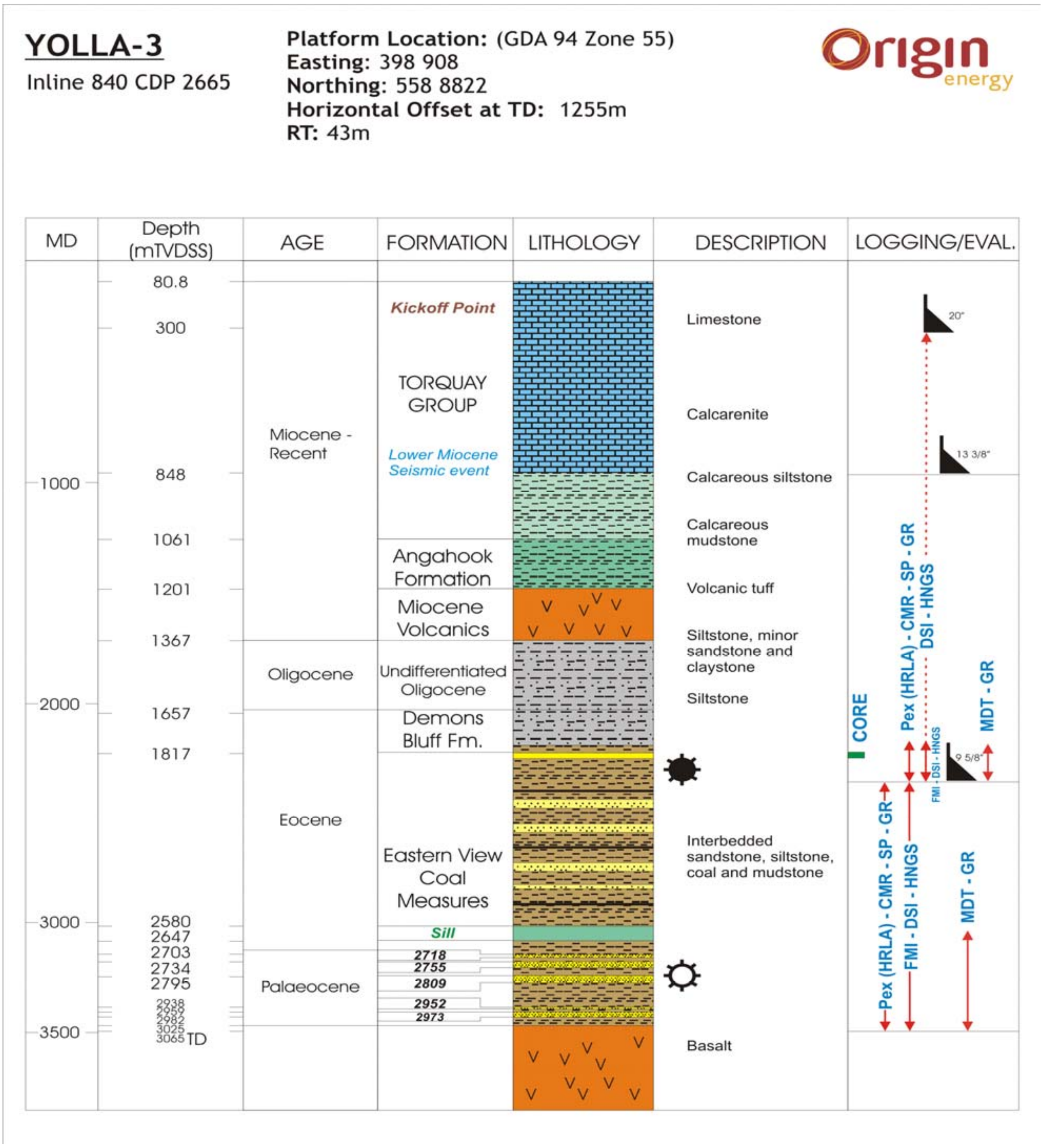


Figure 4.4: Yolla 3: Prognosed Stratigraphic Column

Torquay Group

(80.8 – 1061 mTVDSS; 123.8-1235.62mMDRT)

The Torquay Group is composed of an upper bioclastic limestone section and a lower marl section with the change in lithology being transitional at around 850 mTVDSS (955mMDRT).

The upper limestone section comprises white to mid-grey, coarse to fine-grained unconsolidated bioclastic calcarenite to calcirudite composed of friable and loosely cemented skeletal debris consisting of pelecypods, bryozoans, foraminifera and gastropods. The fragment size decreases with depth with biocalcirudites grading to biocalcarenites and calcarenites and finally calcilutites. Quartz grains appear in the lower portion of the limestone interval. There is a general increase in the proportion of clay in silt towards the base of this interval.

The clay content significantly increases at approximately 850mTVDSS (955mMDRT). Below this depth the section is dominated by calcareous claystone. These are soft, dispersive and light green-grey. The calcareous content decreases with depth to approximately 15% near the base of the unit.

Angahook Formation

(1061-1201 mTVDSS; 1235.62-1421.56mMDRT)

This unit is described as unit 1 in the Yolla 1 and Yolla 2 Well Completion Reports. It comprises light coloured, slightly calcareous claystone, which become firmer with depth. Some units become silty and trace amounts of medium-grained quartz sand are present in the basal portion of this interval. Gas levels increased at the base of this unit in Yolla 1 and these same shows should be a good indicator in Yolla 3 that the well is close to the top of the underlying tuffaceous unit.

Miocene Volcanics

(1201 – 1367 mTVDSS; 1421.56 -1642.04mMDRT)

This unit is dominated by tuffaceous material, sandstone, siltstone and claystone. Volcanics are white to light pale blue, firm-soft and slightly calcareous. Sandstone is predominantly fine-grained, well sorted and quartzose. Claystone is medium to dark grey, firm and calcareous. Siltstone is yellow-white-brown; contains trace glauconite and some calcareous cement.

In Yolla 1 gas shows up to C4 where seen in the top portion of this formation over a 20m interval from 1260mKB to 1280mKB. Similar shows are expected at the Yolla 3 location. In addition, a bright seismic amplitude, not intersected in Yolla 1, will be penetrated by Yolla 3 in the middle of this unit. These amplitudes represent an estimated thickness of 25m, have a relatively small areal extent and terminate against an interpreted dyke. The amplitudes could therefore indicate either a sill originating from the dyke or a gas charged sand.

Angahook Formation - Undifferentiated Oligocene

(1367 – 1657 mTVDSS; 1642.04 – 2027.06mMDRT)

The upper part of this section comprises dominantly sandstone with minor inter-bedded claystone. Sandstone is fine to very fine-grained with abundant clay and calcite cement. Claystone is of dark grey to olive brown, non-calcareous, firm with trace quartz grains and common disseminated pyrite.

The lower section of this unit comprises interbedded reddish-brown sandy dolomites and dolomitic limestone interbedded with fine-grained dolomitic quartz sandstone and medium brown, silty and sandy claystone.

Demons Bluff Formation

(1657 – 1817 mTVDSS; 2027.06 -2216.28mMDRT)

The boundary with the overlying Angahook Formation is gradational and indistinct but an increase in mica content could signal the top of the Demons Bluff Formation.

The Demons Bluff Formation is dominated by claystone with thin interbeds of sandstone and dolomitic limestone. The claystone characteristically becomes darker and more reddish brown with depth to almost black at the base. Sandstones are reddish brown, very fine to fine-grained, argillaceous with abundant calcite and dolomitic cement. Trace glauconite was noted in Yolla 1.

Eastern View Coal Measures

(1817 – 3025 mTVDSS; 2216.28-3458.89mMDRT)

The Eastern View Coal Measures (EVCM) within Yolla 1 and Yolla 2 consists of interbedded sandstone, siltstone, claystone and minor coal.

The contact between the top of the EVCM and the overlying Demons Bluff Formation is lithologically gradational with siltstone gradually becoming sandier downhole and eventually grading into very fine grained, moderately sorted to well sorted, quartz sandstone. The top may be picked from a change in the resistivity baseline and a slight decrease in gamma ray, as a response to the increase in sand into the system.

The top of the upper EVCM is expected to consist of 20 to 30m of siltstone grading to sandstone. The sand package underlying this siltstone is hydrocarbon-bearing in Yolla 1 and is included as an appraisal target in Yolla 3. The sandstone is fine-grained, with abundant clay matrix. Core 1 in Yolla 1 was obtained from this interval and showed the section to be strongly bioturbated. The siltstone is dark grey to yellow brown, firm to soft and in part thinly interbedded with brown claystone that is soft and silty.

The remainder of the Eocene EVCM (1817 – 2703mTVDSS) is a thick succession of interbedded sandstone, siltstone, claystone and coal. Sandstone units are either:

- Friable, fine-grained, angular, moderately to well sorted, friable with abundant clay matrix and some mica; or

- Fine- coarse grained (medium- to coarse-grained dominant), unconsolidated, angular to rounded and quartzose.

Coal is common in the Eocene section with seams typically 1-3m thick. Coal is bituminous, black, glossy, hard and brittle. Shale interbedded with the coal and sandstone is typically black, moderately hard to fissile, non-calcareous and brittle. They contain varying proportions of coaly material and pyrite.

The main reservoir section of the EVCM is of Palaeocene age (2703 – 3025mTVDSS) and comprises interbedded sandstone, siltstone and shale with rare thin coal seams. Five reservoir units are predicted in the Palaeocene section and are termed the 2718, 2755, 2809, 2952 and 2973 sands (based on the measured depth of intersection at Yolla 1). Figure 4.4 shows the depth prognosis for each of these units. Sandstone ranged from fine- to very coarse-grained (dominantly medium-grained, well cemented, sub-angular to sub-rounded, micaceous and abundant carbonaceous matter. Two types of claystone are described in the Yolla 1 interval:

- Lighter coloured and very silty with moderate amounts of organic material; and
- Dark coloured, less silty and organic-rich, occasionally grading to coal.

In addition to siliciclastic lithologies, Yolla 1 and Yolla 2 intersected intervals of extrusive and intrusive igneous rock. Extrusives were intersected within the EVCM at Yolla 1 between 2413 – 2422mMDRT and 2567 – 2580mMDRT. These consist of dark grey pumice and cream-white tuff. A dolerite intrusive was also intersected between 2584 – 2651mMDRT.

Basalt

(3025 – 3065 mTVDSS; 3458.89-3498.89 mMDRT (TD))

A thick sequence of amygdaloidal basalt is present at the base of the stratigraphic section. The basalt ranges from fresh to highly altered. The basalt has primarily altered to a mixture of carbonates, chlorite, silica and zeolite. The basalt is commonly fractured and veined.

4.8 Target Tolerances

Spatial tolerance polygons for the top EVCM and 2809 target sands are shown in Figure 4.5. In both cases the polygon is a 100m by 100m box with a radius from the well bore of 50m.

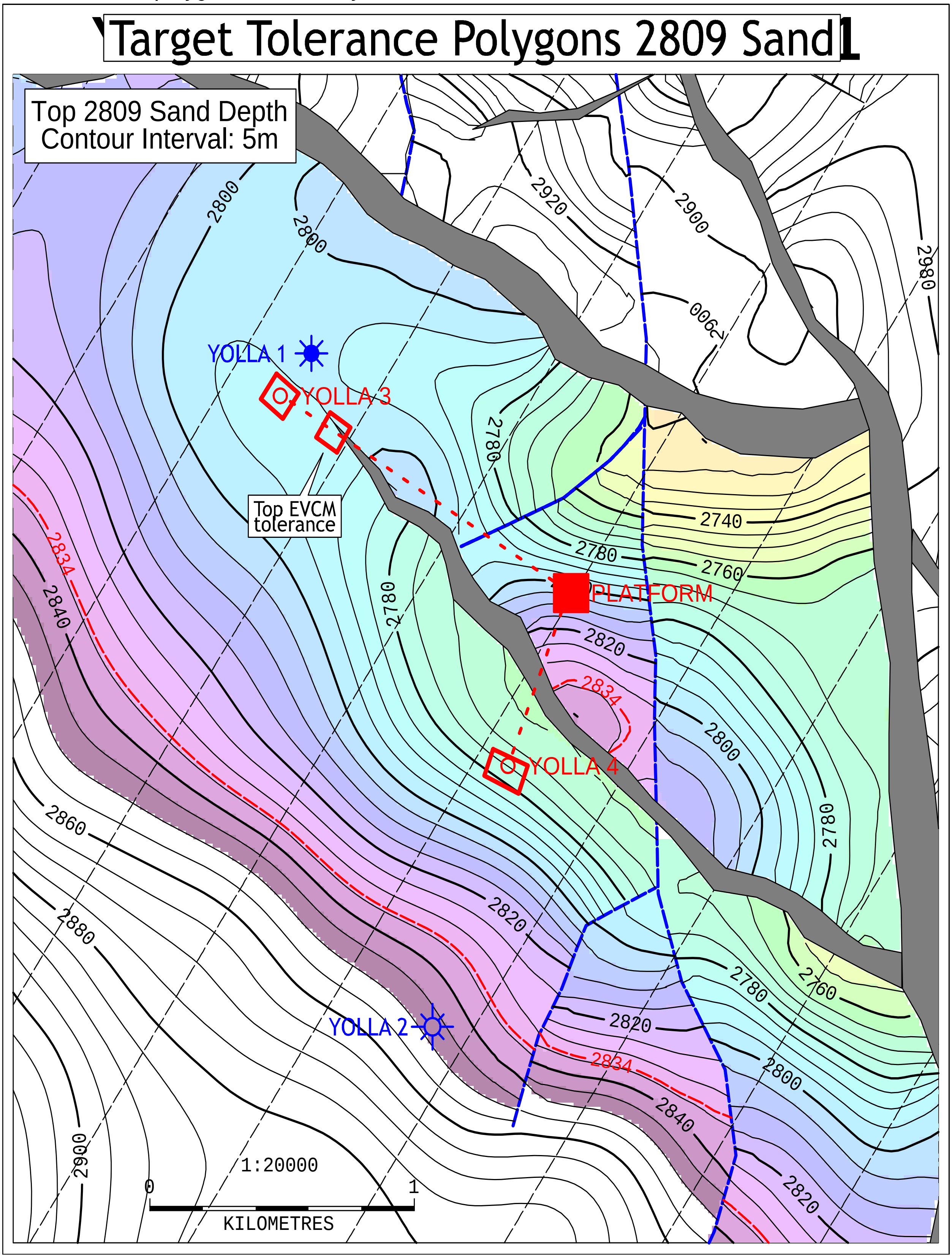


Figure 4.5: Yolla 3 well bore, Target Tolerance at Top EVCM and Top 2809 horizons

5 FORMATION EVALUATION

5.1 Wellsite Geologist's Responsibilities

The Wellsite Geologist is responsible for geological supervision at the wellsite and for formation evaluation. The Wellsite Geologist reports to the Drilling Supervisor at the wellsite and to the Operations Geologist in Melbourne. The Wellsite Geologist supervises the mud-logging unit, mud loggers and wireline logging, and carries out a QC of the mud-loggers cuttings and core descriptions.

5.2 Ditch Cuttings

Table 3: Sample Requirements

Sets	Size	No	Type	In	For
A	500 g	1	Unwashed & air dried	Cloth bag	ORIGIN
B	100 g	1	Washed & air dried	Minigrip bag	MRT
C	100 g	1	Washed & air dried	Minigrip bag	ORIGIN
D		2	Washed	Samplex tray	ORIGIN
E	100 g	1	Washed & air dried	Minigrip bag	Geoscience Australia

Table 4: Sampling Intervals

Interval	From	To
No Sample	Surface	20”
5 m	20”	1800 m
3 m	1800 m	Total Depth

Additional samples will be taken to evaluate shows and at any time deemed necessary by the Wellsite Geologist. At the discretion of the wellsite geologist, sampling intervals may be increased through intervals of fast drilling to limit the samples caught per hour to a maximum of six.

Additional samples may be collected at any time at his discretion. Significant drilling breaks will be penetrated by no more than 2 m then flow checked for fluid influx. If a sample of the new lithology is required for hydrocarbon show evaluation, drill 3 - 5 m from the drilling break, then pull up at least 6 metres above and circulate out the break. If a PDC bit is in use, the drilling parameters (WOB etc) should be kept relatively constant as the primary objectives are approached, and any significant change in drill rate (increase or decrease) investigated as above.

Below 1800 m, a 1-litre mud sample will be taken every 100m while drilling and preserved with biocide for future analysis. A mud sample will also be taken prior to running MDTs or DSTs.

5.3 Mud Logging

The mud logging company, Geoservices, will provide fully computerised mud-logging services from surface to total depth. The unit will provide continuous 24-hour surveillance of drilling operations including the minimum:

- Total gas detection
- Chromatographic gas analysis
- Continuous CO_2 detection
- Continuous H_2S detection
- Measured depth
- True vertical depth as calculated from surveys
- Rate of penetration
- Weight on bit
- RPM
- Pump stroke rate
- Mud pit levels

Before surface casing is set, a single H_2S sensor will be mounted in the possum belly and used to continuously monitor ditch gases for H_2S. Detection of H_2S will trigger a pre-set alarm inside the mudlogging unit.

A comprehensive 1:500 scale mud log will be maintained at all times from surface to total depth, and will include WOB and RPM in the ROP column.

When an LWD is run, a formation evaluation log will be compiled which will include column 1- ROP, GR, columns 2, TVDSS (data tied to TVD), mMDRT, column 3- cuttings % and interpretation, column 4 – shows, column 5- Resisitivity curves, column 6 Total & gas chromatograph column 7 – comments. Initially the scale will be at 1:500 TVD.

In addition, a drill-log will be produced at 1:1000 scale which will include, ROP, depth tied to measured depth (MDRT, TVDSS).

An up-to-date log is to be submitted daily to the Wellsite Geologist in time for the daily report along with a **<u>*.PDF</u>** file for transmission to Melbourne. A complete **ASCII** file containing the metres drilled, rate of penetration, WOB, RPM, total gas and gas breakdown (including CO_2 and H_2S) is to be transmitted to the Brisbane office on reaching Total Depth, and at other times as requested.

All instrument charts are to be annotated with: depth (in metres), attenuation changes, dates, times and sample collection intervals. Charts are to be submitted to the Company Representative prior to release of the mud-logging unit.

Gas detectors and chromatographs are to be calibrated with standard check gas blends each trip. Total gas detectors are to be calibrated so that 1% methane in air will produce a chart deflection of 50 units. CO_2 and H_2S draeger tubes will be on site for evaluation of formation gas samples from MDT or DST.

Calcium carbide lag checks will be run once per day or every 300 m, whichever occurs first (or at the discretion of the Wellsite Geologist). Total gas units and lag times (actual and calculated) are to be recorded on the mud log in minutes. No carbides are to be run whilst evaluating prospective hydrocarbon zones.

Formation Integrity / Leak-off / Extended Leak-off Tests, pit losses/gains, tight-hole, bit data, mud information and survey data are to be recorded on the mud log. The mud loggers will be responsible for time lagging, collection and description of drill cuttings from surface casing shoe to total depth. Routine microscopic and fluoroscopic examination of ditch cuttings for hydrocarbon shows will be undertaken.

Upon encountering a significant drilling break the interval is to be penetrated by no more than 2 m; drilling will be suspended and a flow check conducted. Bottoms up will be circulated if a sample of the new lithology is required for hydrocarbon show evaluation. Drill 3 - 5 m from the drilling break, then pull up at least 6 m above the top of the drilling break to minimise formation damage. If a PDC bit is in use, the drilling parameters (WOB etc) should be kept relatively constant as the primary objective is approached, and any significant change in drill rate (increase or decrease) investigated as above. If the Wellsite Geologist is not present, inform the Drilling Supervisor.

5.4 Coring

There is 1 core planned for Yolla 3 at the top of the EVCM.

The core is planned to be 27m long and target the top EVCM reservoir which tested oil and gas in Yolla 1. This core data will provide valuable reservoir quality data for future well planning, field modeling and calibrating logs for future log interpretation.

Identification of the core point will be as follows:

Core 1 (27m): Top EVCM. The top of this core should be taken from 2211mMD, which is 5m above the predicted top of the EVCM at 2216.28mMD, (-1817mSS). At this depth the first major gas shows should be encountered, as seen in Yolla 1. If the interpreted top EVCM comes in high to prognosis, above the proposed core point, (based on ROP, gas shows and lithology correlation with Yolla 1) then coring should commence as soon as possible. The base of the core will be at 2238mMD, which is 6.4m below the predicted OWC at 2231.6mMD (-1831.1mSS).

More detailed instructions for picking core points will be given closer to the time.

If there is poor core recovery in Yolla 4 within the intra-EVCM gas reservoirs (2755, 2809 and 2973 sands), then coring of these zones may be considered in Yolla 3.

5.5 Production Testing and Well Completion

Production testing and well completion is planned to be carried out over the following intervals:

Table 5: Proposed Perforation Intervals

Sand Unit	Formation	Assumed intervals	Gun System	Shot Density	Remarks
		(m)		Shots/ft	
1830	UEVCM	5	Wireline Casing Guns	12	Contingent
2718	IEVCM	7	Wireline Casing Guns	12	Casing size= 6 5/8"
2755	IEVCM	12	Wireline Casing Guns	12	Casing size= 6 5/8"
2809	IEVCM	12	Wireline Casing Guns	12	Casing size= 6 5/8"
2973	IEVCM	12	Through-Tubing Guns	max	Tubing size= 4 1/2"

A separate programme will be issued for the testing and completion of the well.

5.5.1 Upper EVCM Fluid Samples

Fluid samples may be collected in Yolla 3 from the top EVCM zone subject to good results from the hydrocarbon indicators.

5.5.2 Intra-EVCM Fluid Samples

Fluid samples will be collected during the production testing phase at the discretion of the Origin Energy Reservoir Engineer. It is not planned to collect samples during the wireline logging operations.

5.5.3 Water Samples

No water samples are planned.

5.6 Measurement While Drilling

A Measurement While Drilling (MWD) tool will be used in the 12 ¼" and 8 ½" hole sections to collect directional data, and Logging While Drilling (LWD) tools will also be included to collect gamma ray and resistivity data.

5.7 Wireline Logging

Logs are to be displayed at 1:500 and 1:200 scales. TVD and MD plots will be generated. During logging operations both PDS and PDF digital copies will be generated. The logs will emailed to the Petrophysicist in Brisbane, Operations Geologist in Melbourne and Reservoir Engineer in

Adelaide. Quality control will be carried out in the Brisbane office and edited prior to Schlumberger forwarding paper copies, as per the contract.

CMR digital data to be forwarded to Schlumberger, Perth (ATNN: Zachariah John) as soon as possible for processing. The copies of the data should be sent on CD, to the Operations Geologist in Melbourne who will take to Schlumberger (Melbourne) for transmission to Perth. FMI digital data is to be forwarded to the Origin Petrophysicist for in-house data processing.

At the wellsite, Schlumberger will provide 2 paper prints at 1:500 and 1:200 (TVD and MD) for the use of the wellsite geologist and company man.

During any MDT programme the Wellsite Geologist will discuss any issues directly with the Reservoir Engineer. However the Operations Geologist is to be kept informed of any changes/ problems etc.

The proposed logging programme is outlined below.

Table 6: Yolla 3 Proposed Logging Programme

Depth	Suite	Run	Logs to Run	Interval
12 ¼”	Suite-1	1	PEX-HRLA-CMR-SP-GR-LEH-QT (High Resolution). 40m rat-hole required	12 ¼” TD to 50m above top EVCM
		2	FMI-DSI-HNGS-LEH-QT (DSI-GR logged up through casing until DSI signal lost)	12 ¼” TD to 50m above top EVCM (GR through casing to surface) (turn off FMI and revert to total gamma mode from 50m above reservoir) DSI modes to be finalised
		3	MDT-GR-LEH-QT (Pre-tests only)	Reservoir section
		4 Contingent	MSCT-GR (contingent on core recovery)	min 15 cores
8 1/2"	Suite-2	1	PEX-HRLA-CMR-SP-GR-LEH-QT (High Resolution). 40m rat-hole required	TD – 9 5/8” casing shoe CMR intervals/modes to be finalised
		2	FMI-DSI-HNGS-LEH-QT	TD to approx 50 m above reservoir (turn off FMI and revert to total gamma mode from 100m above reservoir) DSI modes to be finalised
		3	MDT-GR-LEH-QT (Pre-tests only)	Reservoir section
		4 Contingent	MSCT-GR(contingent)	min 15 cores
		5 Contingent	CST-GR (contingent)	Reservoir section
Thru Csg.	Suite-3	1	CBL-VBL-CCR-GR	Base 6 5/8” to 50m above top of cement

5.7.1 Sidewall Coring

Rotary sidewall cores are contingent in the 12 ¼" and 8 ½" sections depending on core recovery. If insufficient core is recovered over the reservoir intervals then use of the MSCT will be considered. Note Schlumberger charge for a minimum of 15 cores.

No percussion sidewall cores are planned; however they are contingent in the event of unexpected results.

5.7.2 Velocity Survey

No velocity or checkshot data is planned to be acquired due to the close proximity to the Yolla 1 well bore.

5.8 Distribution of Data

5.8.1 Daily Reports

All daily reports from the wellsite are to be forwarded to the ADA office in Melbourne. The ADA office will check the reports and forward them to Origin's Brisbane office for distribution to the Joint Venture and Government.

5.8.2 Cuttings and Mud Samples:

The samples are to be sent to the following:

Table 7: Cuttings and Mud Sample Distribution

Set	Type	Contact	Address
A	Unwashed & air dried	Kevin Flynn Ph: 07 3357 1133	Origin Energy C/- ACS Laboratories 8 Cox Road, Windsor, QLD, 4030
B	Washed & air dried	Clive Calver ph: 03 6233 8327	Mineral Resources Tasmania, 30 Gordons Hill Road, ROSNY PARK, TAS, 7018
C	Washed & air dried	Kevin Flynn Ph: 07 3357 1133	Origin Energy C/- ACS Laboratories 8 Cox Road, Windsor, QLD, 4030
D	Washed	ATTN: Kevin Flynn Ph: 07 3357 1133	Origin Energy C/- ACS Laboratories 8 Cox Road, Windsor, QLD, 4030
E	Washed & air dried	Eddie Resiak Ph: 02 6249 9222	Geoscience Australia Data Repository, Cnr Jerrabomberra Ave & Hindmarsh Drive, Symonston Canberra, ACT, 2801
Mud Samples	Glass Bottles	ATTN: Kevin Flynn Ph: 07 3357 1133	Origin Energy C/- ACS Laboratories 8 Cox Road, Windsor, QLD, 4030

5.8.3 Core Data

Distribution of the core will be as follows:

Table 8 : Core Distribution

Core	Type	Contact	Address
1/2	Whole Core	Kevin Flynn Ph: 07 3357 1133	Origin Energy C/- ACS Laboratories 8 Cox Road, Windsor, QLD, 4030
1/4	Slabbed core	Clive Calver Ph: (03) 6233 8327	Mineral Resources Tasmania, 30 Gordons Hill Road, ROSNY PARK, TAS, 7018
1/4	Slabbed core	Eddie Resiak 02 6249 9222	Geoscience Australia Data Repository, Cnr Jerrabomberra Ave & Hindmarsh Drive, Symonston Canberra, ACT, 2801

Note the entire core will be forwarded to ACS Laboratories for RCA and slabbing. ACS Laboratories will then forward the slabbed cores to the respective Federal and State government departments.

5.8.4 Wireline Data

When approval has been given by the Chief Geologist/ Petrophysicist in Brisbane, final wireline digital and paper copies should be couriered to the following:

Table 9: Wireline Data Distribution

Quantity	Type	Contact	Address
1	Digital + paper	Richard Suttill Ph:(07) 3858 0252	Origin Energy Resources Second Floor, South Tower, John Oxley Centre 339 Coronation Drive Milton QLD 4064 Brisbane QLD 4001
1	Digital + paper	Rick Frith	AWE Petroleum Pty Ltd Level 9 60 Miller Street NORTH SYDNEY NSW 2060
1	Digital + paper	Gaye Munro	CalEnergy Gas (Australia) Ltd Level 3, 47 Havelock Street WEST PERTH WA 6005
1	Digital + paper	Chris Hodge	Wandoo Petroleum Pty Ltd Level 24, Forrest Centre 221 St Georges Terrace PERTH WA 6000
2	Digital + paper	Ms Carol Bacon Ph: (03) 6233 8327	Mineral Resources Tasmania 30 Gordons Hill Road ROSNY PARK TAS 7018
1	Digital + paper	Eddie Resiak Ph: (02) 6249 9222	Geoscience Australia Data Repository, Cnr Jerrabomberra Ave & Hindmarsh Drive, Symonston, CANBERRA ACT 2801

6 DRILLING PROGRAMME OUTLINE

6.1 General

The Yolla 3 development well will be drilled in the Yolla License T/L1 during Q2 of 2004 with a scheduled spud-in date of approximately 25 June, 2004.

In addition to giving an outline of the drilling and evaluation operations to be conducted, the following describes the background, philosophy and reasoning used in the design of the well and the well procedures to be used.

6.2 Safety Management

The ENSCO 102 MODU will be operating under a vessel safety case regime. As such, all operations on the rig will be conducted according to ENSCO's safety management system, which includes a strong safety ethos and functional safety procedures, including a permit to work system and the use of Job Safety Analysis (JSA) meetings before operations.

6.3 Rig Mobilisation

The ENSCO 102 jack up drilling rig will be towed from an ESSO well location in the Gippsland Basin to the Yolla field using two anchor handling supply vessels. A third vessel, which will be under short term hire, will be used to assist in the positioning of the rig adjacent to the east face of the Yolla platform.

6.4 Rig Positioning

The rig will initially be positioned approximately a hundred meters to the east of the Yolla-A platform. All four of the rig's anchors will be laid on the sea bed, after which the rig will begin final approach to the platform, using a combination of anchor tension and boat positioning. The rig will be equipped with laser as well as visual measuring devices for precise positioning. The primary towing vessel (with in excess of 130 tonnes Bollard Pull rating) will at all times be attached to the bow of the rig such that it can pull the rig away from the platform should anything go wrong with the anchors or other supply boats during the positioning operations.

Weather conditions and rig movement (pitch, heave and roll) will all need to be favourable for the rig move, and will be verified by a marine warranty surveyor on the rig at the time. Prevailing wind and wave direction is from the southwest, which would assist in pushing the rig away from the platform should any problems arise during the positioning operation.

6.5 Rig Preloading

Once in position, the rig will be jacked up to a minimal air gap and commence preloading operations. Numerous cores have been taken at the site as part of the platform design process and these cores indicate that preloading in this manner should be feasible. The core samples indicate that there is no known "punch through" risk at the location, therefore the preloading of the rig while the rig hull is marginally out of the water should not be any problem. The rig will be preloaded according to ENSCO's requirements and those of the marine surveyor.

6.6 Rig Jacking & Skidding

Once preloading has been completed, the rig will be jacked up to an air gap of approximately 21 meters, which will place the rig floor approximately 43 meters above sea level. The rig floor is 71 ft 9 in, or 21.88 meters above the bottom of the rig hull. Note that the bottom deck of the platform is at an elevation of 15.17m above sea level. Once at the desired elevation, the jack up legs will be chalked and the rig package will be skidded out over the platform.

The bottom of the rig's cantilever beams are 38.35ft or 11.7m below the rig floor, therefore the bottom of the cantilever beams will clear the top deck of the platform by approximately 8.55 meters (the top deck on the platform is 22.75m above sea level).

The outside edges of the rig cantilever beams are approximately 62 ft 10 inches or 19.15 meters apart, so apart from the beams being a long distance above the platform, they are safely away from impacting any equipment on the platform because the leg jacket hole in the platform has a width of 24 meters. Likewise, the cantilever beams and rig floor extend only 25 ft 6 in or 7.77 meters past the centre of the rotary table, and since the innermost well slot is 23.2m from the western extremity of the leg jacket hole of the platform, there is again no risk of the rig impacting on any equipment in an east/west direction on the platform.

The rig is expected to be fitted with a Pollution Containment Unit (PCU), which is a heavily reinforced steel box suspended below the rig cantilever beams. As the name implies, the box is designed to catch and collect any spilled liquids below the rig floor, but is also designed to provide a work platform for personnel to service the BOP stack, which is located inside the box. The PCU is almost square, with each side being approximately 7.5 meters wide and tall. The bottom of the PCU extends approximately 61.6 ft (18.8m) below the rig floor, or 1.45m above the weather deck on the platform.

6.7 Driving 20" Conductors

The 20 inch (508mm) OD conductor casing string will be driven to approximately 140m vertical depth sub sea. The conductors will likely be installed in a batch setting operation to eliminate having to rig up the drive hammer and large pipe handling equipment more than one time.

Soils at the platform are known to be quite soft, therefore driving loads are not expected to be severe. In fact, the conductors will not be driven to refusal because soils experts cannot predict where refusal might occur. The conductor setting depth was therefore chosen based on the requirement of platform designers to not disturb the first approximately 40 to 50 meters of sea bed soils. The conductors are therefore being driven to approximately 60 meters below the mud line.

Soils experts have also indicated that due to the low cohesiveness of the soils, there is a possibility for the conductors to move down hole (due to their own weight) while drilling the 16" hole below the conductor shoes. The soils models indicate that for average expected soils conditions this should not happen, but to ensure against such an event, the conductors will be fitted with pad eyes and slings which will be attached between those pad eyes and corresponding pad eyes on the platform all the while the 16” hole section is being drilled and cased. The pad eyes and slings are designed to carry the full air weight of the conductor string, even though there will always be some buoyancy and friction between the conductor and the soils. Once the next string of casing (13 3/8”) has been cemented inside the 20” conductors (via a stage collar to ensure good clean cement will be between the two casing strings), the slings will be removed.

Details concerning the casing weight, grade and connection design can be found in the attached tables.

6.8 Diverter Installation

Once the 20” conductor has been installed, a 20” wellhead will be installed onto the top of the 20” conductor. A Cameron adapter will be attached to the wellhead, which in turn will be attached to a 24” (610mm) diameter riser. The rig is equipped with a diverter which has an overshot housing which is designed to swallow and seal on the outside diameter of the 24” riser. The rig diverter has dual 14” (355.6mm) diameter outlets which have straight piping runs pointed toward the opposite (port and starboard) sides of the rig. The diverter bag and overboard valves will be function tested prior to drilling of the 16” hole.

Details concerning the elevation and configuration of the diverter and riser can be found in the attached drawings.

6.9 Drilling 16” Hole

The 16” (406.4mm) hole will be directionally drilled to the 13 3/8” (340mm) casing point at approximately 850mVDSS. This depth was chosen so the 13 3/8” casing shoe would be located in the claystones that start to appear around 700mSS and which become fairly clean at around 850mSS. The claystone is desirable in that it should provide greater assurance of getting a good shoe test before drilling the next hole section.

Although this hole section will be drilled with a diverter and riser in place, there are no known drilling hazards expected which would require diversion. Once the hole section is drilled, the diverter/riser assembly may be removed prior to the running of the 13 3/8” casing string. The near-by Yolla 1 and 2 offset wells were drilled to this depth without encountering any difficulties with overpressure or shallow gas zones.

No open hole logs are anticipated in the 16” open hole.

Details concerning the mud program can be found in the attached tables.

6.10 Running & Cementing 13 3/8” Casing

The 13 3/8” (340mm) casing will be run to within a few meters of bottom. The casing string will include approximately 120m of heavy walled high grade casing from just inside the 20” casing shoe to approximately 100m below the 20” casing shoe because this is the area of pipe that could potentially support the 20” conductor (due to potentially weak soils previously described). The casing will be fully centralized in this area and high strength cement will be placed across this interval through the use of a stage collar located at the bottom of the high grade casing.

As mentioned above, if no hazards or over-pressured/gas zones are encountered in this hole section, the diverter/riser assembly may be removed prior to running 13 3/8” casing. The 13 5/8” (346mm) wellhead housing will be installed in the casing string as the casing is run. If the diverter/riser is left in place, the wellhead is designed such that it will pass through the riser/diverter and land in the 20” wellhead.

Details concerning casing weight, grade and connections, wellhead design and cementing can be found in the attached tables.

6.11 BOP Installation

The rig is equipped with an 18 ¾” (476mm) 15,000 psi (103,350kpa) BOP stack which consists of four ram BOP’s and one 10,000 psi (68,900kpa) annular BOP. The stack will be attached to the top of the 13 5/8” wellhead housing using a high pressure riser as shown in the attached riser drawing.

The 13 3/8” casing, BOP stack and all related choke, kill and rig floor BOP equipment will be function and pressure tested prior to drilling out the 13 3/8” casing. Test pressures are specified in the attached table on this subject.

6.12 Drilling 12.25” Hole

The 12.25” (311mm) hole will be directionally drilled to the next casing point at approximately 1899mVDSS according to the attached directional drilling plan. This casing point is selected because it is approximately 70m below the anticipated base/OWC of the Upper EVCM (TEV4) zone. This depth was chosen because it should give the greatest chance for obtaining good cement bonding opposite the potential pay sands in the Upper EVCEM, yet it is deep enough to allow adequate liner overlap of the subsequent 6 5/8” liner.

A formation integrity test (FIT) will be conducted immediately after the 13 3/8” casing shoe has been drilled. Due to the depth of the 13 3/8” shoe, a more than adequate FIT is expected to drill all of the 12.25” hole section, particularly since there are no over-pressured intervals anticipated (as evidenced by the lack of any such pressure in the near-by Yolla 1 and 2 wells).

A very hard volcanic sill is predicted in this hole section because the well is reasonably close to the Yolla 1 well, which had such a sill between approximately 2256m and 2640mVDSS. The sill poses no particular safety risk, it may cause slow drilling and bit damage. Bit selection will be made on the basis that the hard sill will be encountered.

One conventional core is proposed to be taken in the Upper EVCM formation.

Details concerning the logging program for this hole section are found in the Geological Prognosis section of this document.

Details concerning the mud program and directional drilling plan can be found in the attachments to this document.

6.13 Running 9 5/8" / 10 ¾" Casing

The casing string will consist of 9 5/8" (244mm) casing on bottom with 10 ¾" (273mm) casing from surface down to approximately 60m below the mud line. The larger OD casing is needed at surface to accommodate the large diameter sub surface safety valve (SSSV) that will be run to approximately 50m below the mud line as part of the tubing completion. The 10 ¾" casing will be landed in the 13 5/8" wellhead housing, thus eliminating any need to break the BOP to wellhead connection.

The 9 5/8" casing shoe will be set as close to bottom as is practical and cemented in one stage, although the stage will consist of a lower density lead slurry (to maximize cement coverage) and a high density/strength tail slurry near the 9 5/8" shoe and across the potential pay sands in the Upper EVCM.

Details concerning casing weight, grade and connection, wellhead design and cementing can be found in the attached tables.

6.14 Drilling 8.5" Hole To TD

The 8.5" (216mm) hole will be directionally drilled with an ever decreasing hole deviation to a point approximately 40m measured depth below that point where the well encounters the Basalt section in the well. This depth may vary slightly depending on the amount of rat hole deemed necessary to ensure a good cement job outside the subsequent production casing liner and to ensure trouble free production and associated activities in the well bore.

A formation integrity test (FIT) will be conducted immediately after the 9 5/8" casing shoe has been drilled. Due to the depth of the 9 5/8" shoe, a more than adequate FIT is expected for drilling the 8.5" hole section, particularly since there are no over-pressured intervals anticipated (as evidenced by the lack of any such pressure in the near by Yolla 1 and 2 wells). The 9 5/8" casing and BOP stack will be pressure tested prior to drilling out the 9 5/8" casing shoe according to the attached BOP test schedule.

Although this hole section is expected to encounter the hydrocarbon pay zones in the well, none of the zones are expected to be over pressured or particularly difficult to drill from a safety standpoint. The section contains inter-bedded coals, hard streaks and a Basalt section which can slow drilling operations or cause bit damage, but which pose no safety hazard for the well or well operations. Care will be taken to avoid or minimise such problems and drilling parameters will be adjusted accordingly (i.e. reducing RPM, WOB, etc).

No cores are planned in the 8.5" hole section, although such a core may be possible if coring in this hole section in the previous Yolla 4 well proved to be unsuccessful.

The logging program for this hole section is also described in section 5.

Details concerning the mud program and directional drilling plan can be found in the attachments in section 9.

6.15 Running & Cementing 6 5/8" Casing Liner

The 6 5/8" (168mm) casing will be run on a liner hanger and suspended approximately 20 to 30m inside the 9 5/8" casing shoe. The bottom of the liner will be set as close to TD as is practical. A liner hanger packer will be set at the liner hanger to ensure the annulus between the 6 5/8" and 9 5/8" casing strings is sealed and tested.

The casing will be cemented in one stage using high density/strength slurry which will be circulated to at least 100m above the top most pay zone in the well. The liner will be rotated, reciprocated or both during the job to provide the greatest opportunity for getting good cement bonding and sealing between the various pay zones in the well.

Details concerning casing weight, grade and connection and the cementing program can be found in the attached tables.

6.16 Liner Clean Out

The liner will be cleaned out using a bit and scraper to a depth that will allow subsequent logging, production and completion operations to take place. Current rat hole requirements are expected to be approximately 20meters.

Once all cement has been cleaned out, the liner and intermediate production casing strings will be flushed with sea water and sweeps as necessary to ensure a totally clean wellbore. Once the wellbore is clean, a super-saturated sodium chloride brine containing size graded sodium chloride salt crystals will be placed inside the well opposite all expected perforation intervals, including the Upper EVCM, which will be behind the 9 5/8" casing and above the top of the 6 5/8" liner. The sodium chloride crystals will be sized to provide optimum bridging on the sand face of the perforation tunnels, thus keeping fluid loss to the formation at a minimum and in turn preventing possible formation damage which might restrict subsequent production from the wells. The salt will disappear once the perforated intervals are allowed to produce since it will be totally soluble in the small quantities of water that will be produced from the formation.

The remainder of the wellbore will be filled, as necessary, with a brine solution with a density sufficient to ensure overbalance of the formation pressures prior to and during perforating operations.

6.17 Perforating

The casing will be perforated overbalanced using large diameter casing perforating guns run on electric line. Due to the number of zones to be perforated, numerous runs will be required.

The choice of casing gun and charges will be based on the optimum charge density, hole diameter and penetration depth required for optimization of production rate and reserve recovery from the reservoir.

The location of the perforations will depend on the results of log interpretation at the time. However, the bottom most zone will not be perforated until after the tubing completion has been run since this sequence is expected to reduce the time required to complete the well and increase the productivity of the zone since it is planned to perforate the bottom zone with an under-balanced fluid column (something which cannot be done for the shallower zones due to the necessity of running multiple packers for long term reservoir production management).

6.18 Scraper Run

A scraper run will be required after perforating to remove the steel burrs and any other debris that may have accumulated on the inside of the casing as a result of perforating. Such burrs could otherwise damage the sealing and operational elements of the tubing completion equipment (e.g. packers) to be run into the well.

6.19 Running Tubing Completion String

The first tubing completion item to be run will be a permanent production packer, which will be set (on electric line) just below the anticipated 2809 production perforations (i.e. between the two lowest production zones). This packer is needed to provide a foundation upon which the upper tubing string can be landed so there is a positive compressive force in the tubing between the upper hydraulic set packers. Without this compressive force, the upper packers could potentially release due to the application of test pressures and/or cold fluids inside the tubing, which act to shorten the tubing (the upper packers are all designed to be released with simple axial tension).

Once the bottom packer is set, the remainder of the tubing completion string will be run and landed as shown in the attached drawing.

Prior to landing the tubing string for the last time (i.e. after space out operations), the annulus behind the tubing string above the top packer will be displaced with a corrosion inhibited fluid, and the inside of the tubing will be displaced with diesel. The diesel will be used to create an under-balanced condition to induce flow from the well perforations once the sliding sleeves in the tubing string are eventually opened.

Once the tubing string is landed in the wellhead, pressure will be applied to the inside of the tubing string to set the hydraulically set packers and to test the pressure integrity of the tubing string. Note that the pressure will be applied against the un-perforated production casing below the bottom most packer. The tubing annulus will also be pressure tested at this time.

The tubing string is designed to minimize flow restriction and to maximize production rate from the individual pay zones. It is for this reason that the production packers in the well are of a somewhat special size, and that the tubing size increases wherever possible up the well bore.

The multiple production packer design has been chosen to maximize control and therefore recovery of reserves from the various reservoir zones. A sliding sleeve is located between each set of packers so individual zones can be shut off or produced, and if necessary, so combinations of zones can be produced or shut in.

A tubing retrievable sub surface safety valve (SSSV) is installed in the tubing string and located approximately 50m below the mud line. This depth was chosen to ensure that the valve is well below the depth of any sea bed disturbance should the platform catastrophically capsize or be destroyed in any way and damage the well at or below the mud line. Of course the SSSV would also protect against uncontrolled discharges from the well should any mishap occur at surface or at any location above the depth of the SSSV.

The top most production packer in the well is located above the top most perforation in the well. The packer therefore provides protection against uncontrolled flow up the tubing annulus in the event of a mishap above that point.

The tubing string and all equipment made up in the tubing string are made from corrosion resistant 13 Chrome or equivalent materials. Key sealing surfaces in the completion string, such as those in the sliding sleeves, SSSV and tubing hanger, are made from Incaloy, which has an ultra high corrosion resistance, thus guaranteeing an unmarked sealing surface for production tools and safety devices throughout the life of the well. Refer to attached drawing for details of the weight, grade and connections in the tubing string.

6.20 BOP Removal & Tree Installation

Before removing the BOP stack, the well will be secured with two flow barriers, one of which will be tested in the direction of flow from the well.

The first and tested barrier will be the combination of blank tubing (all sleeves will be in a closed position), lower most production packer, and un-perforated production casing below the lower most production packer. These are deemed tested in that if there were a leak in any of these items, the well would begin flowing due to the under-balanced fluid column inside the tubing string. The tubing hanger would have also been pressure tested from below (ref previous step), thus ensuring there would be no flow up the tubing annulus.

The second barrier will be the closing of the SSSV, or the setting of a plug inside the tubing near the surface. The second barrier can also be tested if necessary in the direction of flow by trapping fluid pressure below the barrier using the volumetric fluid return method.

Once the barriers are in place and the production tree has been confirmed as having been pressure tested and in a position to be quickly and easily installed, the BOP stack and high pressure riser assembly will be removed. The production tree will then immediately be installed and the seal between the tree and wellhead pressure tested.

The tree has a working pressure of 5000 psi (34,450kpa), which is approximately 1500psi greater than the maximum anticipated shut in surface pressure calculated for the well, and that pressure was calculated using an absolute worst case dry gas gradient, something which will likely never exist in the well due to the high liquid content of the reservoir fluids.

Like the tubing, the tree is manufactured from highly corrosion resistant material. Further, all key sealing areas in the tree, such as valve seats, gates and seal ring surfaces, have been inlayed with Incaloy, and highly corrosion resistant material to ensure the integrity of such key sealing surfaces throughout the life of the well.

Attached is a stack up drawing of the tree, which also identifies the valve configuration of the tree. The tree contains two master valves, one of which is manually operated and one of which is hydraulically operated. The tree is also equipped with a hydraulically operated production wing valve. The two hydraulically operated valves on the tree and the hydraulically operated SSSV in the well are all controlled by the production and safety control system on the production platform. All three valves are designed such that they are fail safe close, which means that if control line pressure is lost for any reason, springs within the valve actuators will automatically act to close the valves.

6.21 Production Testing

To further reservoir understanding and hence long term management and reserve recovery from the reservoir, the completion procedure includes the production testing of the individual production zones in the well while the rig is still on location. The production testing will also verify the integrity of the annular sealing mechanism of the intermediate production packers between zones.

The duration of the tests will be kept to a minimum due to the high cost of the drilling rig and associated services, but will be of a duration where maximum flow information will be obtained. The exact sequence of zones to be tested may vary depending on information gained from the well logs, equipment details and ongoing optimization efforts to reduce rig time, but the current plan is to conduct a commingled clean up flow of all zones, followed by individual production flow tests of each zone. The lower most zone will be perforated under-balanced using through tubing perforating guns just before the commingled clean up flow period. Reservoir engineers are to issue instructions as to which zone will be tested last and therefore left open at the end of the testing period.

All clean up flows and production testing operations are to be conducted through temporary production testing equipment rigged up on the drilling rig. No clean up flows or production testing are scheduled to take place through the permanent production equipment on the platform.

All slick line and electric line operations in the wells during the production testing phase will be conducted on the rig floor via a 7 inch (178mm) diameter high pressure tubing riser extending from the top of the permanent production tree to a temporary/redundant production test tree located at the rig floor. Slick line and electric line BOP and lubricator equipment will be installed above that point, and all such equipment will be pressure tested prior to use to approximately 5000 psi (34,450kpa), which is again safely above the worst case shut in surface pressure discussed earlier of 3500psi (24,100kpa).

6.22 Rig Demobilisation

After the completion and production testing of the Yolla 3 well (and the Yolla 4 well before it), the rig is scheduled to be moved off the Yolla location using the reverse of the mobilization procedure described earlier. At that time, control of the Yolla wells will be formally handed over to Origin's production operations group.

7 RIG DETAILS

7.1 MODU ENSCO 102 Jack-Up Rig

Origin Energy will conduct their drilling operations using a contracted Mobile Offshore Drilling Unit (MODU), the ENSCO 102 jack up, supplied by ENSCO Australia.

The person in charge of the ENSCO 102 is the Offshore Installation Manager (OIM) who is responsible for and in charge of emergency response on board the MODU. The ENSCO 102 Rig Manager is based in Melbourne Victoria.

The ENSCO 102 is a non-propelled, self-elevating, independent leg, cantilevered jack-up drilling unit. The rig is a KFELS enhanced MOD V design drilling unit, constructed at Keppel Fels Yard, Singapore in 2002. The rig is specifically designed for deeper drilling in a harsh environment. The ENSCO 102 is registered in Monrovia, Liberia, and the basic physical systems important to safety have been designed in accordance with the rules and regulations of the UK HSE, Dutch SODM, IMO MODU Code and the American Bureau of Shipping (ABS). The rig is capable of operating in 350 ft water depth (400ft = in non-harsh environments) and drilling wells to 30,000 ft (over 9000m).

General arrangement and systems drawings are provided at the end of this section, including a drawing of the rig in position over the Yolla-A platform.

The ENSCO 102 Vessel Safety Case has been accepted by the DA.

The ENSCO 102 will be inspected annually by ABS to ensure compliance with the ABS rules and the IMO MODU Code 1989.

7.2 ENSCO 102 Specifications & Equipment

All ENSCO 102 equipment is maintained through the ENSCO Planned Maintenance Programme (PMP).

Being a new rig (construction completed in mid 2002), the rig is not only equipped with new and up to date equipment, but the is also very well equipped in terms of quantities of equipment and general volume and load capacities.

The rig is equipped with six main engine/generator sets each capable of generating 2150kW, 1 emergency power generator (1040kW), three 2200 horespower mud pumps, a 7500 psi (52,000kPa) mud piping system, a mud storage system capable of holding 5,387 bbls (856 cubic meters), full coverage pit monitoring devices, 4 high flow/fine screen shale shakers and 8 dry bulk storage tanks, each capable of holding over 2000 cubic feet (56 cubic meters) of product. The derrick and rig floor are equally well equipped, with a 1.9 million pound (876 tonne) derrick, 3000 horsepower draw-works, 49.5" rotary table with permanent diverter below, Varco TDS4H 1130 Hp top drive, automatic pipe racking system, extended mouse hole for making up stands of pipe off the critical path of the rig, iron roughneck, and computerised drillers station, complete with closed circuit television monitors. The rig is equipped with 6000m of 5" S135 drill pipe and a large quantity of Hevi Wate Drill Pipe, drill collars, 3.5" drill pipe, subs and fishing tools. The rig is fitted with a modern Dowell cementing unit package, complete with recirculating mixer and sound proof wall between the engine room and the mixing equipment. The rig also has three Dreco 55 ton (50 tonne) cranes. The rig has 108 beds in no more than two bed cabins and changing rooms for male and female personnel. The rig has four 61 person life boats and six 25 person inflatable life rafts. One of the life boats is equipped to meet fast rescue boat requirements. The rig has a well equipped hospital room. The rig also has its own satellite communications system, but Origin is installing its own satellite communications system to avoid any possible bottle necks in terms of communications and data transfer.

Following are details of key dimensions and capabilities of the rig. However, more detailed information and design parameters can be found in rig's Marine Operations Manual and Equipment List, copies of which can be provided if necessary.

Table 7.1 ENSCO 102 Principle Dimensions

Shape of hull.	Triangular.
Hull length (between perpendiculars).	246 ft
Hull width.	222 ft
Length overall (including helideck).	334 ft
Depth of hull (at sides).	30 ft
Gross Register Tonnage.	12,247 Tons
Net Register Tonnage.	3,674 Tons
Maximum displacement prior to elevation.	41,806 Kips
Load line displacement.	41,838 Kips w/ Cans Free Flooded
Load line draft.	20.8 ft
Light ship displacement.	29,481 Kips w/ Cans Free Flooded
Light ship draft.	15.2 ft
Load line mark position (aft of bow)	168 ft

Table 7.2 ENSCO 102 Spun Legs

Number of legs.	3
Type of legs.	Triangular Truss
Overall length of spud legs.	544 ft
Diameter of spud cans (across flats).	59.8 ft
Height of spud cans (to top of trunk).	18 ft
Footing area of spud cans (one can).	2862.9 ft^2
Volume of spud cans (one can).	20,000 ft^3
Below hull.	1.3 ft
Length of raw water tower.	4 x units leg mounted. Full operational length of legs.

Table 7.3 ENSCO 102 Helideck

Shape.	Octagonal
Helideck diameter.	83 ft
Overall length of helicopter.	S61N Sikorsky

Rotor size.	60 ft
Gross weight.	20,400 lbs

Table 7.4 ENSCO 102 Environmental Design Limits

Maximum operating water depth.	400 ft
Minimum water depth without special equipment.	25 ft
Maximum air gap (for which unit is fully equipped).	110 ft @ 300 ft Water Depth
Minimum atmospheric temperature.	-20ºC steel design
Minimum water temperature.	-20ºC

Table 7.5 ENSCO 102 Operational Limits

Wind velocities - based on.	1 min average
Based on water depth of.	328 ft
Maximum wind speed.	70 Knots
Maximum wave height.	65 ft
Surface current speed.	1 Knot
Bottom current speed.	0
Rated wave period	16 seconds
Leg penetration.	10 ft

Table 7.6 ENSCO 102 Survival Limits

Wind velocities - based on.	1 min average
Based on water depth of.	328 ft
Maximum wind speed.	100 Knots
Maximum wave height.	78 ft, 15.5 seconds period
Surface current speed.	1 Knot
Bottom current speed.	0
Atmospheric temperature (°F).	-20 ºC
Water temperature (°F).	-20 ºC
Air gap.	65 ft
Leg penetration.	10 ft

Table 7.7 ENSCO 102 Well Control Equipment - Diverter

Make.	ABB Vetco, Singapore
Type.	KFDJ
Size.	47” maximum housing bore (Nominal 49-½”)
Working pressure.	2,000 psi
Available inserts.	22” f/ 20”…16” casing 17 ¾” f/ 13 3/8”…8” 10” f/ 5” drill pipe

Outlet size.	14”
Flow line size.	14”
Fill up line size.	3”
Valve make.	14” type remote actuated Trunnion Ball Valves
Over shots available.	30” f/ Conductor 24” f/ Mandrel or Conductor

Table 7.8 ENSCO 102 Well Control Equipment – Annular Preventer

Make.	Shaffer
Type.	Spherical BOP H2S Trim
Size.	18 ¾” vertical bore
Working pressure.	10,000 PSI WP packing element
Top connection.	BX 164 studded top
Bottom connection.	BX 164 flanged bottom

Table 7.9 ENSCO 102 Well Control Equipment – Ram Type Preventers

Make.	Shaffer	
Type.	NXT Double Ram w/Ultralocks & boltless doors	
Size.	18 ¾”	
Working pressure.	15,000 psi	
Top connection.	BX 164 studded top type NXT	
Bottom connection.	BX 164 flanged bottom	
Outlets.	4 -3 1/16” 15,000 WP BX-154 studded side outlet	
Casing rams.	1 set each - 10 ¾”, 9 $^{5}/_{8}$”, 7 $^{5}/_{8}$”, 7”	
Effective Height.	1.5 ft	0.83 ft

Table 7.10 ENSCO 102 Well Control Equipment – Drilling Risers

Size.	$13^{5}/_{8}$” x $13^{5}/_{8}$”	$13^{5}/_{8}$” x $13^{5}/_{8}$
Working pressure.	10K x 10K	10K x 10K
Ring grooves.	BX 159 x BX 159	BX 159 x BX 159
Studded / Flanged.	Flanged x Flanged	Flanged x Flanged
Length.	20 ft	10 ft

Table 7.11 ENSCO 102 High Pressure Mud System – Mud Pumps

Quantity	3
Make	National
Model	14-P-220
Mud pump driven by	GE 752 DC high torque shunt motors
Continuous power rating of each motor	1130 @ 1040 rpm
Pump stroke counter - type	Augmented in Spectrum tracer panels
Available liner size	6 ½” & 7” supplied

Maximum working pressure	7,500 psi with 5" HP Plungers
Maximum flow rate	1215 gal with 9" liner @ 105 spm
Liner and valve system	P-Quip Quick Liner Change System

7.3 ENSCO 102 Conductor Tensioning System

Provision is made for a maximum 600 Kips (272 Tonne) load through a floating Tension Frame located in the PCU as required.

Four (4) pad eyes rated at 75 short tons (68 tonnes) each to support conductor/riser are located under the rig floor. These are attached to cables and shackles attached to double acting hydraulic rams and to the floating tension frame.

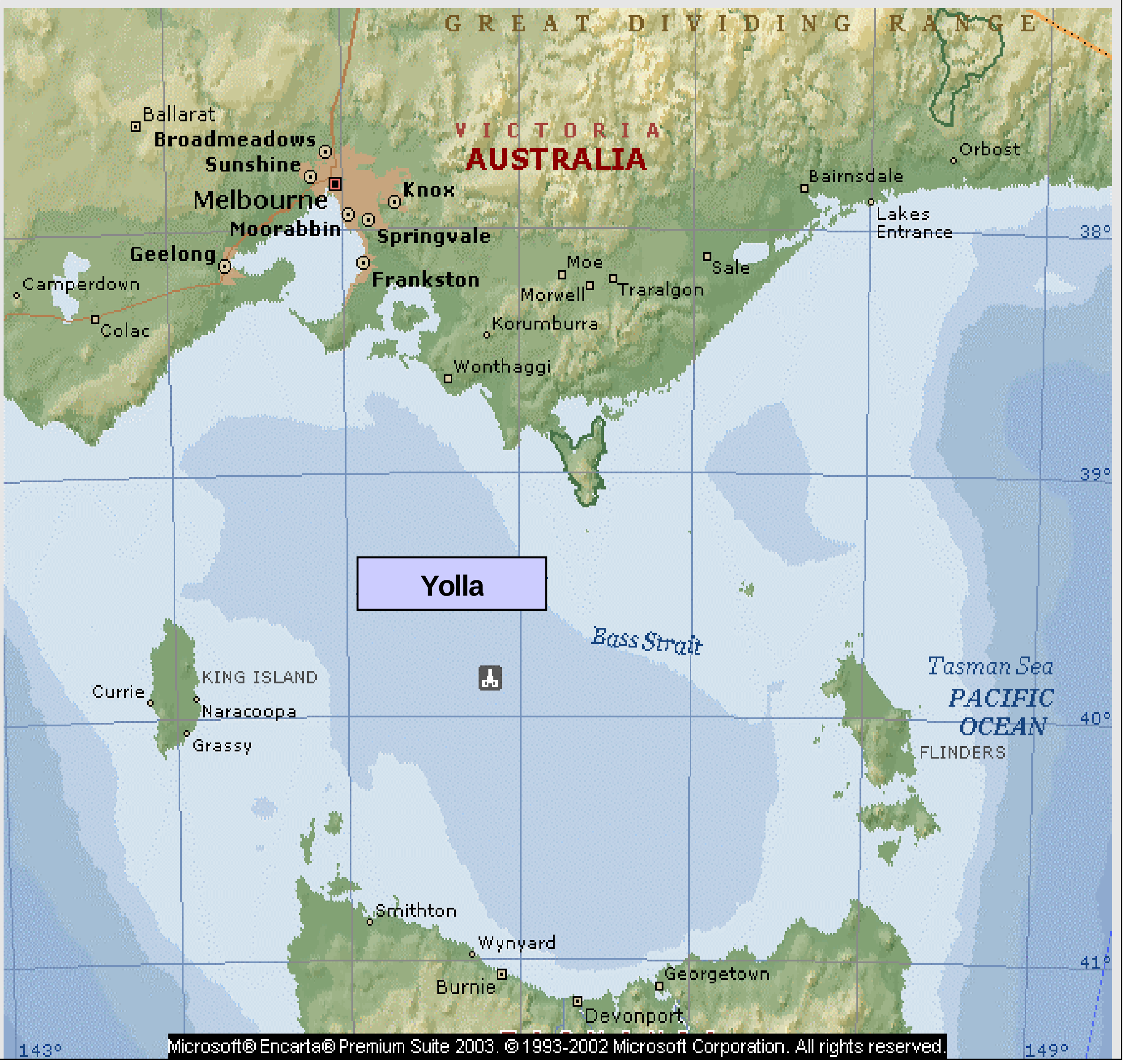
Skid mounted, air powered (2 LP & 2 HP) hydraulic pumps and system control panel with fully active pressure monitoring are located in the cellar deck area.

The pre-selected tension loads are constantly maintained by two positive displacement pumps which activate when the applied tension pressure is decayed through the flow divider. Both the P.R.V. and positive displacement pumps provide a totally constant and maintained tension.

8 FLIGHT TIMES AND LANDFALL MAP

Latitude:39° 50' 45.90" S - Longitude:145° 49' 01.39" E		
Distance to:	**Kilometres / *Nautical Miles***	**Average helicopter flight time minutes**
Naracoopa, King Island, Tasmania	146 / *79*	38
Burnie, Tasmania	135 / *73*	35
Devonport, Tasmania	155 / *84*	40
Geelong, Victoria	229 / *124*	60
Essendon Airport Melbourne	248 / *134*	67
Sale Search & Rescue Base	220 / *118*	57
Smithton, Tasmania	125 / *68*	33
Wonthaggi, Victoria	138 / *75*	40

Assumes nil wind conditions ± depending on head / tail winds – @ cruising speed of 125 kts



9 ATTACHMENTS

Figure 9.1 - YOLLA WELL SLOT SELECTION DRAWING
May, 2003

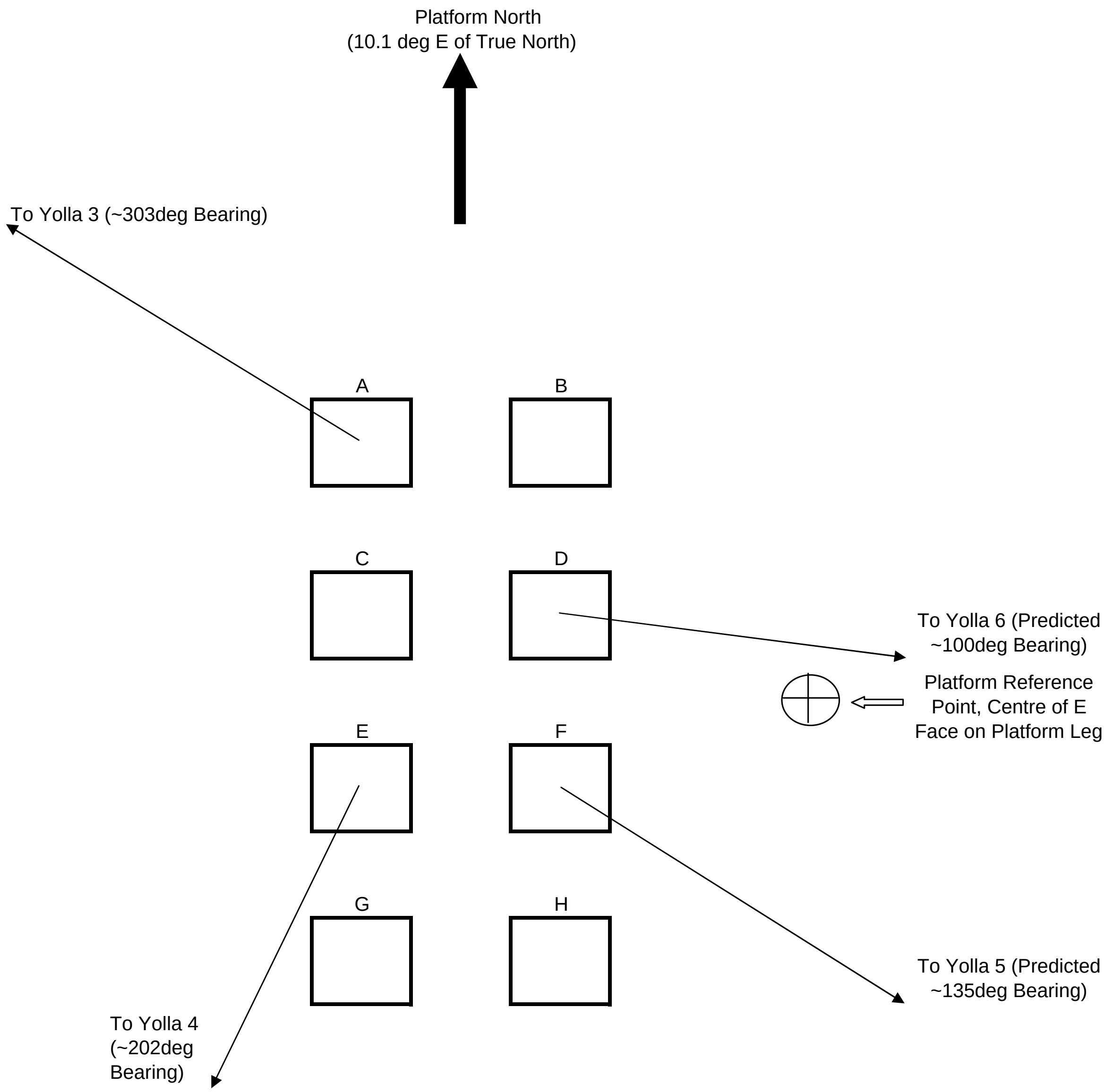
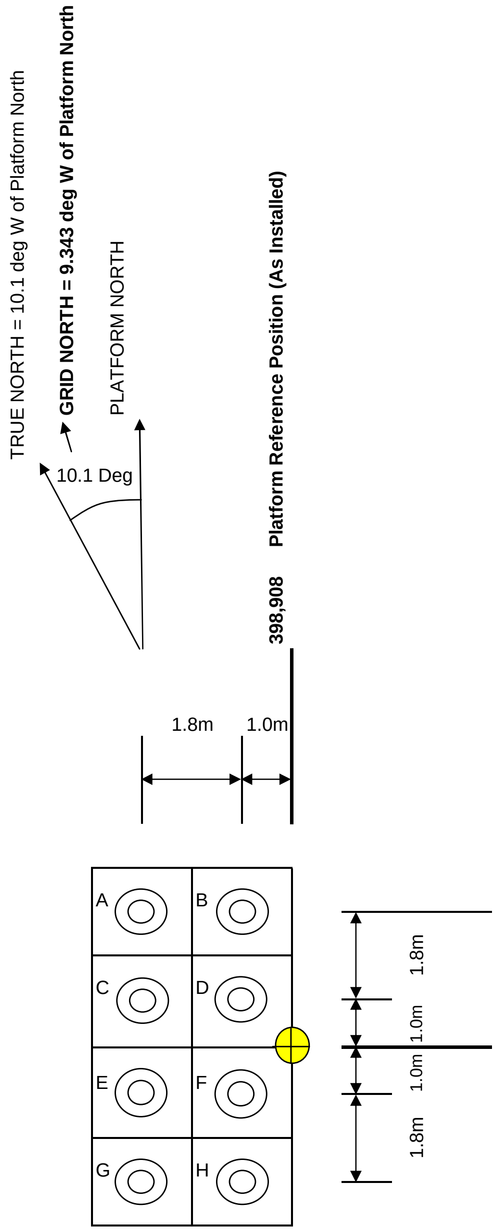


Fig 9.2 - YOLLA WELL SLOT COORDINATES (GDA94) AFTER PLATFORM INSTALLATION IN MARCH, 2004



SLOT	ANGLE BETWEEN PLATFORM NORTH AND VECTOR EXTENDING FROM PLATFORM REFERENCE POINT TO WELL SLOT	ANGLE BETWEEN GRID NORTH AND VECTOR EXTENDING FROM PLATFORM REFERENCE POINT TO WELL SLOT	HORIZ SECTION TO SLOT	GRID NORTH COMPONENT	GRID EAST COMPONENT	GRID NORTH COORDINATE	GRID EAST COORDINATE
X	0	(w/9.343 deg Correction)				5,588,822.00	398,908.00
A	N45degW	35.657	3.96	3.22	2.31	5,588,825.22	398,905.69
B	N19.65degW	10.307	2.97	2.92	0.53	5,588,824.92	398,907.47
C	N70.35degW	61.007	2.97	1.44	2.60	5,588,823.44	398,905.40
D	N45degW	35.657	1.41	1.15	0.82	5,588,823.15	398,907.18
E	S70.35degW	79.693	2.97	-0.53	2.92	5,588,821.47	398,905.08
F	S45degW	54.343	1.41	-0.82	1.15	5,588,821.18	398,906.85
G	S45degW	54.343	3.96	-2.31	3.22	5,588,819.69	398,904.78
H	S19.65degW	28.993	2.97	-2.60	1.44	5,588,819.40	398,906.56

Figure 9.3 - YOLLA 20" DRIVEN CONDUCTOR DRAWING
23 December, 2003

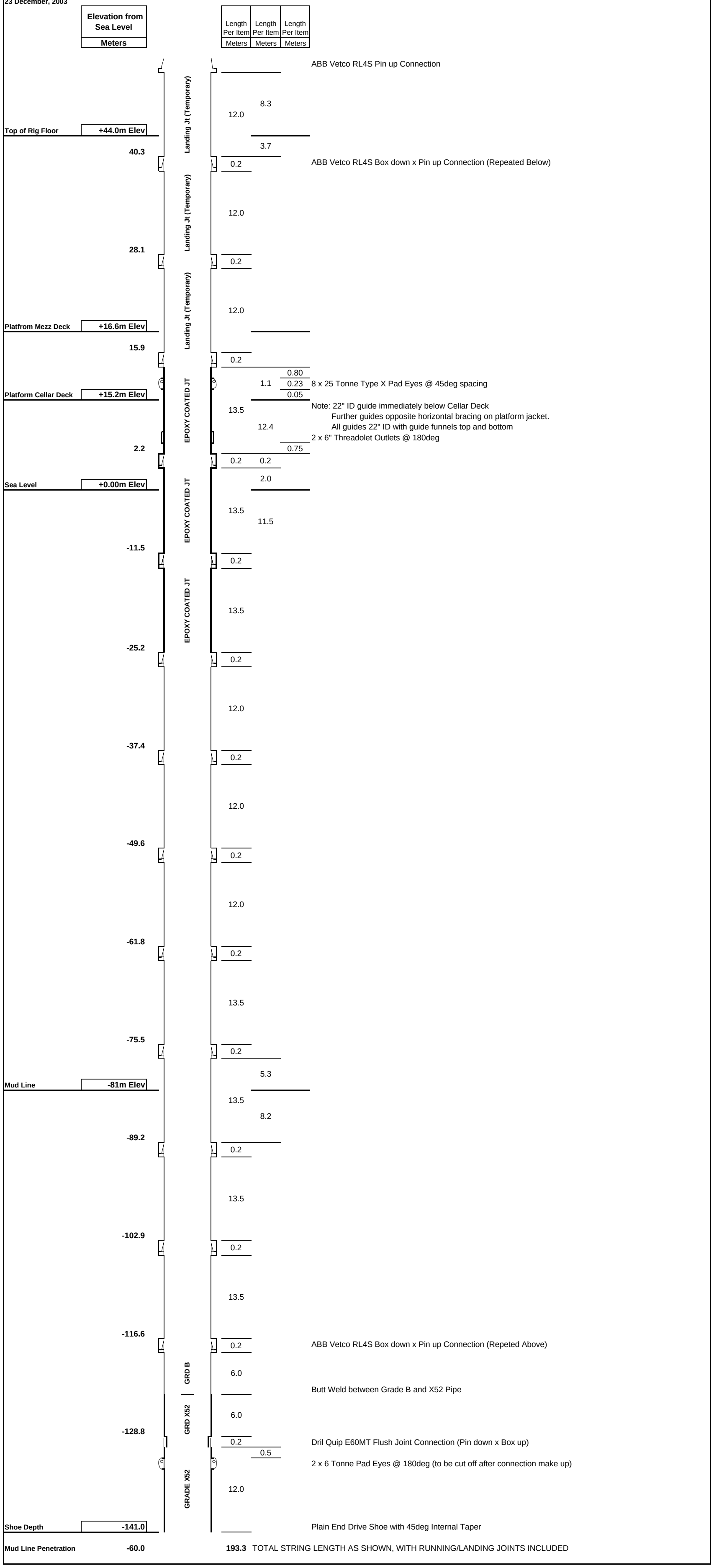


Figure 9.4 - Yolla 3 & 4 Wells Diverter/Low Pressure Riser Configuration
April, 2004

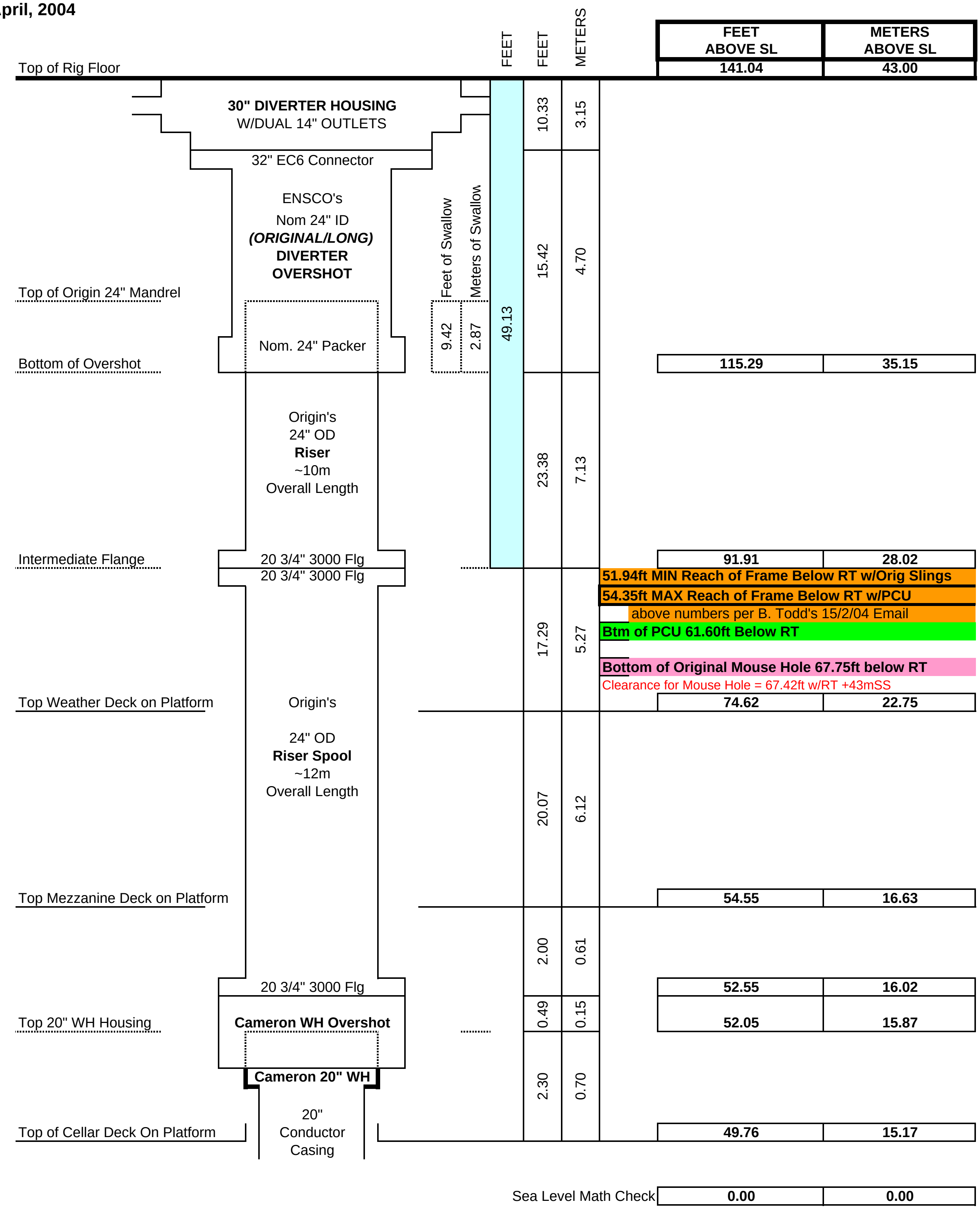


Figure 9.5 - Yolla 3 & 4 Wells High Pressure Riser Configuration
April, 2004

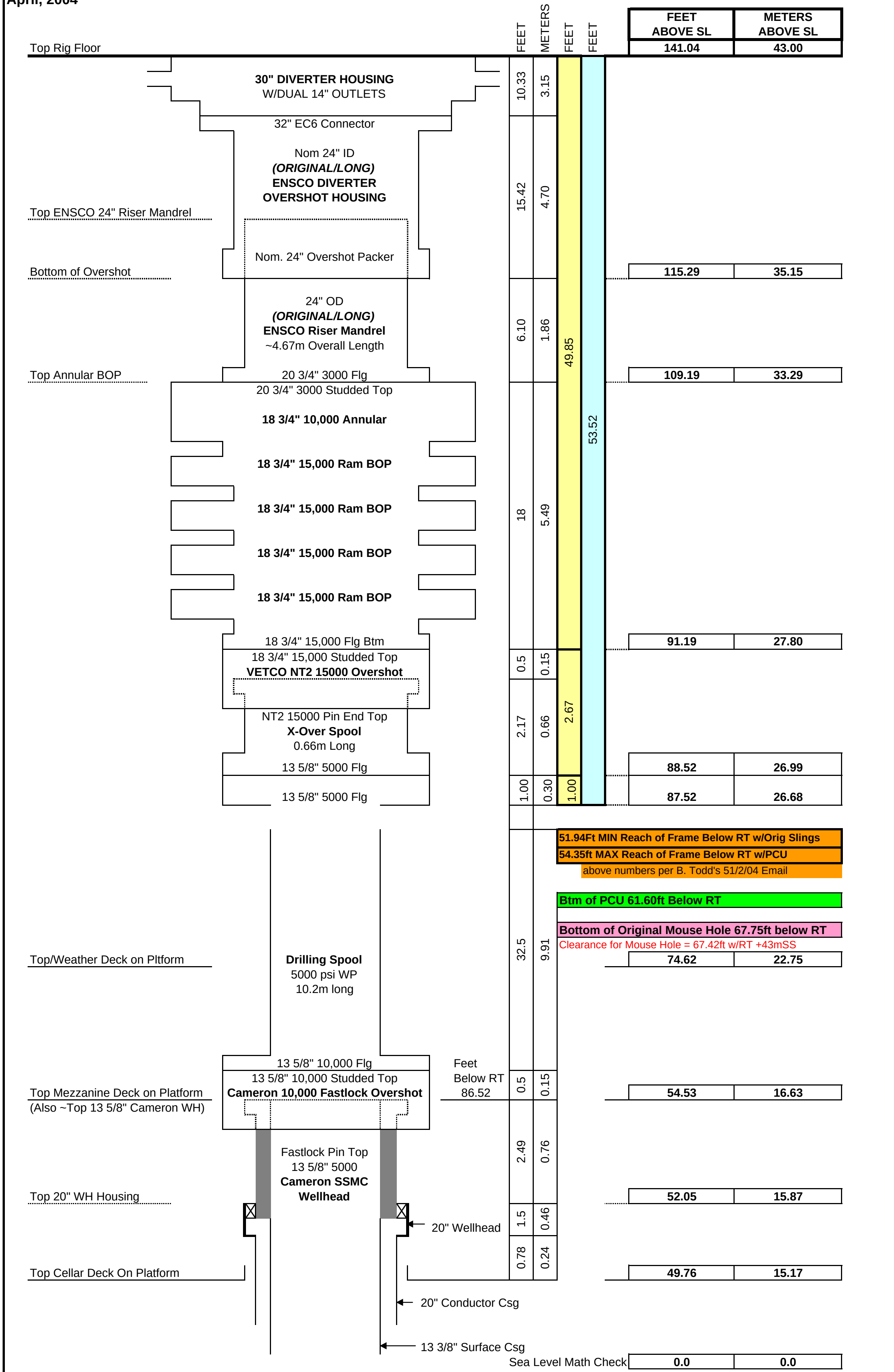


Figure 9.6 - ENSCO 102 BOP Configuration

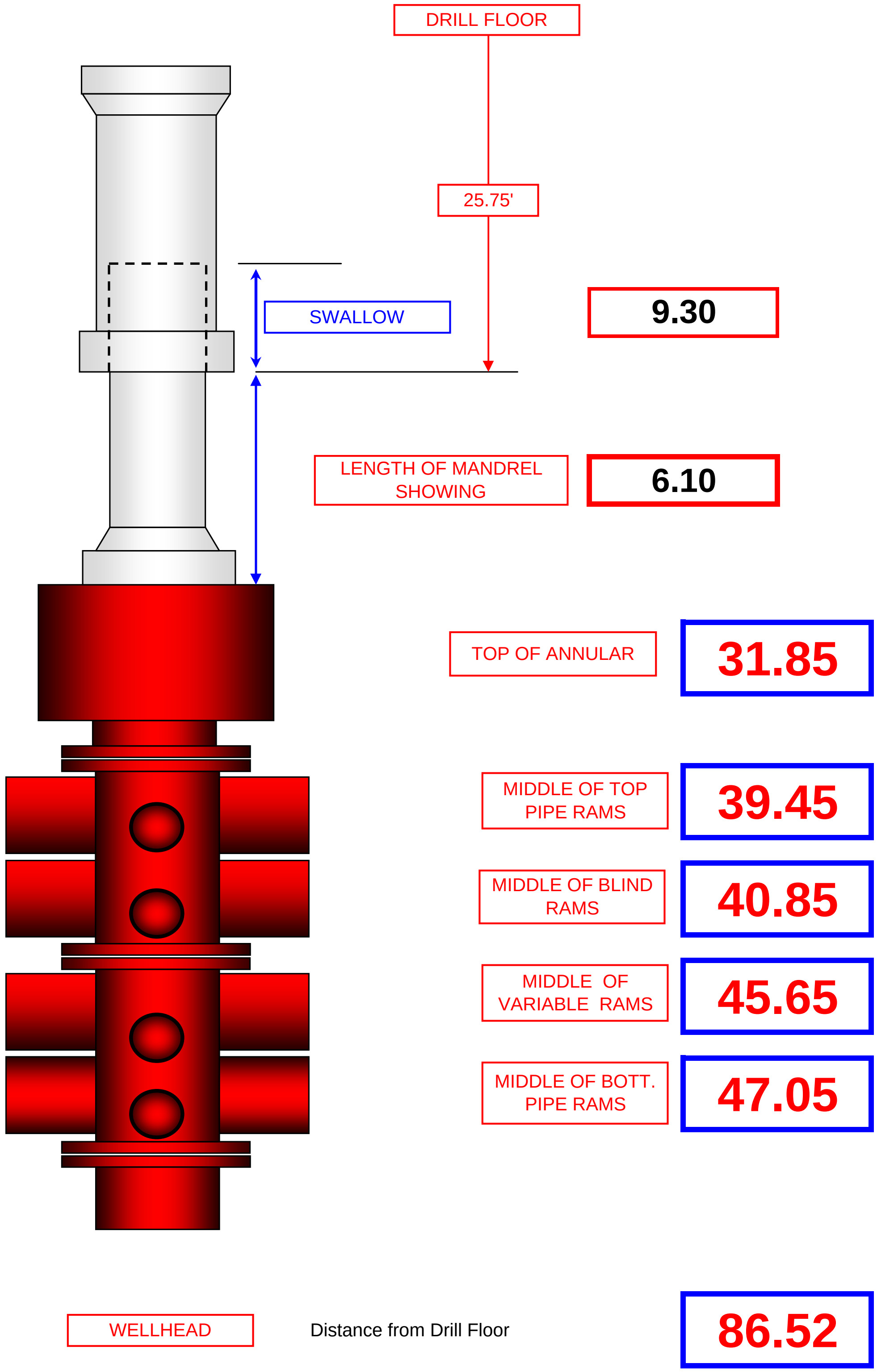


Fig 9.7 - YOLLA 3 CASING DIAGRAM

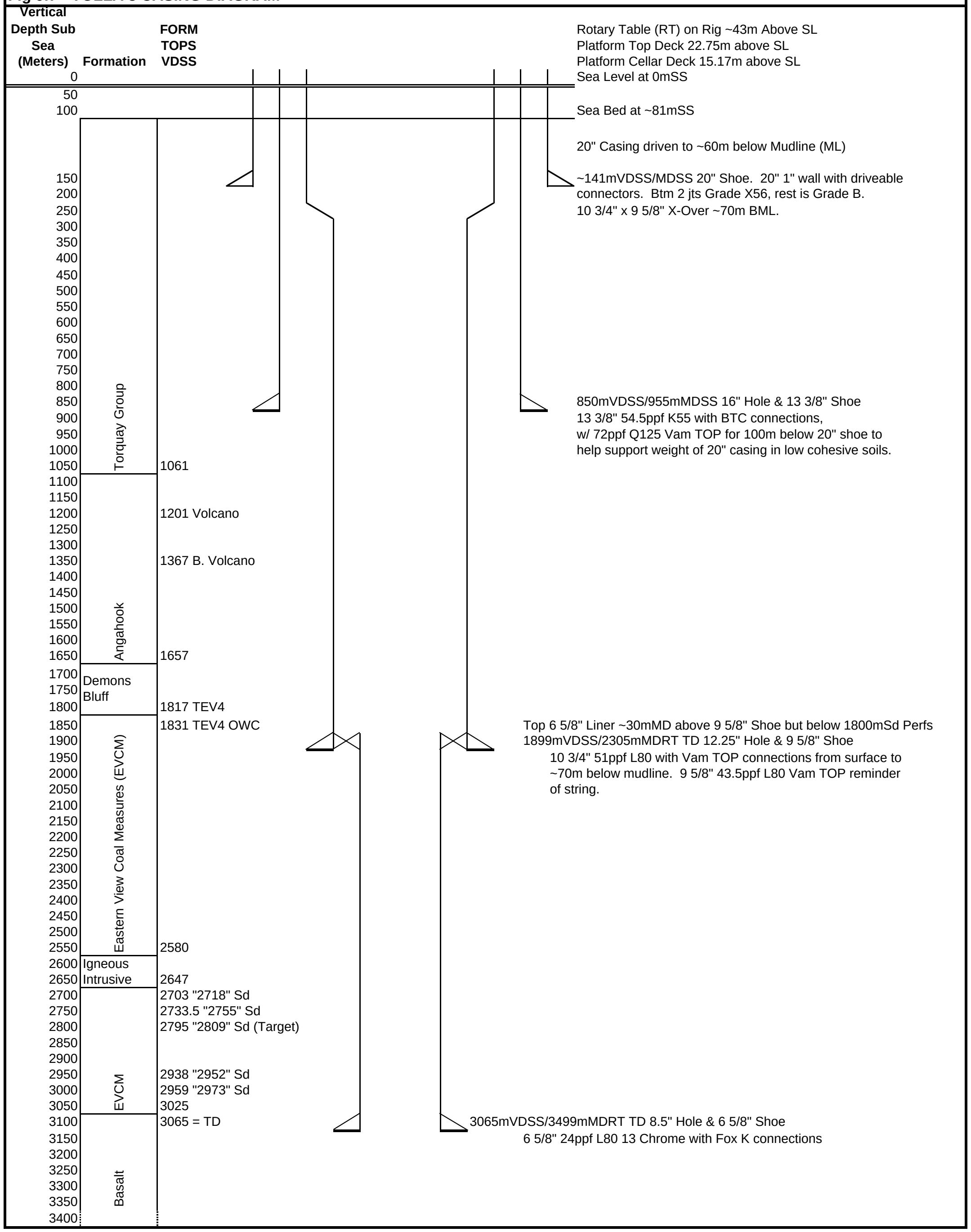
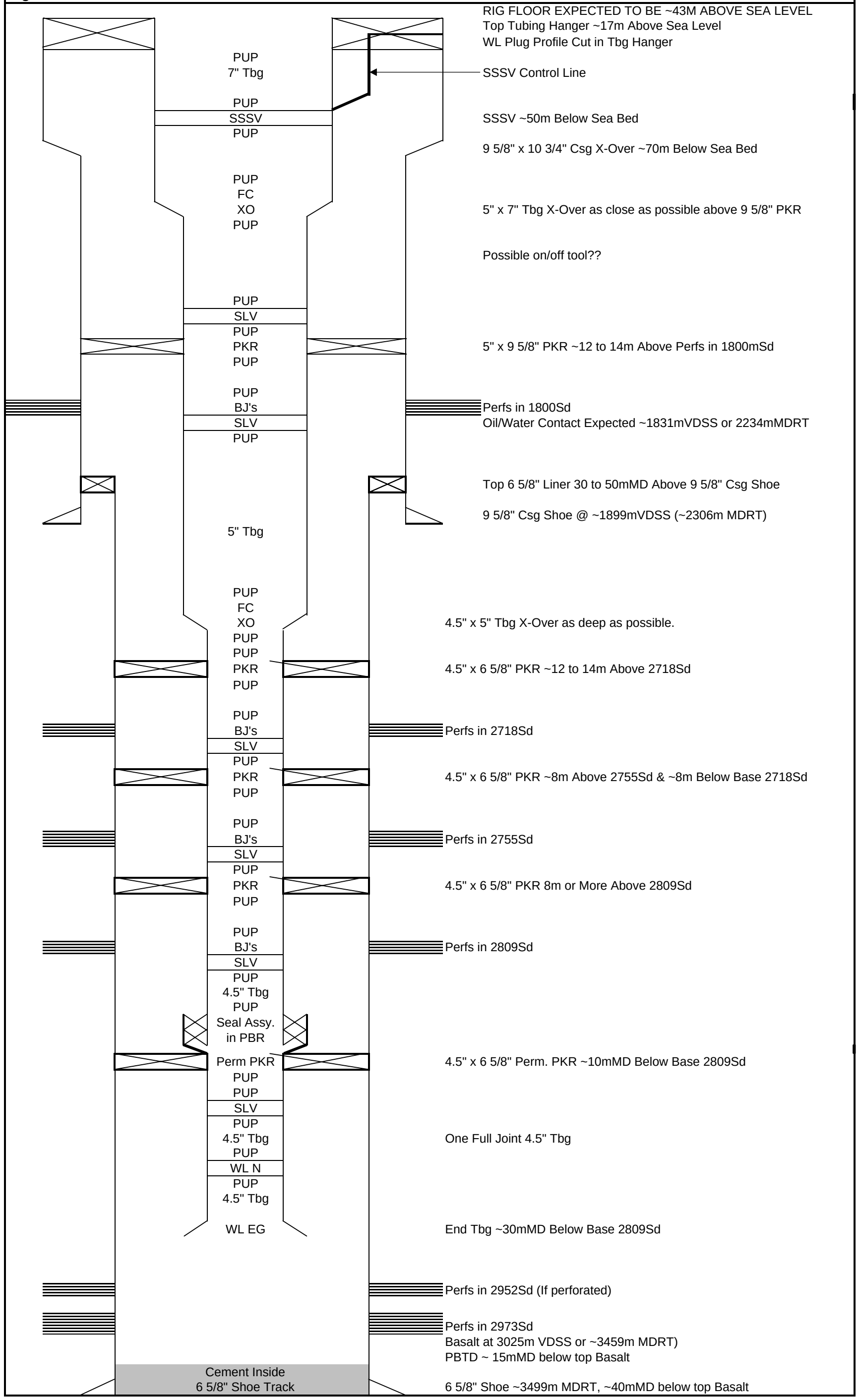


Fig 9.8 - YOLLA 3 TUBING COMPLETION DIAGRAM



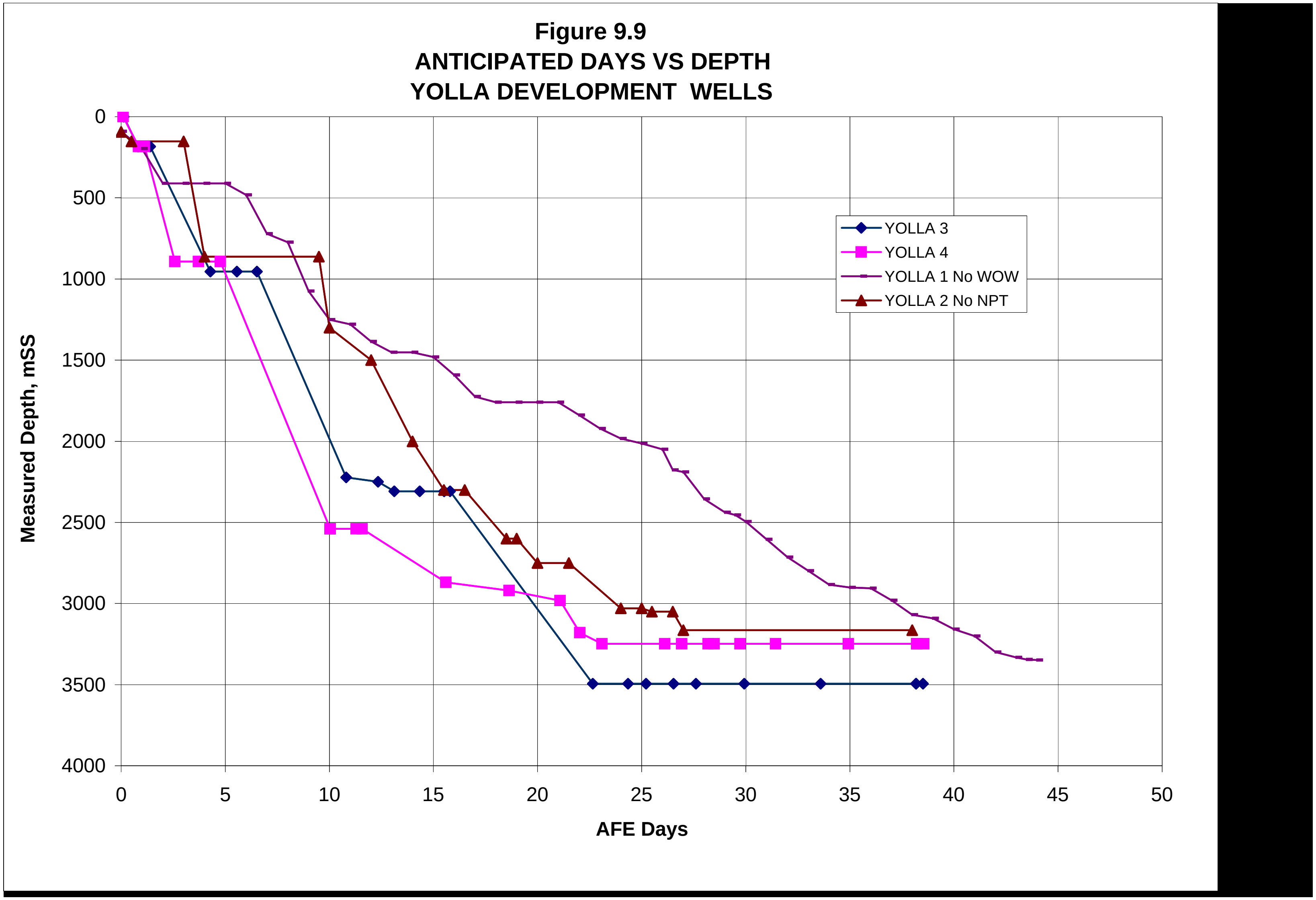


Figure 9.9
ANTICIPATED DAYS VS DEPTH
YOLLA DEVELOPMENT WELLS
YOLLA 3
YOLLA 4
YOLLA 1 No WOW
YOLLA 2 No NPT
Measured Depth, mSS
AFE Days
0
500
1000
1500
2000
2500
3000
3500
4000
0
5
10
15
20
25
30
35
40
45
50

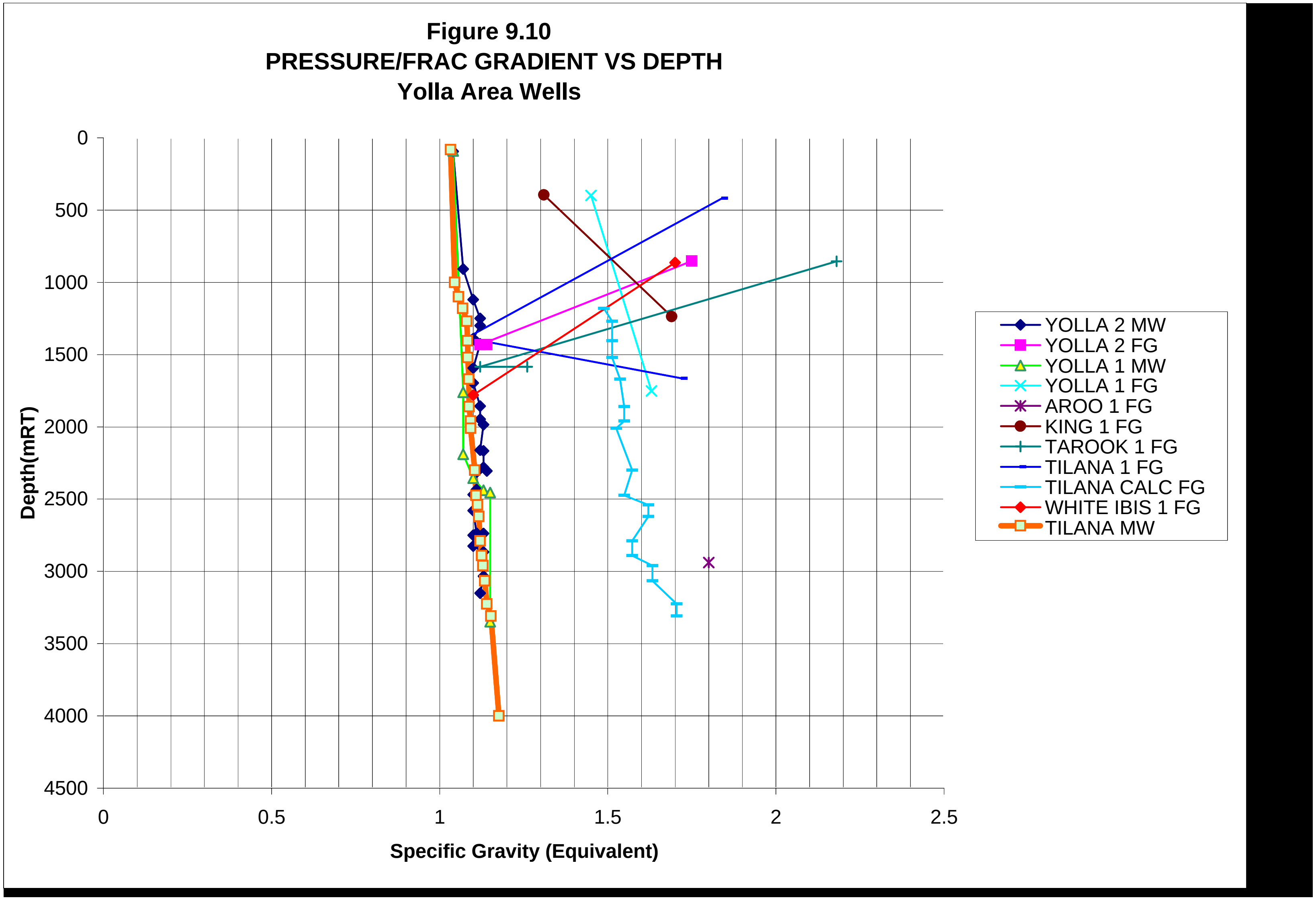
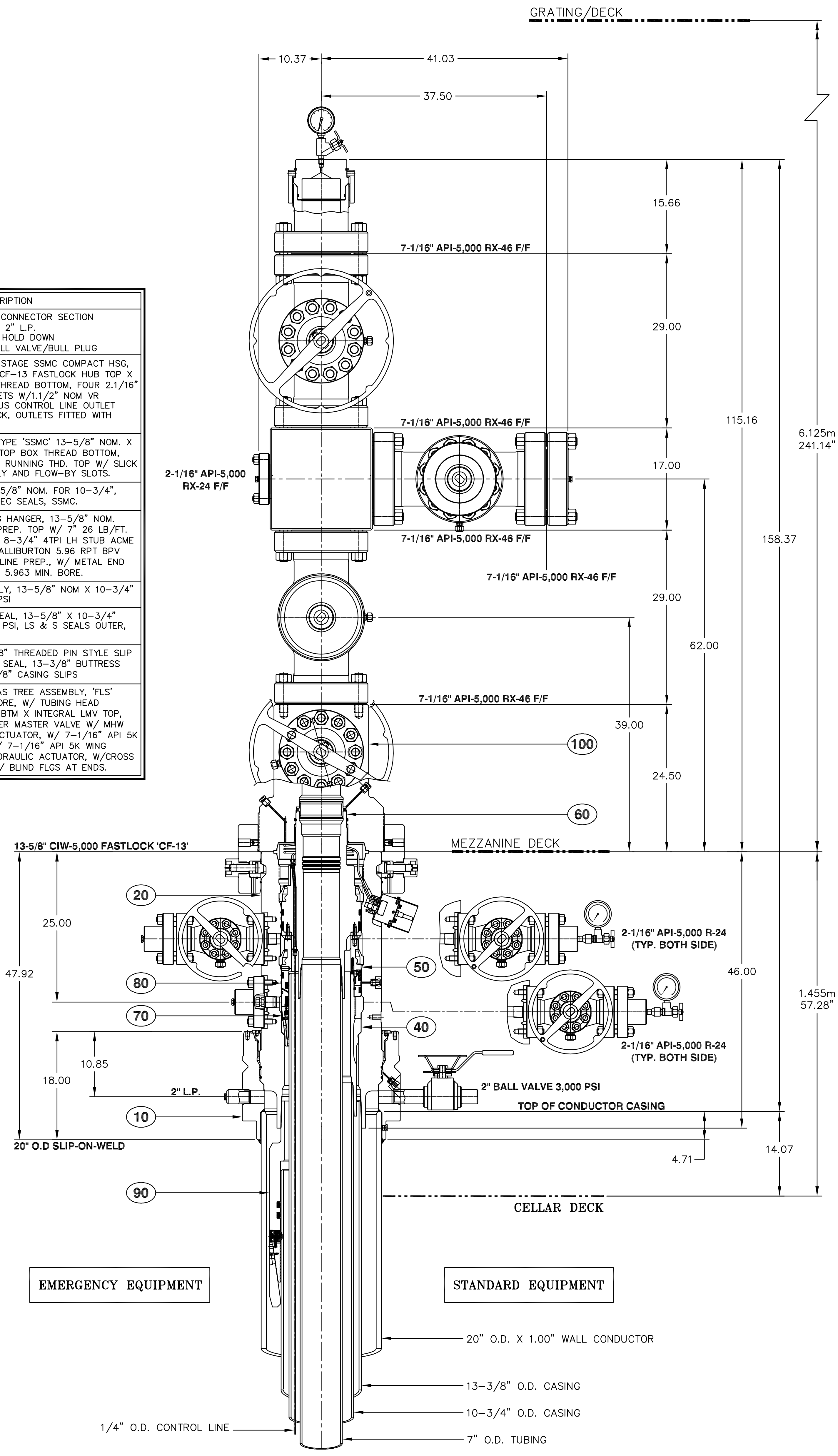


Figure 9.10
PRESSURE/FRAC GRADIENT VS DEPTH
Yolla Area Wells
Depth(mRT)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
0
0.5
1
1.5
2
2.5
Specific Gravity (Equivalent)
YOLLA 2 MW
YOLLA 2 FG
YOLLA 1 MW
YOLLA 1 FG
AROO 1 FG
KING 1 FG
TAROOK 1 FG
TILANA 1 FG
TILANA CALC FG
WHITE IBIS 1 FG
TILANA MW

ITEM	PART NUMBER	QTY.	DESCRIPTION
10	2201888–4000006	1	ASSY, 20" DIVERTER PIN CONNECTOR SECTION X 20" S.O.W. BOTTOM W/ 2" L.P. OUTLETS COMPLETE WITH HOLD DOWN RING + 2" LP NIPPLE/BALL VALVE/BULL PLUG
20	2201888–4000001	1	TOP LEVEL ASSEMBLY, 2 STAGE SSMC COMPACT HSG, 5000 PSI, 13.5/8" NOM. CF–13 FASTLOCK HUB TOP X 13.3/8" BUTTRESS BOX THREAD BOTTOM, FOUR 2.1/16" API 5000 STUDDED OUTLETS W/1.1/2" NOM VR THREADS, ONE CONTINUOUS CONTROL LINE OUTLET WITH NEEDLE VALVE BLOCK, OUTLETS FITTED WITH ASSOCIATED EQUIPMENT.
40	2135609–06	1	BODY, CASING HANGER, TYPE 'SSMC' 13–5/8" NOM. X 10–3/4" 51 BL/FT VAM TOP BOX THREAD BOTTOM, 11.500–5–STUB ACME LH RUNNING THD. TOP W/ SLICK NECK FOR SEAL ASSEMBLY AND FLOW–BY SLOTS.
50	2017955–07	1	ASSEMBLY; PACKOFF 13–5/8" NOM. FOR 10–3/4", 9–5/8" & 7" HANGER, MEC SEALS, SSMC.
60	2046234–12–02	1	ASSEMBLY, 'SSMC' TUBING HANGER, 13–5/8" NOM. W/ 7" NOM. 'SRL' SEAL PREP. TOP W/ 7" 26 LB/FT. FOX BOX THREAD BTM. X 8–3/4" 4TPI LH STUB ACME RUNNING THD. TOP W/ HALLIBURTON 5.96 RPT BPV PREP. W/ ONE CONTROL LINE PREP., W/ METAL END CAP & 'LS' BODY SEAL.~ 5.963 MIN. BORE.
70	2179369–01	1	EMERGENCY SLIP ASSEMBLY, 13–5/8" NOM X 10–3/4" CASING TYPE SSMC 10K PSI
80	2179370–04	1	ASSEMBLY, EMERGENCY SEAL, 13–5/8" X 10–3/4" CASING, SSMC TYPE, 10K PSI, LS & S SEALS OUTER, T SEALS INNER
90	2046184–01–03	1	ASSY, EMERGENCY 13–3/8" THREADED PIN STYLE SLIP LOCK CONNECTOR SLIP & SEAL, 13–3/8" BUTTRESS PIN TOP THREAD X 13–3/8" CASING SLIPS
100	2201888–4000003	1	SECTION; STACK–UP X'MAS TREE ASSEMBLY, 'FLS' GATE VALVES, 6–3/8" BORE, W/ TUBING HEAD ADAPTER W/ 'FASTLOCK' BTM X INTEGRAL LMV TOP, W/ 7–1/16" API 5K UPPER MASTER VALVE W/ MHW 7505/06RS HYDRAULIC ACTUATOR, W/ 7–1/16" API 5K SWAB MANUAL VALVE, W/ 7–1/16" API 5K WING VALVE W/ MH7506RS HYDRAULIC ACTUATOR, W/CROSS & TYPE 'O' TREE CAP, W/ BLIND FLGS AT ENDS.



ECL DRILLING MANAGEMENT PTY. LTD.

BASS GAS PROJECT

– YOLLA FIELD DEVELOPMENT

COMPACT WELLHEAD TYPE 'SSMC' AND CHRISTMAS TREE ASSEMBLY – 5,000 PSI W.P.

CASING PROGRAMME: 20" OD. CONDUCTOR X 13–3/8" OD. X 10–3/4" OD. CASING X 7" OD. TUBING.

SALES ORDER NO.: 140324/5
P/O NUMBER : 4700038724

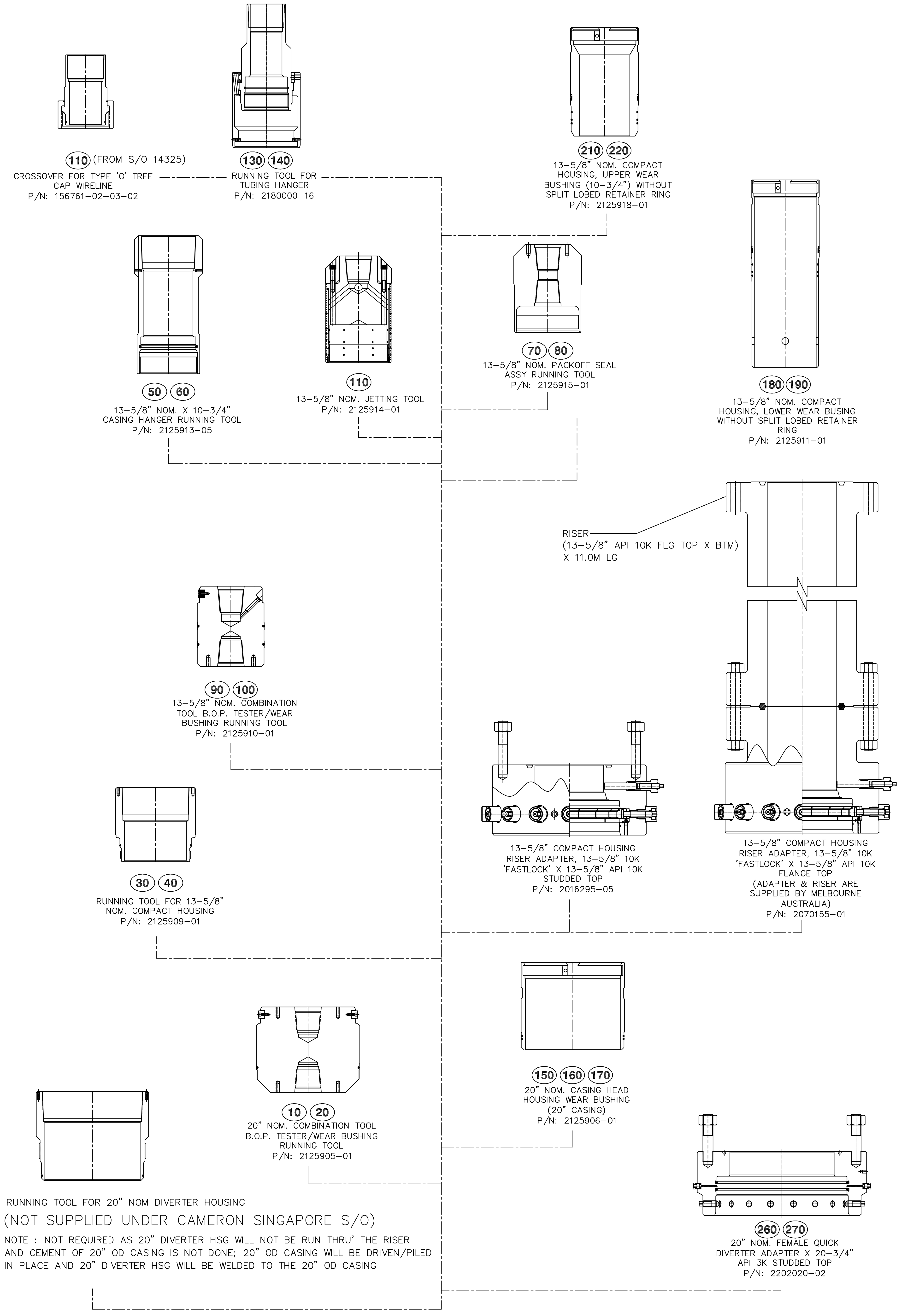
SD-031146

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES .01 – .03 R OR 45° INTERPRET DWG. PER ANSI Y14.5 STANDARD. SEE B/M FOR MATERIAL AND SPECIAL REQUIREMENTS. ITEM NUMBERS NOT APPEARING ON B/M DO NOT APPLY.

TOLERANCE UNLESS OTHERWISE SPECIFIED	SURFACE TREATMENT ~	DO NOT SCALE		CAMERON — Cooper Cameron (Singapore) Pte Ltd. Subsidiary of Cooper Cameron Corp. 2 Gul Circle, Singapore 629560	REV 01
.X ± ~ / ANGLES ± ~	MATERIAL & HEAT TREAT ~	DRAWN BY SAMSIAH	DATE 12 JAN '04	SEE LEFT HAND CORNER	
.XX ± ~ / ~ AA ON ALL MACHINED SURFACES		CHECKED JOSHUA LIM	DATE 14 JAN '04		
.XXX ± ~		APPROVED JOSHUA LIM	DATE 14 JAN '04		
SUPERSEDES	DATE	INITIAL USE B/M ~		SHEET 1 OF 2	SK–081893–01

CAD PRODUCED DOCUMENT – NO MANUAL REVISIONS ALLOWED

~ RUNNING TOOLS AND ADAPTERS ~

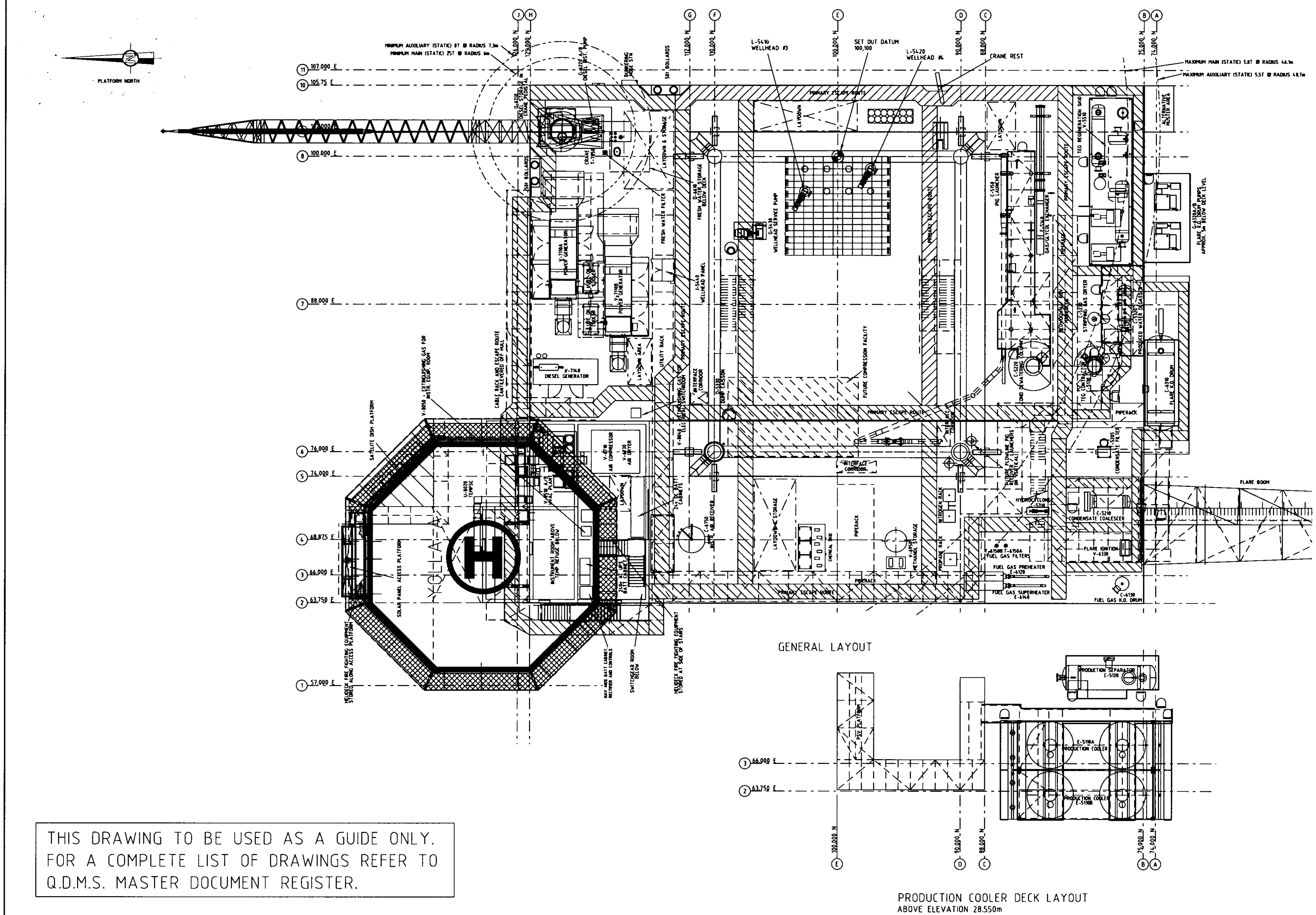


UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES .01 – .03 R OR 45° INTERPRET DWG. PER ANSI Y14.5 STANDARD. SEE B/M FOR MATERIAL AND SPECIAL REQUIREMENTS. ITEM NUMBERS NOT APPEARING ON B/M DO NOT APPLY.

REV 01

CAD PRODUCED DOCUMENT – NO MANUAL REVISIONS ALLOWED

TOLERANCE UNLESS OTHERWISE SPECIFIED	SURFACE TREATMENT ~	DO NOT SCALE		Cooper Cameron (Singapore) Pte Ltd. Subsidiary of Cooper Cameron Corp. 2 Gul Circle, Singapore 629560
.X ± ~ / ANGLES ± ~°	MATERIAL & HEAT TREAT ~	DRAWN BY SAMSIAH	DATE 12 JAN '04	SEE PAGE 1 OF 2
.XX ± ~		CHECKED JOSHUA LIM	DATE 14 JAN '04	
.XXX ± ~	~ AA ON ALL MACHINED SURFACES	APPROVED JOSHUA LIM	DATE 14 JAN '04	
	SUPERSEDES / DATE	INITIAL USE B/M ~	SHEET 2 OF 2	SK-081893-01



THIS DRAWING TO BE USED AS A GUIDE ONLY.
FOR A COMPLETE LIST OF DRAWINGS REFER TO
Q.D.M.S. MASTER DOCUMENT REGISTER.

REV	BY	DATE	DESCRIPTION
0	MW	4.03.03	ISSUED FOR CONSTRUCTION. (REPLACES SK-50-A-0025 REV. D)

CLOUGH
BassGas Project

APPROVALS
Drawn MW

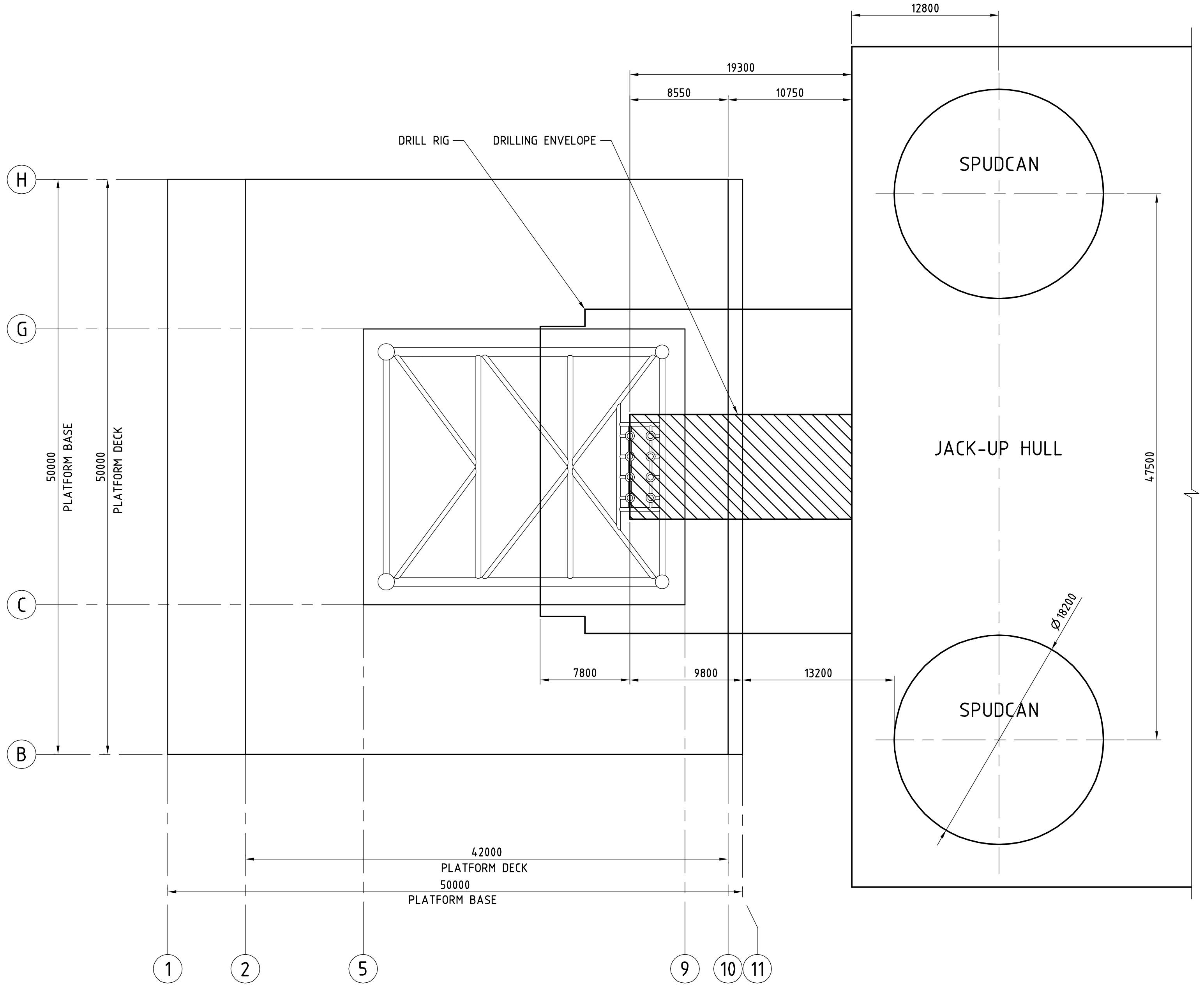
CLIENT: Origin energy

TITLE: BASGAS PROJECT
YOLLA OFFSHORE PLATFORM
GENERAL ARRANGEMENT

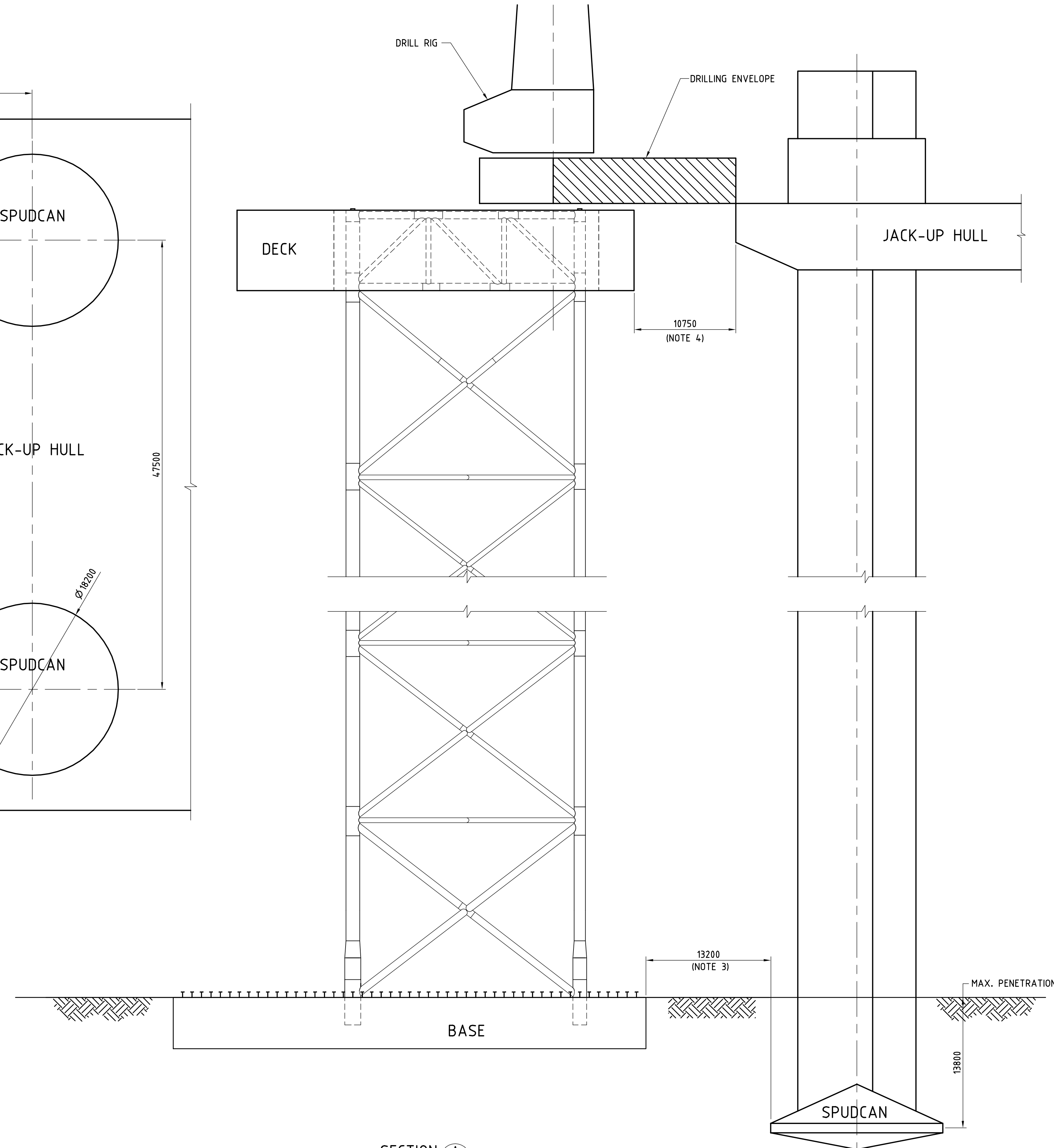
SCALE	CAD No.	JOB No.	DRAWING No.	REV
1:150	50A_0010	5333	DWG-50-A-0010	0

A1

May. 02, 2003 16:17:14 g:\PROJECTS\5333\C\DWG\A\50\50A_0010.dgn



PLATFORM OVERALL PLAN
SCALE: 1:250



SECTION A
1:250

NOTES

1. DETAILS OF JACK-UP DIMENSIONS GIVEN IN YOLLA OFFSHORE PLATFORM - FUNCTION SPECIFICATION - DOCUMENT No.352/00235/SS-JA-01 REV 1 (1-MAY-02)
2. ALL JACK-UP DIMENSIONS ASSUME MAXIMUM JACK-UP REACH FOR WESTERN WELLS.
3. MINIMUM SPUDCAN APPROACH TO EDGE OF BASE IS 1.0 x RADIUS OF SPUDCAN.
4. MINIMUM JACK-UP HULL APPROACH TO EDGE OF DECK IS 2.0m

REFERENCE DRAWING

No	TITLE

REVISIONS

REV	BY	DATE	DESCRIPTION	CKD	DESIGN	ENG APPR	PROJ APPR
0	JAE	14/02/03	APPROVED FOR CONSTRUCTION	GRT	PW	RK	RIY
C	REH	17/01/03	ISSUED FOR THIRD PARTY REVIEW	GRT	PW	RK	
B	SAF	15/5/02	RE-ISSUED FOR GEOTECHNICAL DESIGN	GRT			
A	SAF	01/11/02	ISSUED FOR GEOTECHNICAL DESIGN	GRT			

ArupEnergy CLOUGH

BassGas Project

APPROVALS		
Drawn	JAE	09/09/02
Checked	GRT	14/02/03
Designed	PW	14/02/03
Eng Appr.	RK	14/02/03
Proj Appr.	RIY	14/02/03
Client Appr.		

CLIENT: Origin energy

TITLE: BASSGAS PROJECT
YOLLA A PLATFORM - SUBSTRUCTURE
JACK-UP ACCESS - GENERAL ARRANGEMENT
KEPPEL-FELS MOD V

A1

SCALE	CAD No.	JOB No.	DRAWING No.	REV.
AS SHOWN	50M_0020	05333	DWG-50-M-0020	0

CLOUGHA1

Table 9.1 - YOLLA POTENTIAL HAZARD LIST
April, 2004

POTENTIAL HAZARD	**DESCRIPTION / RISK**
Rig vs Platform Collision	The rig will only be moved next to the platform in calm seas, which are required for the rig to conduct jacking and preloading operations. Rig movement during final approach will be conducted under controlled conditions using three positioning vessels and the four anchors on the rig. The most powerful vessel of the three will be attached to the tow bridle on the bow of the rig such that the vessel can pull the rig away from the platform should anything go wrong during final positioning. Final positioning will be monitored using laser measuring devices. The rig will be positioned approximately 10 meters from the edge of steel on the platform, as opposed to the 1 to 2 meters that is commonly needed for other platforms around the world.
Poor Sea Bed Conditions	The sea bed at the Yolla platform location has been thoroughly surveyed and cored as part of the platform foundation design. Such tests have also confirmed that the soils will not create any hazard for the rig spud cans or legs, aside from the fact that the soils are relatively soft and may result in up to 10m or more of leg penetration (the rig has more than adequate leg length for penetrations of up to 20m or more). The sea bed will also be surveyed with an ROV prior to rig arrival to ensure against the possibility of the spud cans encountering any debris that might have been accidentally dropped as part of the platform installation activities.
Severe Weather	The Bass Strait is notorious for having occasional periods of severe weather, but such conditions have historically only been associated with storm fronts and not due to the more severe rotational weather systems such as cyclones. The drilling rig is designed as a harsh environment rig for service in the North Sea, so it should have no difficultis maintaining position in the Bass Strait. Severe weather should therefore only affect operations such as the loading and unloading of boats and/or lifting/crane related activities on the rig, which will be shut down whenever they are deemed to cause a hazard.
Shallow Gas	No shallow gas has been detected in any of the previous wells in the area. There are no known closures at location, plus the surface lithology does not contain any known formations which are capable of creating a seal. Never the less, the current plan is to install a riser and diverter on the 20" casing during the drilling of the 17.5" hole section.
Lost Circulation	Lost circulation may occur, but is not expected to be severe due to the normal pore pressures expected in the well and the corresponding normal/low mud densities to be used. Lost circulation materials will be maintiained on the rig at all times to combat any lost circulation that is encountered.
Abnormal Pressure	As mentioned above under the heading "Lost Circulation", there are no abnormal pore pressures anticipated anywhere in the well. The producing zones have pore pressures (8.6 ppg or 1.03SG EMW) which are marginally above that of a sea water gradient, so mud density will be maintained above this value while drilling such intervals to prevent any ingress of formation fluids into the wellbore.
Inadequate Shoe Tests	No problems are anticipated a) because only minimal shoe tests will be required due to the normal pressure regime in the wells, and b) because the casing shoe depths have been chosen to ensure that more than adequate formation strength will exist at the casing shoes.
Hole Instability	Although no direcional wells have ever been drilled in the immediate area, the lack of such problems in the vertical wells indicates that there is a minimal chance that such problems will arise in the relatively low angle Yolla development wells. The only hole instability problems that have been observed in offset wells were of a minor nature, and those appear to have been a result of excess "drying" of the formation due to the ultra high concentrations of potassium choloride salt in the drilling fluid. The mud program to be used at Yolla is intended to contain only minor quantities of salt and at the same time excess quantities of polymers and fluid loss agents which should virtually eliminate any hole instability problems.
Hard Drilling	Previous wells in the area have encountered hard drilling at various depths, including hard drilling due to volcanic sills. Similar hard drilling is anticipated at various depths in the Yolla wells and corresponding bit selection and drilling procedures are being prepared. The hard drilling poses no particular safety hazard to the operation, but does have the ability to slow down drilling operations/progress. Drilling parameters will be adjusted accordingly during such intervals to ensure against the occurance of excessive vibration in the drill string.
Bit Balling	The formations at Yolla do not contain any particularly reactive clays that might cause bit balling. In any event, the drilling mud will contain more than adequate concentrations of inhibiting agents to prevent such a problem.
Excessive Temperature	Although the Yolla wells will be drilled in an area which has a high temperature gradient, the depth of the wells is not deep enough to encounter and sever temperatures.
Toxic Gas	No toxic gases or hydrocarbons (i.e. H_2S) have been detected in offset wells, never the less the rig will be equipped with H_2S detection equipment. If such toxins are ever detected in dangerous quantities, then equipment will be mobilised to the rig and procedures will put in place to ensure safe operations thereafter.
Corrosive Gas/Fluids	The pay zones in the Yolla area are known to contain carbon dioxide, which forms a corrosive acid when mixed with water. For this reason, all completion equipment in the wells which might be exposed to this fluid will be manufactured from corrosion resitant materials. The production tubing will all be composed of 13 Chrome material, and the production tree will be composed of similar material. As an extra precaution against the long term effects of corrosion, key sealing surfaces in the well, such as seal bores in nipples, tubing hangers, sliding sleeves, valve seats, seal ring grooves, etc, have been inlayed with a particularly resistant Incaloy material.

Table 9.2 - YOLLA 3 CASING & TUBING DESIGN TABLE
April, 2004

CASING STRINGS

HOLE DIAMETER	VERTICAL HOLE DEPTH SUB SEA	MEASURED HOLE DEPTH SUB SEA	CASING DIAMETER	VERTICAL CASING DEPTH SUB SEA	MEASURED CASING DEPTH SUB SEA	CASING WEIGHT	CASING GRADE	CASING CONNECTION	BURST RATING (API YIELD)	COLLAPSE RATING (API YIELD)	TENSILE RATING (API YIELD)	BURST REQUIRED	COLLAPSE REQUIRED	TENSION REQUIRED	BURST SF	COLLAPSE SF	TENSILE SF
Inches *mm*	Meters	Meters	Inches *mm*	Meters	Meters	Lbs/Ft *Kg/m*	API	As Shown	Psi *Kpa*	Psi *Kpa*	Lbs(1000) *Kg(1000)*	Psi *Kpa*	Psi *Kpa*	Lbs(1000) *Kg(1000)*	[(Rating/Requirement)-1]x100%		
	Note 1	Note 1		Note 1	Note 1							Note 2	Note 2				
N/A (Driven)	Driven	Driven	20 508	141	141	203 92.1	Gr B/X56	RL4S / E60MT	3062/4900 21100/33700	2800 19292	3300 1500	500 3445	203 1399	180 82	512%	1408%	1601%
16 *406*	850	912	13.375 *340*	850	912	54.5 *24.7*	K55	BTC	2730 *18809.7*	1130 *7785.7*	1038 *472*	1600 *11024*	700 *4823*	361 *164*	71%	61%	188%
12.25 *311*	1899	2262	9.625 *244*	1899	2262	43.5 *19.7*	L80	Vam TOP	6330 *43613.7*	3810 *26250.9*	1074 *488*	4500 *31005*	3400 *23426*	361 *164*	41%	12.1%	198%
8.5 *216*	3065	3456	6.625 *168*	3065	3456	24 *10.9*	L80 13Chrome	Fox K	7440 *51261.6*	5760 *39686.4*	555 *252*	4500 *31005*	4920 *33899*	187 *85*	65%	17%	197%

TUBING STRING (Tapered)

HOLE DIAMETER	VERTICAL HOLE DEPTH SUB SEA	MEASURED HOLE DEPTH SUB SEA	TUBING DIAMETER	TOP (MEASURE DEPTH SUB SEA)	BOTTOM (MEASURED DEPTH SUB SEA)	TUBING WEIGHT	TUBING GRADE	TUBING CONNECTION	BURST RATING (API YIELD)	COLLAPSE RATING (API YIELD)	TENSILE RATING (API YIELD)	BURST REQUIRED	COLLAPSE REQUIRED	TENSION REQUIRED	BURST SF	COLLAPSE SF	TENSILE SF
Inches mm	Meters	Meters	Inches mm	Meters	Meters	Lbs/Ft Kg/m	API	As Shown	Psi Kpa	Psi Kpa	Lbs(1000) Kg(1000)	Psi Kpa	Psi Kpa	Lbs(1000) Kg(1000)	[(Rating/Requirement)-1]x100%		
9 5/8"Csg *top 9 5/8" PKR*	3040	3431	7 *178*	0	2153	26 *11.8*	L80 13Chrome	Fox K	7240 *49883.6*	5410 *37274.9*	604 *275*	5250 *36172.5*	2800 *19292*	336 *153*	38%	93%	80%
6 5/8"Csg *to top 6 5/8" PKR*	3040	3431	5 *127*	2153	3073	15 *6.8*	L80 13Chrome	Fox K	8290 *57118.1*	7250 *49952.5*	350 *159*	5250 *36172.5*	3250 *22393*	140 *64*	58%	123%	150%
6 5/8"Csg *to end tbg*	3040	3431	4.5 *114*	3073	3228	11.6 *5.3*	L80 13Chrome	Fox K	7780 *53604.2*	6350 *43751.5*	267 *121*	5250 *36172.5*	5285 *36414*	111 *50*	48%	20%	141%

Note 1: Hole depths and casing setting depths may vary slightly according to hole conditions and/or casing space out lengths.

Note 2: Reservoir pressures have been measured with high accuracy gauges to be 4180 & 4390 psi at the two gas/water contacts in the reservoir at 2834 & 2991mSS.
These pressures equate to a kill fluid gradient of 8.65ppg & 8.6ppg (1.04SG & 1.03Sg) from sea level, and max surface pressures of 3400 & 3500 psi assuming a 0.7SG gas column.
Worst case design for 9 5/8" & 6 5/8" casing strings: Design burst is max conceivable SISP plus nominal 1000 psi injection pressure. Design collapse assumes zero psi inside casing.
Worst case design for 13 3/8" casing string: Design burst is max conceivable SISP of 0.7SG gas column to fracture shoe. Design collapse assumes fluid level drop to 20% max bit depth, or zero psi inside casing to that depth.
Worst case design for 20" casing string: Design burst is max conceivable test pressure (well above shoe LOT pressure). Design collapse assumes zero fluid, hence zero pressure inside casing.

Table 9.3 - YOLLA 3 MUD PROGRAMME
February, 2004

HOLE DIAMETER	VERTICAL HOLE DEPTH SUB SEA	MEASURED HOLE DEPTH SUB SEA	CASING DIAMETER	VERTICAL CASING DEPTH SUB SEA	MEASURED CASING DEPTH SUB SEA	FLUID DENSITY (MINIMUM EXPECTED)	FLUID DENSITY (MAXIMUM EXPECTE D)	FLUID BASE	MUD SYSTEM	CHLORIDES RANGE	pH Range	MAJOR ADDITIVES
Inches *mm*	Meters	Meters	Inches *mm*	Meters	Meters	Lbs/Gallon *S.G.*	Lbs/Gallon *S.G.*	N/A		PPM	N/A	N/A
	Note 1	Note 1		Note 1	Note 1	Note 2	Note 2					
N/A (Driven)	Driven	Driven	20 508	141	141	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16 *406*	850	912	13.375 *340*	850	912	8.6 *1.03*	8.6 *1.03*	Fresh and Sea Water	Seawater with fresh water gel sweeps	~1500 ~20,000	8.0-8.5	Caustic & Soda Ash, Bentonite
12.25 *311*	1899	2262	9.625 *244*	1899	2262	8.6 *1.03*	9.2 *1.10*	Fresh and Sea Water	Drispac/Soltex Low solids dispersed.	~16,000 ~20,000	8.0-8.5	Caustic, Soda Ash & Potash, Bentonite, Polymers & Soltex. No Barite unless needed for hole conditions.
8.5 *216*	3065	3456	6.625 *168*	3065	3456	8.6 *1.03*	8.8 *1.06*	Fresh and Sea Water	Drispac/Soltex Low solids dispersed.			Caustic, Soda Ash & Potash, Bentonite, Polymers & Soltex. Barite as necessary for pressure control.
Cased Hole	As Above	As Above	6.625 & 9.625 *168 & 244*	As Above	As Above	8.55 *1.03*	8.7 *1.04*	Fresh and Sea Water	Salt Brine	Super-Saturated	8.0-8.5	Sodium Chloride Salt and Polymers

Note 1: Hole depths and casing setting depths may vary slightly according to hole conditions and/or casing space out lengths.

Note 2: Reservoir pressures have been measured with high accuracy gauges to be 4180 & 4390 psi at the two gas/water contacts in the reservoir at 2834 & 2991mSS.
These pressures equate to a kill fluid gradient of 8.65ppg & 8.61ppg (1.04SG & 1.03SG) from sea level, or 8.52ppg & 8.48ppg (1.03SG & 1.02SG) from a +44mSS rig floor.

Table 9.4 - YOLLA 3 CEMENT PROGRAMME TABLE
February, 2004

HOLE DIAMETER	VERTICAL HOLE DEPTH SUB SEA	MEASURED HOLE DEPTH SUB SEA	CASING DIAMETER	VERTICAL CASING DEPTH SUB SEA	MEASURED CASING DEPTH SUB SEA	CEMENT SLURRY	TOP OF CEMENT MEASURED DEPTH SUB SEA	BOTTOM OF CEMENT MEASURED DEPTH SUB SEA	LENGTH OF SLURRY	APPROXIMATE SLURRY DENSITY	MIXING FLUID	MAJOR ADDITIVES
Inches *mm*	Meters	Meters	Inches *mm*	Meters	Meters	Lead/Tail/SC	Meters	Meters	Meters	Lbs/Gallon *S.G.*	Type	N/A
	Note 1	Note 1		Note 1	Note 1		Note 1	Note 1	Note 1	Note 2	Note 2	Note 2
N/A (Driven)	Driven	Driven	20 508	141	141	Driven	Driven	Driven	Driven	Driven	Driven	Driven
16 *406*	850	912	13.375 *340*	850	912	Stage Collar	80	240	160	15.6 *1.87*	water	Possible Calcium Chloride and/or Defoamer.
						Lead	412	812	400	12.5 *1.50*	water	Extender agent, such as gel or sodium silicate. Possible defoamer, friction reducer and/or retarder.
						Tail	812	912	100	15.8 *1.89*	water	Possible defoamer, friction reducer and/or retarder.
12.25 *311*	1899	2262	9.625 *244*	1899	2262	Lead	1762	2162	400	12.5 *1.50*	water	Extender agent, such as gel or sodium silicate. Possible defoamer, friction reducer and/or retarder.
						Tail	2162	2262	100	15.8 *1.89*	water	Likely defoamer, friction reducer and/or retarder.
8.5 *216*	3065	3456	6.625 *168*	3065	3456	Tail	2650	3456	806	15.8 *1.89*	water	Defoamer, friction reducer, fluid loss agent and/or retarder.

Note 1: Hole depths, casing setting depths and cementing depths may vary slightly according to hole conditions and/or casing space out lengths.
Lead cement pumped through the shoe of 13 3/8" casing may be increased in volume, hole conditions permitting, so slurry approaches stage collar.

Note 2: Slurry density, volume/length and additives may vary according to hole conditons experienced while drilling, such as lost circulation, washouts, tight hole, etc..

Table 9.5 - YOLLA 3 CASING & BOP PRESSURE TESTING PROGRAMME
February, 2004

										ON TEST STUMP & AFTER REPAIRS TO ITEM				INITIAL INSTALLATION, AFTER SETTING CASING & PRIOR TO DST				EVERY 14 DAYS FROM ANY PREVIOUS TEST			
HOLE DIAMETER	CASING DIAMETER	VERTICAL CASING OR TUBING DEPTH SUB SEA	MEASURED CASING DEPTH SUB SEA	CASING WEIGHT	CASING GRADE	CASING CONNECTION	BURST RATING (API YIELD)	COLLAPSE RATING (API YIELD)	MAX ANTICIPATED SISP	ANNULAR	WH CONNECTOR, CHOKE & KILL	BLIND RAM	ALL OTHER PARTS & RAMS	ANNULAR	WH CONNECTOR, CHOKE & KILL	BLIND RAM	ALL OTHER PARTS & RAMS	ANNULAR	WH CONNECTOR, CHOKE & KILL	BLIND RAM	ALL OTHER PARTS & RAMS
Inches *mm*	Inches *mm*	Meters	Meters	Lbs/Ft *Kg/m*	API	As Shown	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*	Psi *Kpa*
		Note 1	Note 1						Note 2												
CASING STRINGS										Note 3				Note 3				Note 3			
N/A (Driven)	20 508	141	141	203 92.1	Gr B/X56	RL4S / E60MT	3062/4900 21100/33700	2800 19292	50 *300*	500 *3400*	N/A	N/A	N/A	200 *1400*	N/A	N/A	N/A	200 *1400*	N/A	N/A	N/A
17.5 *445*	13.375 *340*	850	912	54.5 *24.7*	K55	BTC	2730 *18809.7*	1130 *7785.7*	1600 *11000*	4000 *27600*	5000 *34500*	5000 *34500*	5000 *34500*	2000 *13800*	5000 *34500*	5000 *34500*	5000 *34500*	2000 *13800*	3000 *20700*	0 *0*	3000 *20700*
12.25 *311*	9.625 *244*	1899	2262	43.5 *19.7*	L80	Vam TOP	6330 *43613.7*	3810 *26250.9*	3500 *24100*	4000 *27600*	5000 *34500*	5000 *34500*	5000 *34500*	4000 *27600*	5000 *34500*	5000 *34500*	5000 *34500*	4000 *27600*	5000 *34500*	0 *0*	5000 *34500*
8.5 *216*	6.625 *168*	3065	3456	24 *10.9*	L80 13Chrome	Fox K	7440 *51261.6*	5760 *39686.4*	3500 *24100*	4000 *27600*	5000 *34500*	5000 *34500*	5000 *34500*	4000 *27600*	5000 *34500*	5000 *34500*	5000 *34500*	4000 *27600*	5000 *34500*	0 *0*	5000 *34500*
TUBING STRING (Tapered)																					
N/A	7 *178*	1797	2153	26 *11.8*	L80 13Chrome	Fox K	7240 *49883.6*	5410 *37274.9*	3500 *24115*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	5 *127*	2683	3073	15 *6.8*	L80 13Chrome	Fox K	8290 *57118.1*	7250 *49952.5*	3500 *24115*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	4.5 *114*	2837	3228	11.6 *5.3*	L80 13Chrome	Fox K	7780 *53604.2*	6350 *43751.5*	3500 *24115*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note 1: Hole depths and casing setting depths may vary slightly according to hole conditions and/or casing space out lengths.

Note 2: Reservoir pressures have been measured with high accuracy gauges to be 4180 & 4390 psi at the two gas/water contacts in the reservoir at 2834 & 2991mSS.
These pressures equate to a kill fluid gradient of 8.65ppg & 8.6ppg (1.04SG & 1.03Sg) from sea level, and max surface pressures of 3400 & 3500 psi assuming a 0.7SG gas column.

Note 3: Only a diverter will be rigged up on the 20" casing.Pressure testing above the 20" starter head will simultaneously test the annular, wellhead connector and riser.
A function test of each of the two diverter valves is also required.

Table 9.6 - Yolla Offset Well Summary

YOLLA 1

Depth Sea Level	FORM	LITHOLOGY	M/HR	PROBLEMS	OTHER	MUD WT.	CSG
50							RT-ML =90.1m
100							WD = 79m
150		Crbonate	19.4 avg	Anchors 12h	2000sx Neat		
200		Shell	while rot.	WOW 65h	Cmt to surf OK.	1.04	30"@189mRT
250		Fragments	34 w/17.5			120bbl/hr	
300		to 535m	29.6 w/26"	WOW 160h	12.8ppg Lead	losses (riser)	
350		"	HO avg.	Anchors 57h	Cmt to surf OK	No Fill.	~350 LC
400		"			500sx Tail	1.07	20"@399mRT
450		"	9.1 avg			1.07	1.45 FIT
500		"	while rot.				400 1st Tr C1
550		"	for entire	Well spudded			
600		Calcarenite	section.	in mid			
650		Calcarenite		winter			
700		Calcilutite		4 June,85		1.12	
750		Calcar.					
800		Calcar.		5 anchor		Lightly	
850		Reactive		wires broke	850to900 gas	disperced	850 1st Build in C1
900	Torquay Group	Clay starts			starts to incr.	sw/gel mud	
950		at 720m to			950 larger gas	W/solid ctrl	
1000		100% at 990m					
1050		Calc.Clystn				1024 worst	
1100		Calc.Clystn			1080 1st C2 gas	dispersive	1085 1st C2
1150		"		WOW 156h		clay. No prob	
1200		"				but fill WOW.	
1250		Shale		1232-57		Reactive cly	
1300		Vol/Sd/Shl		light bridge		850 to 1280.	
1350		Sd w/Clyst		after wow.		Spot 1.26	
1400		"		30 to 40 ft		on bottom	
1450		"		fill on trips.		to run csg.	
1500		Sd w/Lst/Clyst		17'fill after			
1550		"		logs.	Full Cmt	1555 CO2	
1600	Angahook	"		No bad hole	returns w/	aerated mud	
1650		"		problems	2200sx 12.8	1600 DemB	No LC reported.
1700		"		drlg/csg to	ppg lead.	not reactive.	
1750	Demons	Clyst w/sd/Lst		this depth.	500sx tail	1.09	13 3/8@1752
1800	Bluff	Clyst	5.35 avg rot			1.07	1.63 FIT
1850		Clyst, then Sd		WOW 608h	1810 1st C5 gas		
1900		Sd					
1950		"					
2000		"					
2050		Sd w/Coal/Cly					
2100		"					
2150		"					
2200		Coal w/Sd				1.07	
2250	Eastern View Coal Measures (EVCM)	Sd/Coal/Sh				2285 gas incr	
2300		"		No fill on			
2350		"		trips.		1.1	
2400		"				1.13	
2450		"		2610 RFT hit		1.15	
2500		"		bridge, trip.			
2550		"		2599 & 2640	2 Stage Cmt		
2600	Igneous	Vol/Sd/Shl		tight (once)	No mention	2710 CO2 inc	
2650	Intrusive	67m Igneous		spot/ledge	of losses.		
2700		Ign/Shl			Claimed	Lightly	
2750		Sd/Shl/Coal		CO2 contam	good CBL,	disperced	
2800		Ign/Shl		below 2750	but still SQZ.	Fresh Wtr/	
2850		Sd/Shl			several times	gel mud	
2900		Shl w/sd			at 1850m.	W/solid ctrl	
2950		Sd w/ Shl				Dextrid/QBx	
3000	EVCM	Sd w/Shl		WOW while		**1.03 RFT**	
3050		Sd, then Ign		run csg, no			
3100		Igneous		problems!			
3150		"		But landed			
3200		"		40" high!!!			
3250		"					No LC reported
3300	Basalt	"		No prob			
3350		"		Drlg/TightH	2.25 deg max	1.15	9 5/8"@3341mRT
3400			AMOCO	129 DAYS on location			TD at 3348mRT
3450			1985	61 Days Spud to TD incl. 41days WOW/reanchor			
3500							
3550							
3600							
3650							
3700							
3750							
3800							
3850							
3900							

YOLLA 1

YOLLA 2

Depth Sea Level	FORM	LITHOLOGY	M/HR(on btm)	PROBLEMS	OTHER	MUD WT.	CSG
50							RT-ML=94m
100							WD = 81.5m
150			61	Anchors Slip	GoodHole	1.04	30"@151.5mRT
200			20/70/51.3avg	6days to anchor.	Good Cmt return.	Guar Sweeps	36" to 152mRT
250			20/70/51.3avg	Very hard seabed.		1.04	
300			30/70/51.3avg	Bruce anchors			
350			30/70/51.3avg	slip. Stevpris OK		Sea Wtr w/	
400			20/60/51.3avg		Some Torq	35bbl/jt	
450		One or two	20/60/51.3avg		360 to 377	Guar Sweeps	
500		1 to 3m thick	20/50/37avg		428 Pack-Off		
550		Limestone	15/50/37avg		ExcessCuttings?		
600		Stringers / 50m	15/200/37avg				
650		500 to 850m	15/50/37avg				
700			30/50/37avg				
750			10/50/37avg				
800			10/30/37avg		Csg run ok, even		17.5" to 862mRT
850		90Clyst,10Lst	10/30/37avg		w/delays. No fill.	1.04	13 3/8@853mRT
900	Torquay Group	3 to 7	10/40/18.8avg	Poor hole cond		1.07	1.75 FIT
950		Lst Str / 50m	10/50/18.8avg	850 to 1315			850 C1 present
1000		850 to 1300	20/50/18.8avg	50k drag 1000-50			
1050		90Clyst,10Lst	15/50/18.8avg	1030-68 wiped X2			
1100		90Clyst,10Lst	8/40/18.8avg	Blinded shakers.		1.1	
1150		90Clyst,10Lst	15/100/18.8avg			KCL/PHPA	
1200	Angahook Unit 1	90Clyst,10Lst	10/50/18.8avg			Mud	
1250		90Clyst,10Lst	10/30/18.8avg	Log bridge 1256	Log worked thru	1.12	
1300	Unit 2	Vol 1270-1310	8/50/18.8avg	OK after CO trip.	1260 & 1290		
1350		90Cly,5L,5Vol	5/50/18.8avg	Lots cut'g to 1305	Log bridge 1276		
1400	Ang'k	60Cly,40Slts	3/20/18.8avg			1.1	
1450	Unit 3	80Cly,20Slts	5/20/18.8avg	1431-85 Lcirc		1.12	1431 LC
1500	Unit 4	60Slts,40Clys	3/20/18.8avg	20/100bbl/hr	PDC stop@1485	1.1	
1550		Slt/Sd/Clys	8/30/11.1avg	Tight 1550	TriC to 2306		
1600		Sd/Slt/Clys	7/30/11.1avg				
1650	Oligocene	Slt/Sd/Clys	7/20/11.1avg				
1700		Slt/Sd	5/20/11.1avg	Tight 1699			
1750	Demons	Slt/Sd/Clys	7/20/11.1avg				1725 1st C2
1800		Slt/Clyst	7/20/11.1avg			1.1	
1850	Bluff	Slt/Clyst	5/20/11.1avg	Pack off at 1890		1.12	
1900		Slt/Sd/Clys	5/100/11.1avg	Log wiper to TD			
1950		Sd/Slt/Coal	5/100/11.1avg				
2000		60-100Sd	7/100/11.1avg			1.13	
2050		Sd/Clyst	7/100/11.1avg			1.12	
2100		Sd/Clyst	7/100/11.1avg	30b/hr losses.		1.13	
2150		Sd/Clyst	7/100/11.1avg	CoalCaving/tight			
2200	Eastern View Coal Measures (EVCM)	Sd/Coal/Clys	7/100/11.1avg	2207-2376 while			
2250		Sd/Clyst/Slt/C	7/100/11.1avg	trip at 2738 &			
2300		Sd/Clyst/Slt/C	2/20/11.1avg	other trips.		1.13	
2350		Sd/Coal/Clys	2/30/7.3avg	Temp stuck 2313	BD447 PDC to	1.14	
2400		Slt/Sd	2/20/7.3avg		top Dolerite@258	1.11	
2450		Slt/Clyst/Sd	2/20/7.3avg			1.1	
2500		Slt/Clyst/Sd	2/20/7.3avg	Tight 2560-67			
2550		Slt/Clyst/Sd	2/20/7.3avg				
2600	Ign Intr'v	Vol 2580-2612	4mph avg in V.				
2650		Slt/Clyst	5/15/5.1avg		EHP41 TriC	Losses down	
2700		Slt/Sd/Clys	3/8/5.1avg		2580 to 2738.	to 10/20bph	
2750		Slt/Sd	3/7/5.1avg				
2800		Sd/Slt/Clyst	5/8/6.5avg		No drag above		
2850		Sd/Slt/Clyst	5/20/6.5avg		2700 on last trip.	1.1	
2900	E. View Coal M. (EVCM)	Sd/Slt/Clyst	5/20/6.5avg		TriC2738-3033	1.13	
2950		Sd/Slt/Clyst	4/7/6.5avg		Core 3033-3051		
3000		Sd/Slt/Clyst	4/7/6.5avg		Full & 100% rec.		
3050		Sd/Slt/Clyst	Core 9.8mph	CoreB hit 10m fill.	ATMP09 drld	1.13	
3100		3087 vol	8.4avg	Log bridge 3100	3051-3164TD		
3150	Basalt	Vol	8.4avg		2.5deg max dev.	1.12	12.25"to 3164mRT
3200			Premier	55 DAYS ON LOCATION			TD at 3164mRT
3250			1998	34 DAYS SPUD TO TD, 25 wo/trouble			
3300							
3350							
3400							
3450							

YOLLA 2

Other offset wells

AROO 1 FORM	AROO 1 CSG	BASS 1 FORM	BASS 1 CSG	BASS 3 FORM	BASS 3 CSG	KING 1 FORM	KING 1 CSG	TAROOK 1 FORM	TAROOK 1 CSG	TILANA 1 FORM	TILANA 1 CSG	WHITE IBIS 1 FORM	WHITE IBIS 1 CSG	Depth Sea Level
			RT = 9.5m above SL		RT = 9.5m above SL								RT-ML=74.4m	
	RT-ML=86m		WD = ???		WD = ???		RT-ML=94m		RT-ML=89.4		RT-ML=104m		WD=61.9m	50
	WD = 76m		30" 121mRT		30" 102mRT		WD=		WD=79.6m		WD=82m			100
			36"Hole 129mRT		36"Hole 110mRt		30" 127mRT						30" 131mRt	150
	20"Csg 215mRT				20" 220mRT		36"Hole 133mRT		20" 214mRt		30"203mRt		36" 132mRT	200
	26"Hole 235mRT		20" 234mRT		26"Hole 231mRT				26"Hole 230mRT		36"Hole 209mRT			250
			26"Hole 250mRT											300
														350
							13 3/8" 394mRT				20" 413mRT			400
							17.5"Hole 405mRt				26"Hole 416mRT			450
							460 1st C1							500
														550
														600
														650
			13 3/8" 688mRT											700
			17.5"Hole 702mRT								765m 1st C1			750
														800
	884 1st C1				13 3/8" 838mRT				13 3/8" 855mRt				13 3/8" 852mRT	850
Torquay	13 3/8"@908				17.5"Hole 854mRT		860 1st C2		17.5"Hole to ?				17.5"Hole 866mRT	900
Group	16.5"Hole 925mRT								909 1st C1				880 C1 present	950
														1000
												Torquay		1050
										No		Group		1100
		No		No						Formation				1150
		Formation		Formation						Name				1200
		Names		Names			9 5/8" 1237mRt			Info				1250
		Identified		Identified			12.25"Hole 1246mRt			in Files				1300
											1384 LC			1350
											1395 1st C2		1390 1st C2	1400
														1450
												Demons		1500
												Bluff		1550
									1585 LC			1430-1577		1600
											13 3/8" 1651mRt			1650
											17.5"Hole 1662mRt			1700
												EVCM		1750
													1780 LC	1800
														1850
Demons													9 5/8" 1878mRT	1900
Bluff														1950
	1981 1st C2													2000
														2050
							No LC reported.							2100
			No mud log or											2150
			drilling data.		No mud log or		8.5"Hole 2223mRt			Volcanics		Basem't	12.25"Hole 2220mRT	2200
					drilling data.		TD 2223			2013-2266			TD 2220	2250
														2300
			12 1/4"Hole 2353mRT		No LC reported.									2350
			TD 2353											2400
					12 1/4"Hole 2432mRt									2450
					TD 2432									2500
									2515 1st C2					2550
														2600
EVCM														2650
														2700
									12.25" to 2774mRt					2750
	No LC reported								TD 2774					2800
	Limited reports.													2850
														2900
	9 5/8"@2938													2950
	12.25"Hole 2953mRT													3000
														3050
														3100
														3150
														3200
														3250
Paleo											No LC reported			3300
Volcanics														3350
														3400
														3450
														3500
														3550
														3600
														3650
	8.5"Hole 3692mRT													3700
	TD 3692													3750
														3800
														3850
											12.25"Hole 3900mRt			3900
											TD 3900			
17 miles WNW of Y1		5 miles NNW of Y1		26 miles WSW of Y1 (nr W. Ibis)		~20 miles NW of Y1		13.5miles SSW of Y1		~9miles SE of Y1		26miles WSW of Y1		
Drld in 1974		Drld in 1965		Drld in 1967		Drld in 1992		Drld in 1972		Drld in 1985		Drld in 1998		
AROO 1		**BASS 1**		**BASS 3**		**KING 1**		**TAROOK 1**		**TILANA 1**		**WHITE IBIS 1**		

Table 9.7 - YOLLA SERVICE CONTRACTORS

ITEM / SERVICE	CONTRACTOR
Rig	ENSCO
Boat 1	Tidewater
Boat 2	Tidewater
Boat 3 (ad-hoc)	TBA
Helicopter	CHC
Casing (20" & 6 5/8")	Marubeni Itochu
Casing (13 3/8", 10 3/4" & 9 5/8")	Midcontinent
Tubing (7", 5" & 4.5")	Marubeni Itochu
Wellhead & Tree	Cameron
Communications	CSC
Completion Equipment	Halliburton
Casing & Tubing Running	Weatherford
Cementing	Schlumberger
Coring	TBA
Drilling Mud & Services	Halliburton
DST	Schlumberger
Electric Logging	Schlumberger
Fishing & Abandonment	TBA
Flare Cooling	Optima
Hammer & Services	Franks
Liner Hangers	TBA
Mud Logging	Geoservices
MWD/LWD/Directional Drilling	Halliburton
Rig Positioning	Fugro (TBA?)
ROV & Services	Total Marine
Supply Base & Yard	Oil Patch Containers

Origin Energy Resources Ltd.
Yolla
Yolla Platform, slot A
Yolla #3 : Revision #3

Revised: 22 April, 2004

Sperry-Sun

Proposal Report

22 April, 2004

Surface Coordinates: 5588825.22 N, 398905.69 E (39° 50' 40.4707" S, 145° 49' 06.0849" E)
Grid Coordinate System: UTM Zone 55S on Geocentric Datum of Australia 1994, Meters

Kelly Bushing Elevation: 43.00m above Mean Sea Level

Proposal Ref: pro6365

HALLIBURTON

Proposal Report for Yolla Platform - Yolla #3 : Revision #3
Revised: 22 April, 2004

Measured Depth (m)	Incl.	Grid Azim.	Sub-Sea Depth (m)	Vertical Depth (m)	Local Coordinates Northings (m)	Local Coordinates Eastings (m)	Global Coordinates Northings (m)	Global Coordinates Eastings (m)	Dogleg Rate (°/30m)	Vertical Section (m)
0.00	0.000	0.000	-43.00	0.00	0.00 N	0.00 E	5588825.22 N	398905.69 E		0.00
124.80	0.000	0.000	81.80	124.80	0.00 N	0.00 E	5588825.22 N	398905.69 E	0.00	0.00
~	Seabed									
185.00	0.000	0.000	142.00	185.00	0.00 N	0.00 E	5588825.22 N	398905.69 E	0.00	0.00
~	20" Casing									
295.00	0.000	0.000	252.00	295.00	0.00 N	0.00 E	5588825.22 N	398905.69 E	0.00	0.00
~	Kick-Off at 295.00m									
300.00	0.333	301.650	257.00	300.00	0.01 N	0.01 W	5588825.23 N	398905.68 E	2.00	0.01
400.00	7.000	301.650	356.74	399.74	3.36 N	5.45 W	5588828.58 N	398900.24 E	2.00	6.41
500.00	13.667	301.650	455.06	498.06	12.77 N	20.71 W	5588837.99 N	398884.98 E	2.00	24.33
600.00	20.333	301.650	550.64	593.64	28.10 N	45.59 W	5588853.32 N	398860.10 E	2.00	53.55
700.00	27.000	301.650	642.18	685.18	49.15 N	79.74 W	5588874.37 N	398825.95 E	2.00	93.67
800.00	33.667	301.650	728.44	771.44	75.64 N	122.71 W	5588900.85 N	398782.98 E	2.00	144.15
900.00	40.333	301.650	808.26	851.26	107.20 N	173.91 W	5588932.42 N	398731.78 E	2.00	204.29
912.36	41.158	301.650	817.62	860.62	111.43 N	180.78 W	5588936.65 N	398724.91 E	2.00	212.36
952.71	41.158	301.650	848.00	891.00	125.37 N	203.38 W	5588950.58 N	398702.31 E	0.00	238.92
~	Lower Mid Mio									
955.37	41.158	301.650	850.00	893.00	126.28 N	204.87 W	5588951.50 N	398700.82 E	0.00	240.67
~	13 3/8" Casing									
1000.00	41.158	301.650	883.60	926.60	141.70 N	229.88 W	5588966.91 N	398675.81 E	0.00	270.04
1100.00	41.158	301.650	958.89	1001.89	176.23 N	285.90 W	5589001.45 N	398619.79 E	0.00	335.85
1200.00	41.158	301.650	1034.19	1077.19	210.76 N	341.93 W	5589035.98 N	398563.76 E	0.00	401.67
1235.62	41.158	301.650	1061.00	1104.00	223.06 N	361.88 W	5589048.28 N	398543.81 E	0.00	425.11
~	Angahook									
1300.00	41.158	301.650	1109.48	1152.48	245.30 N	397.95 W	5589070.52 N	398507.74 E	0.00	467.48
1400.00	41.158	301.650	1184.77	1227.77	279.83 N	453.98 W	5589105.05 N	398451.71 E	0.00	533.29
1421.56	41.158	301.650	1201.00	1244.00	287.28 N	466.06 W	5589112.49 N	398439.63 E	0.00	547.48
~	Volcano									
1500.00	41.158	301.650	1260.06	1303.06	314.36 N	510.00 W	5589139.58 N	398395.69 E	0.00	599.11
1600.00	41.158	301.650	1335.35	1378.35	348.90 N	566.03 W	5589174.12 N	398339.66 E	0.00	664.92
1642.04	41.158	301.650	1367.00	1410.00	363.42 N	589.58 W	5589188.63 N	398316.11 E	0.00	692.59
~	Base Volc									
1700.00	41.158	301.650	1410.64	1453.64	383.43 N	622.05 W	5589208.65 N	398283.64 E	0.00	730.73
1800.00	41.158	301.650	1485.93	1528.93	417.97 N	678.08 W	5589243.18 N	398227.61 E	0.00	796.55
1900.00	41.158	301.650	1561.22	1604.22	452.50 N	734.10 W	5589277.72 N	398171.59 E	0.00	862.36
2000.00	41.158	301.650	1636.51	1679.51	487.03 N	790.13 W	5589312.25 N	398115.56 E	0.00	928.17
2011.48	41.158	301.650	1645.15	1688.15	491.00 N	796.56 W	5589316.21 N	398109.13 E	0.00	935.72
2027.06	39.858	301.636	1657.00	1700.00	496.31 N	805.18 W	5589321.53 N	398100.51 E	2.50	945.85
~	Demons Bluff									
2100.00	33.781	301.562	1715.36	1758.36	519.20 N	842.39 W	5589344.42 N	398063.30 E	2.50	989.54
2200.00	25.448	301.409	1802.22	1845.22	545.00 N	884.49 W	5589370.21 N	398021.20 E	2.50	1038.91
2216.28	24.091	301.375	1817.00	1860.00	548.55 N	890.31 W	5589373.77 N	398015.38 E	2.50	1045.73
~	EVCM (TEV4)									
2217.37	24.000	301.373	1818.00	1861.00	548.78 N	890.69 W	5589374.00 N	398015.00 E	2.50	1046.18
2231.59	23.713	301.373	1831.00	1874.00	551.77 N	895.60 W	5589376.99 N	398010.09 E	0.60	1051.93
~	OWC									
2300.00	22.335	301.373	1893.96	1936.96	565.70 N	918.44 W	5589390.92 N	397987.25 E	0.60	1078.68
2305.45	22.225	301.373	1899.00	1942.00	566.78 N	920.21 W	5589391.99 N	397985.49 E	0.60	1080.75
~	9 5/8" Casing									
2400.00	20.319	301.373	1987.11	2030.11	584.64 N	949.49 W	5589409.85 N	397956.20 E	0.60	1115.05
2500.00	18.303	301.373	2081.48	2124.48	601.85 N	977.73 W	5589427.07 N	397927.96 E	0.60	1148.12
2600.00	16.288	301.373	2176.95	2219.95	617.33 N	1003.11 W	5589442.55 N	397902.58 E	0.60	1177.85
2700.00	14.272	301.373	2273.41	2316.41	631.05 N	1025.61 W	5589456.27 N	397880.08 E	0.60	1204.20
2800.00	12.257	301.373	2370.74	2413.74	642.99 N	1045.20 W	5589468.21 N	397860.49 E	0.60	1227.14
2900.00	10.241	301.374	2468.81	2511.81	653.15 N	1061.85 W	5589478.37 N	397843.84 E	0.60	1246.65
3000.00	8.226	301.374	2567.51	2610.51	661.50 N	1075.55 W	5589486.72 N	397830.14 E	0.60	1262.69
3012.62	7.971	301.374	2580.00	2623.00	662.43 N	1077.07 W	5589487.64 N	397828.62 E	0.60	1264.47
~	Sill (Top)									
3080.16	6.610	301.374	2647.00	2690.00	666.89 N	1084.39 W	5589492.11 N	397821.30 E	0.60	1273.04
~	Sill (Base)									
3100.00	6.210	301.374	2666.71	2709.71	668.04 N	1086.28 W	5589493.26 N	397819.41 E	0.60	1275.26
3136.48	5.475	301.374	2703.00	2746.00	669.98 N	1089.45 W	5589495.19 N	397816.24 E	0.60	1278.97
~	2718 Sand									
3167.10	4.858	301.375	2733.50	2776.50	671.41 N	1091.80 W	5589496.63 N	397813.89 E	0.60	1281.73
~	2755 Sand									
3200.00	4.195	301.375	2766.30	2809.30	672.76 N	1094.02 W	5589497.98 N	397811.67 E	0.60	1284.32

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Measured Depth (m)	Incl.	Grid Azim.	Sub-Sea Depth (m)	Vertical Depth (m)	Local Coordinates Northings (m)	Local Coordinates Eastings (m)	Global Coordinates Northings (m)	Global Coordinates Eastings (m)	Dogleg Rate (°/30m)	Vertical Section (m)
3228.77	3.615	301.375	2795.00	2838.00	673.78 N	1095.69 W	5589499.00 N	397810.00 E	0.60	1286.28
~	2809 Sand, Target - 2809 Sand, Current Target									
3250.81	3.170	301.375	2817.00	2860.00	674.46 N	1096.81 W	5589499.68 N	397808.89 E	0.61	1287.59
~	Base 2809									
3300.00	2.178	301.375	2866.14	2909.14	675.66 N	1098.76 W	5589500.87 N	397806.93 E	0.60	1289.88
3372.19	0.722	301.375	2938.30	2981.30	676.61 N	1100.32 W	5589501.83 N	397805.37 E	0.61	1291.71
~	2952 Sand									
3392.89	0.305	301.375	2959.00	3002.00	676.70 N	1100.48 W	5589501.92 N	397805.21 E	0.60	1291.89
~	2973 Sand									
3400.00	0.162	301.375	2966.11	3009.11	676.72 N	1100.51 W	5589501.94 N	397805.18 E	0.61	1291.92
3408.01	0.000	0.000	2974.12	3017.12	676.73 N	1100.52 W	5589501.94 N	397805.17 E	0.61	1291.93
3415.79	0.000	0.000	2981.90	3024.90	676.73 N	1100.52 W	5589501.94 N	397805.17 E	0.00	1291.93
~	Base 2973 Sand									
3430.89	0.000	0.000	2997.00	3040.00	676.73 N	1100.52 W	5589501.94 N	397805.17 E	0.00	1291.93
~	GWC									
3458.89	0.000	0.000	3025.00	3068.00	676.73 N	1100.52 W	5589501.94 N	397805.17 E	0.00	1291.93
~	Basalt									
3498.89	0.000	0.000	3065.00	3108.00	676.73 N	1100.52 W	5589501.94 N	397805.17 E	0.00	1291.93
~	Total Depth at 3498.89m									

All data is in Metres unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.
Global Northings and Eastings are relative to UTM Zone 55S on Geocentric Datum of Australia 1994, Meters.

The Dogleg Severity is in Degrees per 30 metres.
Vertical Section is from Well and calculated along an Azimuth of 301.588° (Grid).

Coordinate System is UTM Zone 55S on Geocentric Datum of Australia 1994, Meters.
Grid Convergence at Surface is 0.757°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 3498.89m.,
The Bottom Hole Displacement is 1291.93m., in the Direction of 301.588° (Grid).

Comments

Measured Depth (m)	TVD (m)	Station Coordinates Northings (m)	Station Coordinates Eastings (m)	Comment
295.00	295.00	0.00 N	0.00 E	Kick-Off at 295.00m
3498.89	3108.00	676.73 N	1100.52 W	Total Depth at 3498.89m

Formation Tops

Formation Plane (Below Well Origin) Sub-Sea (m)	Dip Angle	Up-Dip Dirn.	Measured Depth (m)	Profile Penetration Point Vertical Depth (m)	Sub-Sea Depth (m)	Northings (m)	Eastings (m)	Formation Name
81.80	0.000	0.000	124.80	124.80	81.80	0.00 N	0.00 E	Seabed
846.69	0.700	185.000	952.71	891.00	848.00	125.37 N	203.38 W	Lower Mid Mio
1061.00	0.000	0.000	1235.62	1104.00	1061.00	223.06 N	361.88 W	Angahook
1202.94	1.400	220.000	1421.56	1244.00	1201.00	287.28 N	466.06 W	Volcano
1369.10	1.500	25.000	1642.04	1410.00	1367.00	363.42 N	589.58 W	Base Volc
1657.00	0.000	0.000	2027.06	1700.00	1657.00	496.31 N	805.18 W	Demons Bluff
1804.57	0.800	90.000	2216.28	1860.00	1817.00	548.55 N	890.31 W	EVCM (TEV4)
1831.00	0.000	0.000	2231.59	1874.00	1831.00	551.77 N	895.60 W	OWC
2580.00	0.000	0.000	3012.62	2623.00	2580.00	662.43 N	1077.07 W	Sill (Top)
2647.00	0.000	0.000	3080.16	2690.00	2647.00	666.89 N	1084.39 W	Sill (Base)
2689.13	1.000	70.000	3136.48	2746.00	2703.00	669.98 N	1089.45 W	2718 Sand
2733.50	0.000	0.000	3167.10	2776.50	2733.50	671.41 N	1091.80 W	2755 Sand
2793.75	0.500	38.000	3228.77	2838.00	2795.00	673.78 N	1095.69 W	2809 Sand
2817.00	0.000	0.000	3250.81	2860.00	2817.00	674.46 N	1096.81 W	Base 2809
2938.30	0.000	0.000	3372.19	2981.30	2938.30	676.61 N	1100.32 W	2952 Sand

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Formation Tops (Continued)

Formation Plane (Below Well Origin) Sub-Sea (m)	Dip Angle	Up-Dip Dirn.	Measured Depth (m)	Profile Penetration Point Vertical Depth (m)	Sub-Sea Depth (m)	Northings (m)	Eastings (m)	Formation Name
2959.00	0.000	0.000	3392.89	3002.00	2959.00	676.70 N	1100.48 W	2973 Sand
2981.90	0.000	0.000	3415.79	3024.90	2981.90	676.73 N	1100.52 W	Base 2973 Sand
2997.00	0.000	0.000	3430.89	3040.00	2997.00	676.73 N	1100.52 W	GWC
3025.00	0.000	0.000	3458.89	3068.00	3025.00	676.73 N	1100.52 W	Basalt

Casing details

From Measured Depth (m)	From Vertical Depth (m)	To Measured Depth (m)	To Vertical Depth (m)	Casing Detail
<Surface>	<Surface>	185.00	185.00	20" Casing
<Surface>	<Surface>	955.37	893.00	13 3/8" Casing
<Surface>	<Surface>	2305.45	1942.00	9 5/8" Casing

Targets associated with this wellpath

Target Name	Target Entry Coordinates TVD (m)	Northings (m)	Eastings (m)	Target Shape	Target Type
EVCM (TEV4)	1860.00	548.78 N	890.69 W	Polygon	Current Target
Mean Sea Level/Global Coordinates:	1817.00	5589374.00 N	398015.00 E		
Geographical Coordinates:		39° 50' 22.2907" S	145° 48' 28.9212" E		
Target Boundary Point #1	1860.00	480.02 N	881.31 W		
#2	1860.00	565.44 N	830.39 W		
#3	1860.00	617.18 N	906.77 W		
#4	1860.00	531.76 N	960.15 W		
Mean Sea Level/Global Coordinates #1	1817.00	5589305.24 N	398024.38 E		
#2	1817.00	5589390.66 N	398075.30 E		
#3	1817.00	5589442.40 N	397998.92 E		
#4	1817.00	5589356.98 N	397945.54 E		
Geographical Coordinates #1		39° 50' 24.5246" S	145° 48' 29.2772" E		
#2		39° 50' 21.7765" S	145° 48' 31.4671" E		
#3		39° 50' 20.0656" S	145° 48' 28.2831" E		
#4		39° 50' 22.8127" S	145° 48' 25.9896" E		
2809 Sand	2838.00	673.78 N	1095.69 W	Polygon	Current Target
Mean Sea Level/Global Coordinates:	2795.00	5589499.00 N	397810.00 E		
Geographical Coordinates:		39° 50' 18.1484" S	145° 48' 20.3677" E		
Target Boundary Point #1	2838.00	749.43 N	1110.01 W		
#2	2838.00	681.75 N	1026.20 W		
#3	2838.00	595.45 N	1085.80 W		
#4	2838.00	662.51 N	1169.00 W		
Mean Sea Level/Global Coordinates #1	2795.00	5589574.65 N	397795.68 E		
#2	2795.00	5589506.97 N	397879.49 E		
#3	2795.00	5589420.67 N	397819.89 E		
#4	2795.00	5589487.73 N	397736.69 E		
Geographical Coordinates #1		39° 50' 15.6889" S	145° 48' 19.8078" E		
#2		39° 50' 17.9200" S	145° 48' 23.2953" E		
#3		39° 50' 20.6929" S	145° 48' 20.7397" E		
#4		39° 50' 18.4821" S	145° 48' 17.2774" E		

HALLIBURTON

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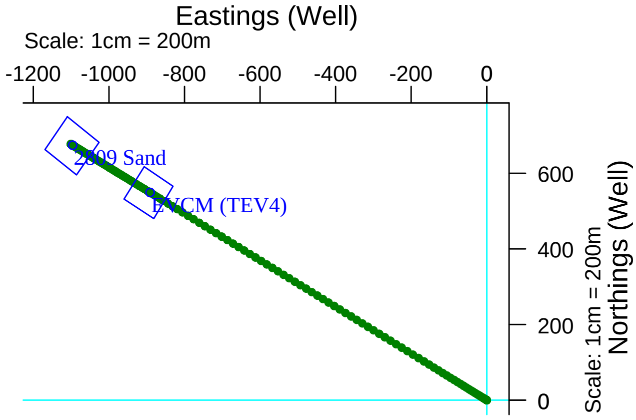
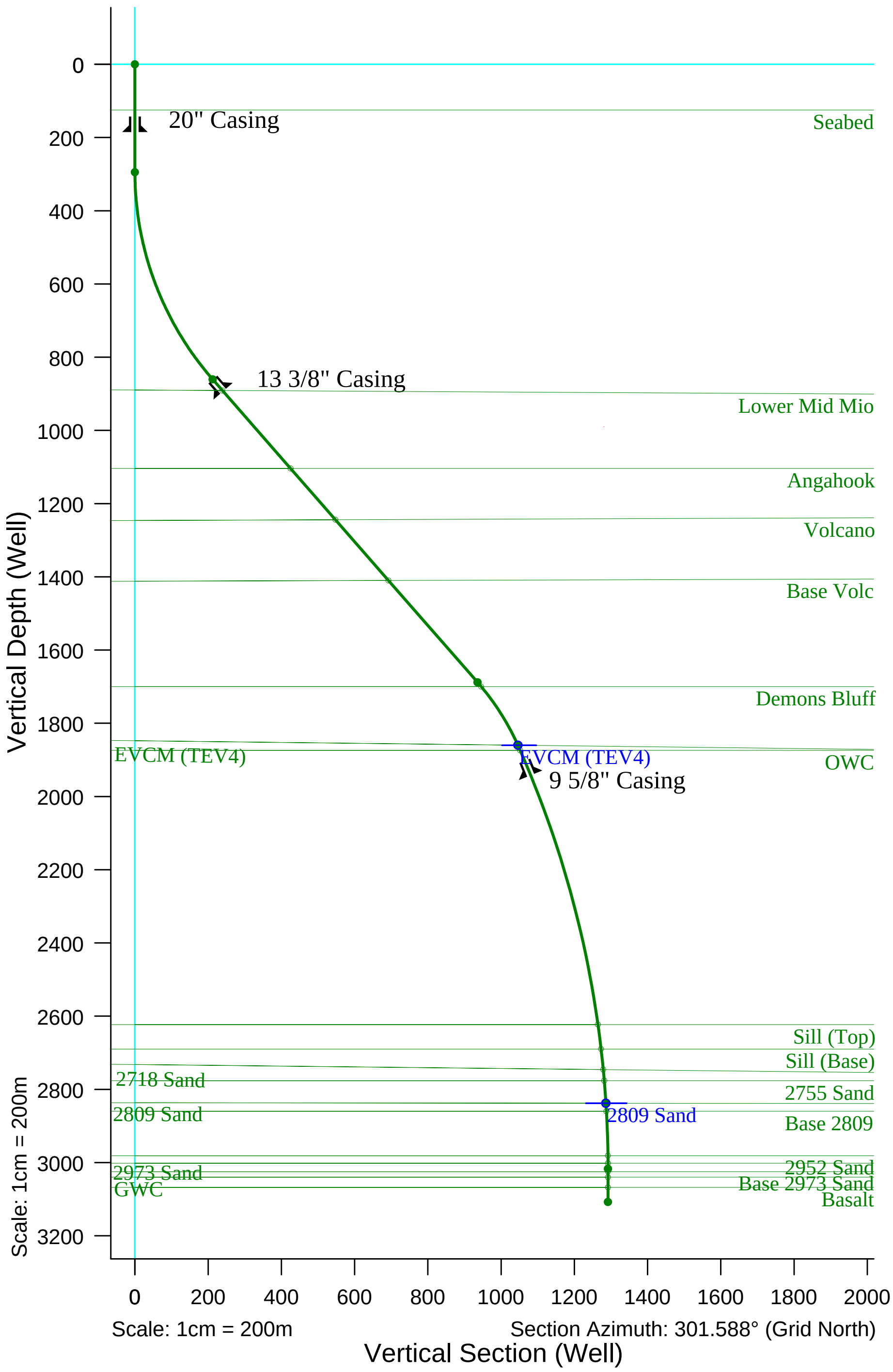
Well : Yolla #3





DrillQuest 3.03.06.002