BASSGAS PROJECT

YOLLA 4 DRILLING PROGRAMME

BR1155-D-221

0	March 2004	Issued for Submission to Regulators	W. Curry		J. Bauer		M. Mussared	
B	March 2004	Issued for Project Review	W. Curry		J. Bauer		M. Mussared	
A	March 2004	Issued for ADA Internal Review	M. Woods		W. Curry		J. Bell	
REV	**DATE**	**STATUS**	**PREPARED**		**CHECKED**		**APPROVED**	

Copy No: ________

CONTROLS

Approval, Ownership & Control

Title	**Origin Energy BassGas Yolla 4 Well Drilling Programme**			
Year Of Currency	**March 2004 - March 2005**			
	Name	**Title**	**Signature**	**Date**
Document Owner	Mark Mussared	Origin Energy Subsurface Manager		
Document Authoriser	John Bell	Australian Drilling Associates Director		
Document Controller	Bill Curry	Australian Drilling Associates Principal Drilling Engineer		

Disclaimer and Limitation

This Drilling Programme has been prepared on behalf of and for the use of Origin Energy Resources Ltd in accordance with generally accepted consulting practice, and is issued in accordance with the agreement between Origin Energy Resources Ltd and Australian Drilling Associates Pty Ltd (ADA). ADA takes no responsibility for the completeness or form of any subsequent copies of this document. Copying of this document in excess of those shown herein, without the permission of the Origin Energy Resources and ADA is not permitted.

DOCUMENT DISTRIBUTION LIST

Copy #	Location	Recipient
1	Australian Drilling Associates	Document Control (file)
2	Origin Energy Resources Limited	Subsurface Manager - BassGas
3	Origin Energy Resources Limited	Manager Exploration - Otway and Bass Basins
4	Tasmania Department of Infrastructure, Energy and Resources (TDIER) – Mineral Resources Tasmania (MRT)	Managing Geologist - Industrial Minerals and Land Management
5	TDIER - MRT	Petroleum Registrar
6	Victoria Department of Primary Industries (VDPI)	Manager Petroleum Operations – Safety & Environment
7	VDPI	Senior Petroleum Operations Engineer - Safety
8	VDPI	Petroleum Environmental Officer
9	Australian Worldwide Exploration Petroleum Pty Ltd	Rick Frith
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 4, 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 4 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.

TABLE OF CONTENTS

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 directionally drill and complete the Yolla 4 development well, the first of two development wells (Yolla 3 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 4 well Application to Drill. The objective of this document is to describe the Origin Energy Yolla 4 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 anticlinal feature which has been divided into compartments by major faults. 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.

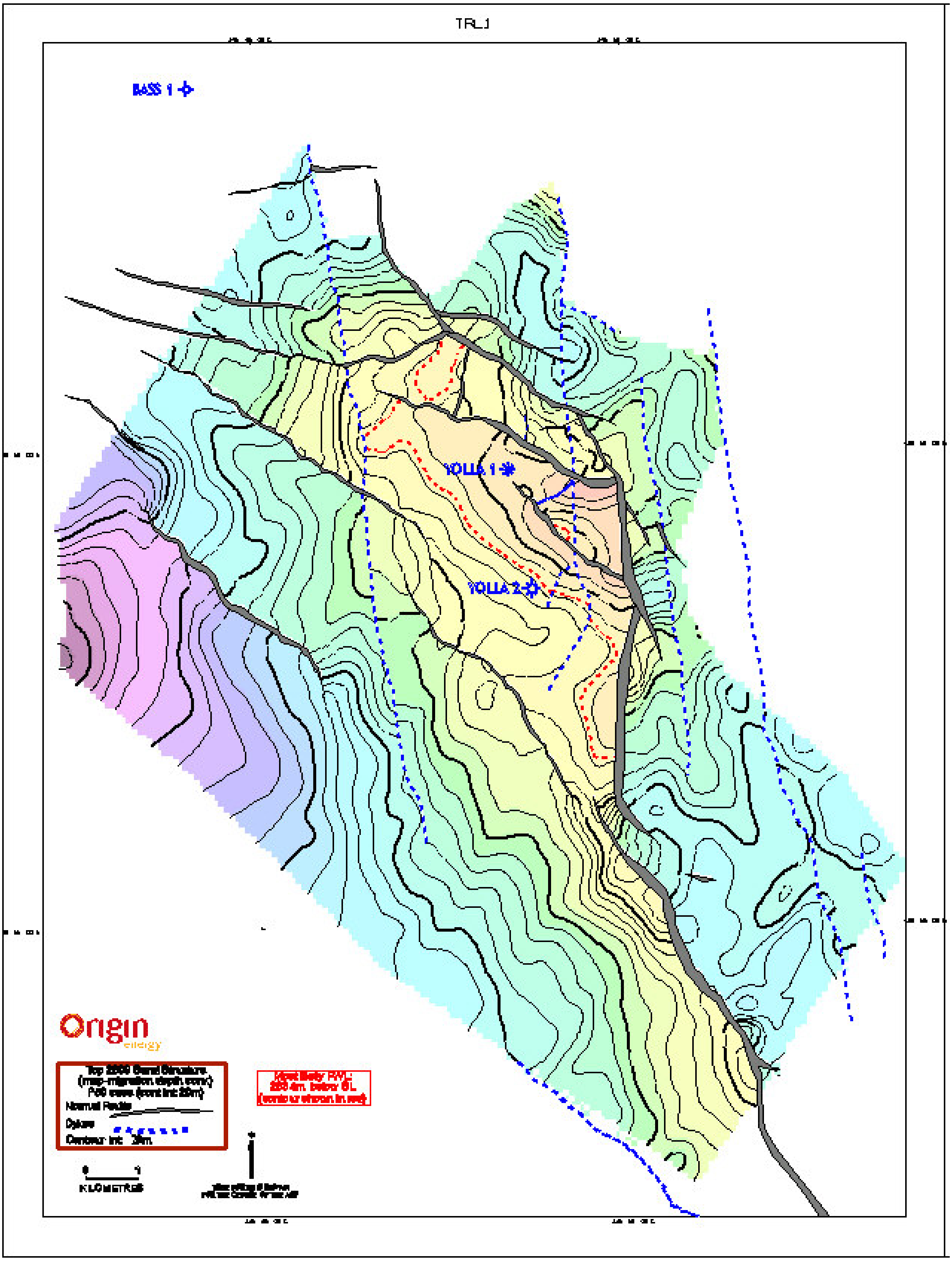


Figure 2.1: Yolla Field Depth Structure at top 2809 sand.

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 4
B	Location.	T/L1 Production License Offshore Bass Basin (120km offshore) Tasmania (location map attached). SURFACE LOCATION (Subject to minor change pending final positioning of platform) Latitude 39° 50' 40.5" South, Longitude 145° 49' 06.3" East 5,588,824N, 398,910E (GDA94 Zone 55) TARGET BOTTOM HOLE LOCATION (Top 2809 Sand) 5,588,223N, 398,671E (GDA 94 Zone 55)
	Water Depth.	Approximately 81 metres with bathymetric data indicating a predominantly flat and featureless topography.
C	Programmed Depth.	3,041mSS, ~3248mMDRT (~40m into Basalt).
D	Estimated Spud-in Date.	Approximately 3 May, 2004. Pre-Spud meeting to be held approximate two weeks prior to 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
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.

Clause 501-(2) Ref:	Schedule Item	Details.
		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 4: Kick off ~1257mSS to ~25deg max deviation & hold. Vertical section ~762m at TD, 202deg Azimuth.
M	Drilling Procedure.	The Detailed Drilling Procedure will be finalised for the Pre Spud Meeting.
N	Geological Prognosis and Objectives	See Geological Prognosis included within this document.
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.

Clause 501-(2) Ref:	Schedule Item	Details.
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 4 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 4 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 key location objective for the deviated well is the following:

- Intra EVCM (2809 unit): 398671E 5588233N (Inline 475, Xline 950) at 2703mTVDSS (2876mMDRT).

The primary objectives for Yolla 4 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 2707mTVDSS (2880mMDRT) and the 2809 unit at 2775mTVDSS (2955mMDRT). The 2755 & 2809 sands are predicted to be intersected 73m and 72m respectively, updip of Yolla 2.

Yolla 4 is predicted to intersect the Upper EVCM at 1832mTVDSS (1914mMDRT) which is within 1m of the interpreted OWC. As such the Upper EVCM is not considered a target in Yolla 4. If a hydrocarbon column is intersected then further evaluation may be planned such as inclusion of this interval in the CST and MDT program.

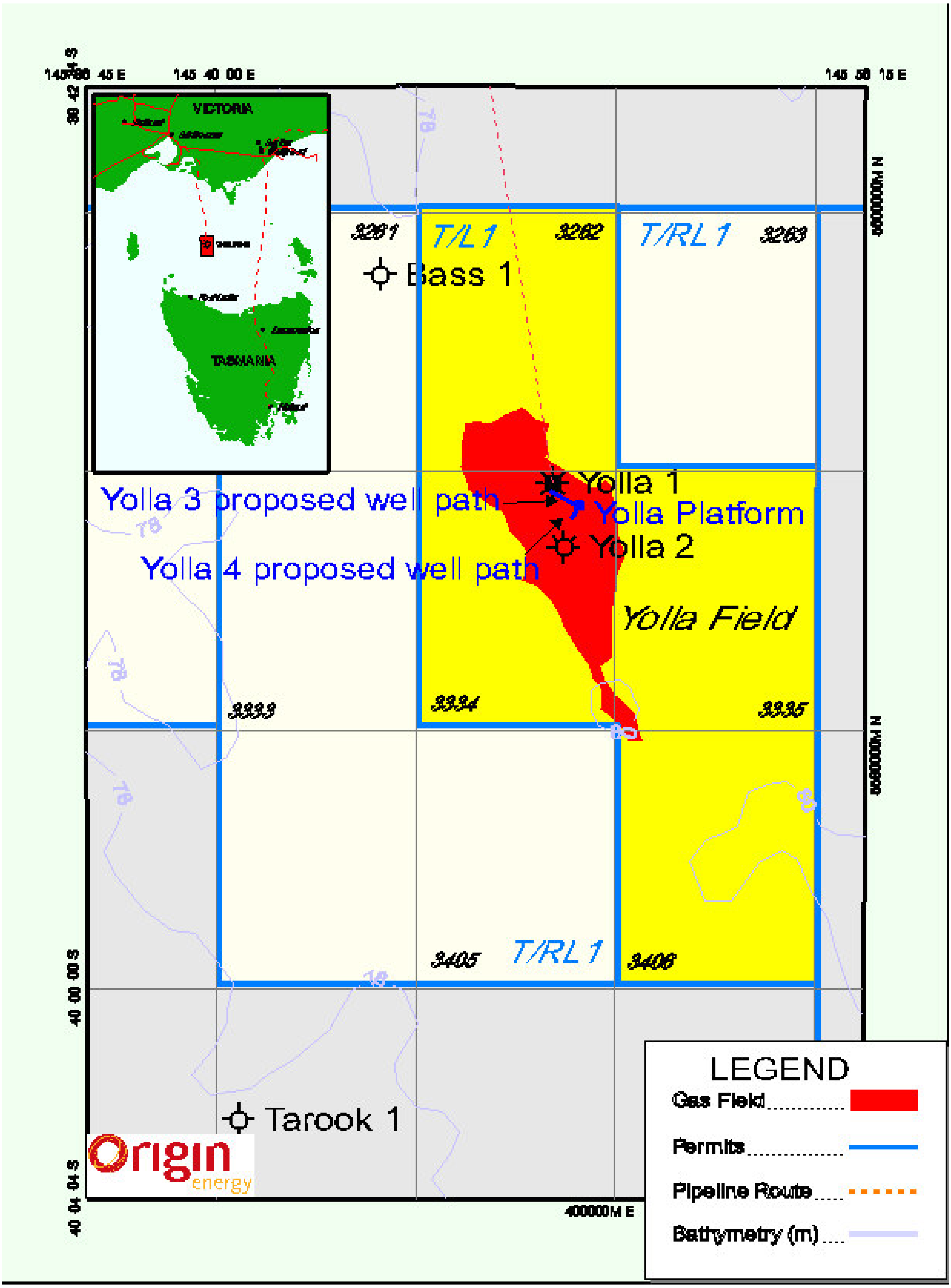


Figure 4.1 - Location Map

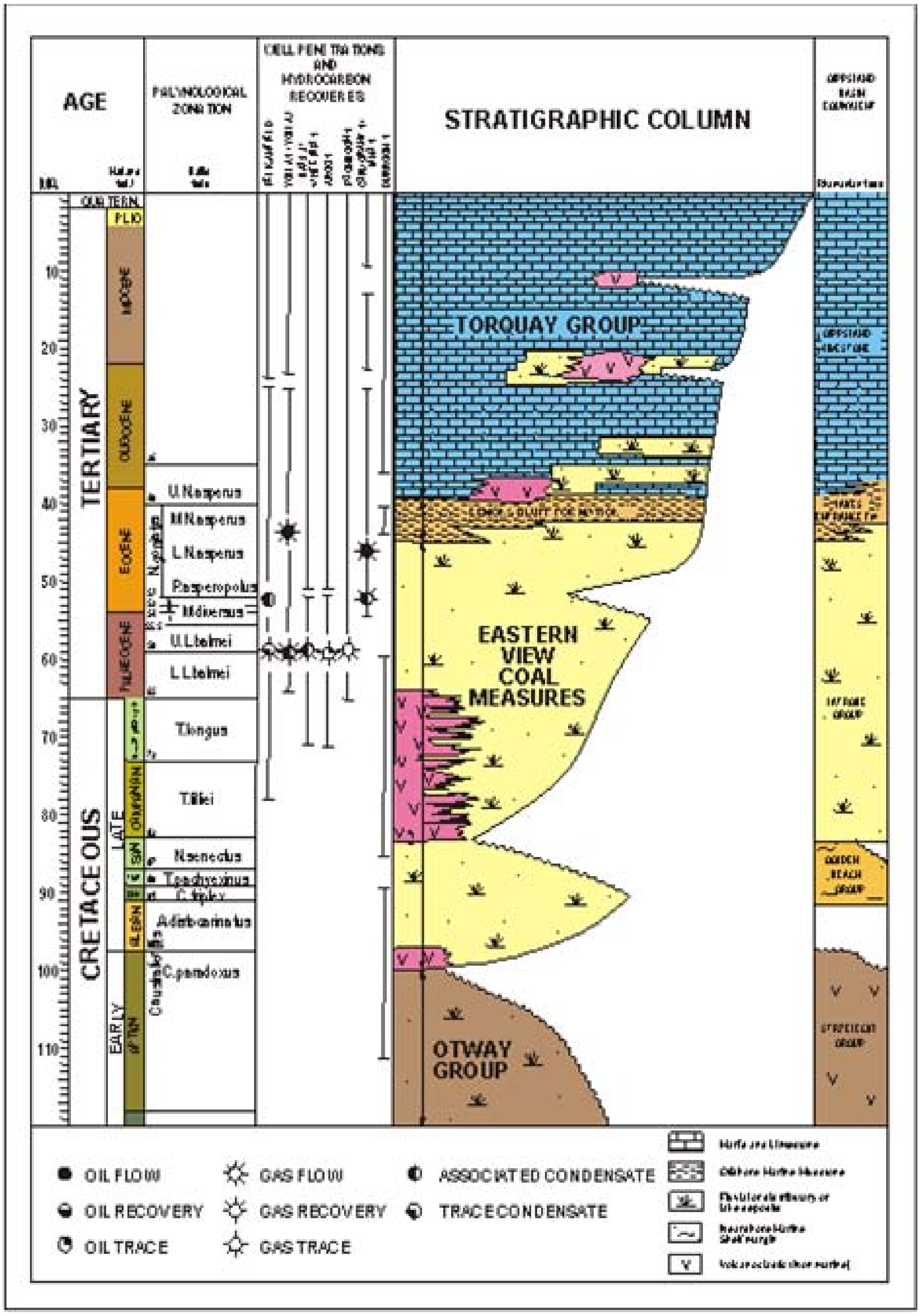


Figure 4.2 – Bass Basin Stratigraphic Column

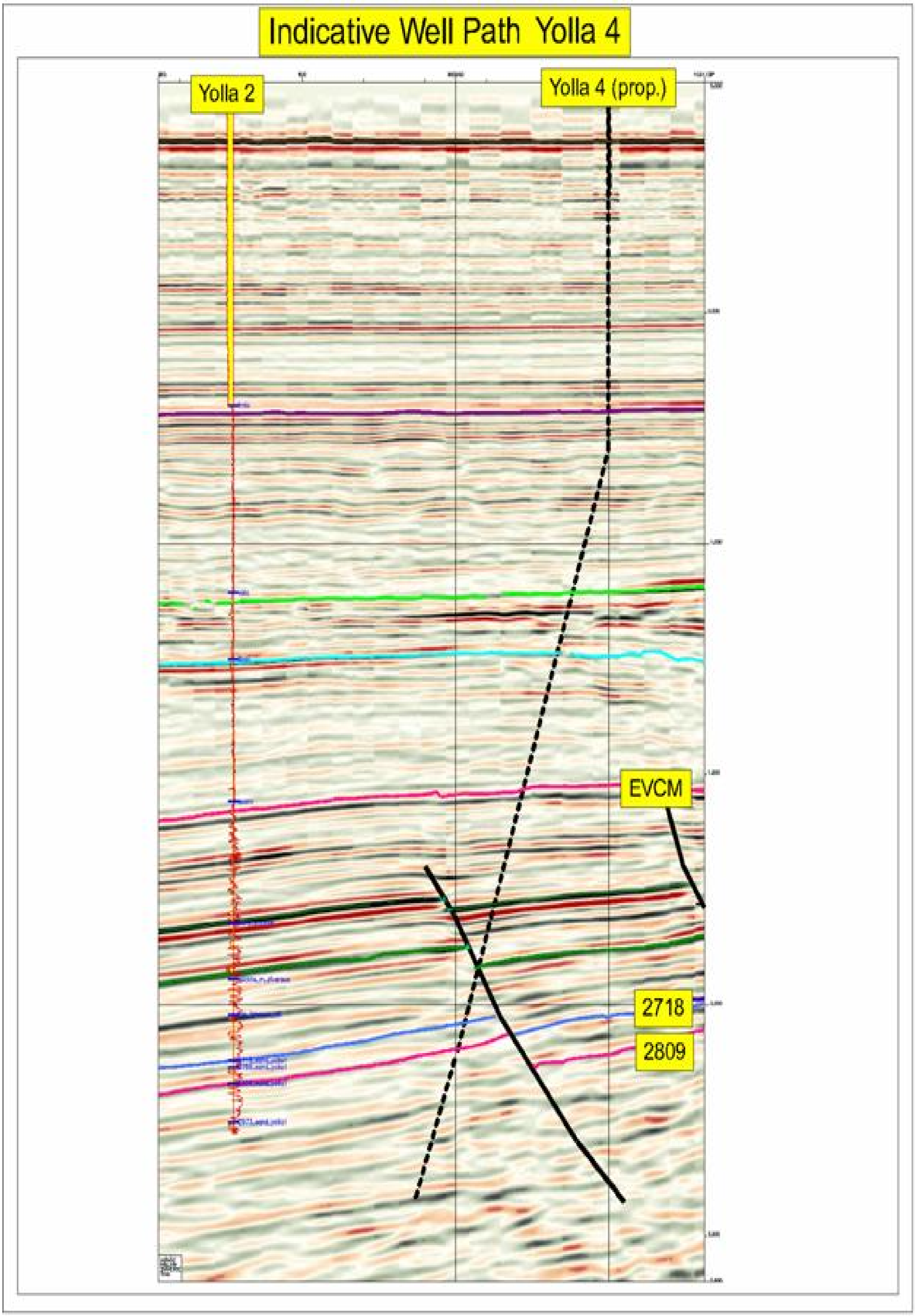


Figure 4.3 - Composite Seismic Line between Yolla 4 and Yolla 2

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 and permeability ranged up to in excess of 20% with permeability in the multi-darcy range. 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 4 well is a deviated well from the platform location targeting gas in the southern part of the Yolla Field (see Directional Drilling Program in Attachments).

4.6 Reservoir Pressure

4.6.1 Upper ECVM Reservoir.

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

This interval in Yolla 4 is not expected to intersect hydrocarbons unless the section comes in shallow to prognosis. At Yolla 1, gas and oil flowed to surface with flow rates up to 11.8MMscfd and 892stbp. Water also flowed to surface in DST 2 which was interpreted to be due to a poor cement job. This section, in this well, is not planned to be evaluated for pressure information.

4.6.2 Intra-ECVM 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-ECVM, 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

The predicted section for Yolla 4 is given in Figure 4.4.

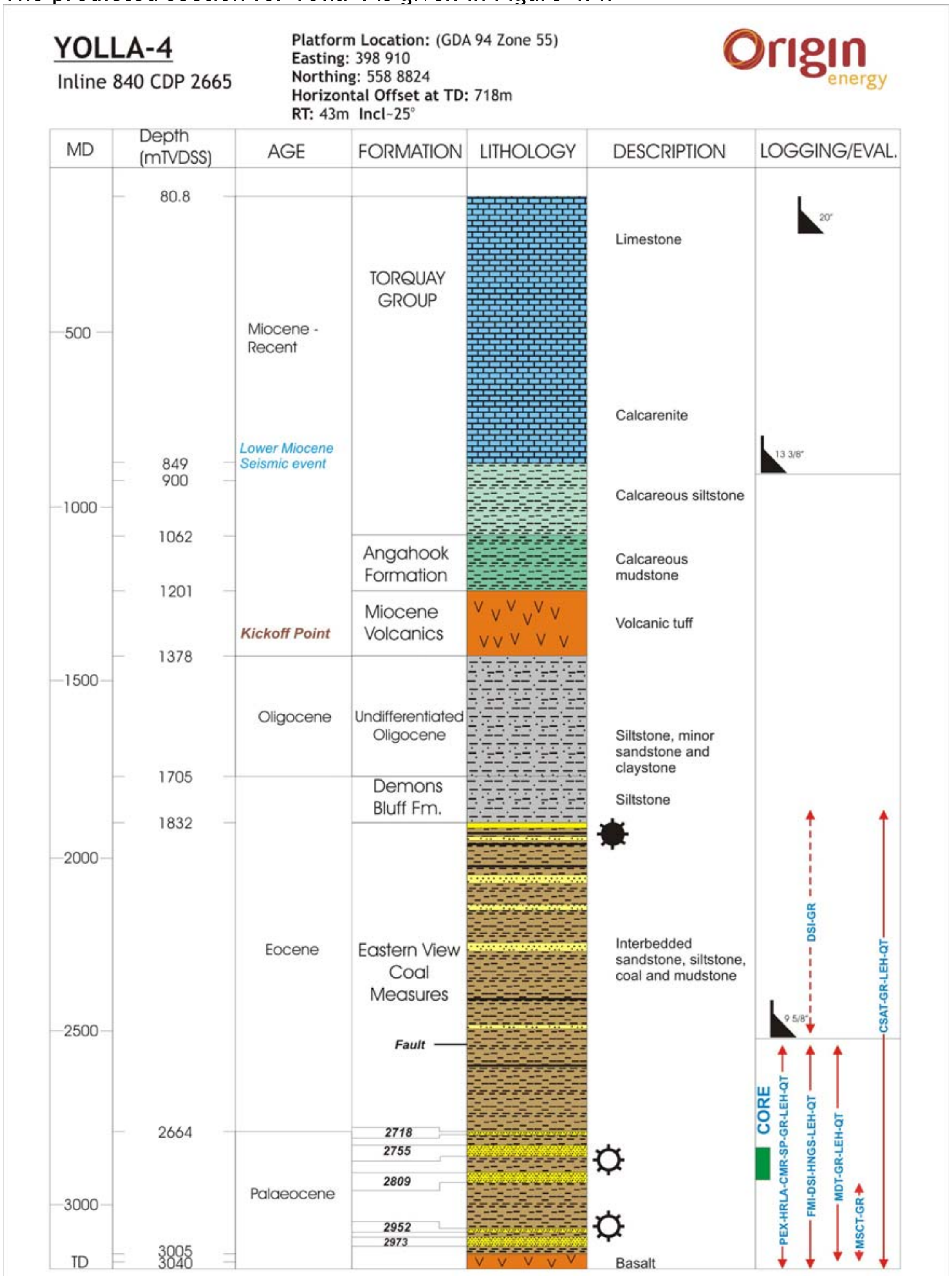


Figure 4.4: Yolla 4: Prognosed Stratigraphic Column

A summary of the depth prognosis and predicted stratigraphy for Yolla 4 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 meters measured depth referenced to an assumed rotary table elevation.

Torquay Group

(80.8 – 1062 mTVDSS; 123.8-1105mMDRT)

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 and 849 mTVDSS (892mMDRT).

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 (893mMDRT). 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

(1062-1201 mTVDSS; 1105-1244mMDRT)

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.

Miocene Volcanics

(1201 – 1378 mTVDSS; 1244-1422mMDRT)

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.

Angahook Formation - Undifferentiated Oligocene

(1378 – 1705 mTVDSS; 1422-1774mMDRT)

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 (approximately 1470mTVDSS -1705mTVDSS; 1515-1774mMDRT) 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

(1705 – 1832 mTVDSS;1774-1914mMDRT)

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

(1832 – 3005 mTVDSS; 1914-3208mMDRT)

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 (1832 – 2664mTVDSS; 1914-2832mMDRT) is a thick succession of interbedded sandstone, siltstone, claystone and coal. Sandstone units are either:

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

b) 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 (2664 – 3005mTVDSS; 2832-3208mMDRT) 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 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:

a) Lighter coloured and very silty with moderate amounts of organic material and

b) 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

(Yolla 4: 3005 – 3040 mTVDSS; 3208-3248 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.

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 4- 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 cutting 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 are 2 cores planned for Yolla 4 within the intra-EVCM reservoirs. However, if there is inadequate core recovery from Yolla 4, then coring of these intervals may be considered for Yolla 3.

The cores are planned to be 54m long and target the main Palaeocene reservoirs; the 2755 and 2809 units. This core data will provide valuable reservoir quality data for future well planning, field modelling and calibrating logs for future log interpretation.

Identification of core points will be as follows:

> **Core 1 (54m): Intra EVCM 2755 sand**. Coring should commence approximately 5m above the predicted top of the 2755 reservoir. Currently the reservoir top is predicted at 2880mMD (-2707mTVDSS) therefore if the overlying markers and other indications are that the depth prognosis is correct, then coring should commence at a depth of 2875mMD. The base of core 1 will then be at 2929mMD.

Core 2 (54m): Intra EVCM 2809 sand. Core 2 should be taken immediately following core 1. Following on from the above discussion, the top of core 2 will be at around 2929mMD and the base at 2983mMD (-2800mTVDSS). The predicted top and base depths for the 2809 sand are 2955mMD (-2775TVDmSS) and 2983mMD (-2800mTVDSS) respectively. The GWC for this zone is at -2834mTVDSS (3024mMD).

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

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	Assumed intervals	Gun System	Shot Density	Remarks
(IEVCM)	(m)		Shots/ft	
2718	5	Wireline Casing Guns	12	Casing size= 6 5/8"
2755	15	Wireline Casing Guns	12	Casing size= 6 5/8"
2809	15	Wireline Casing Guns	12	Casing size= 6 5/8"
2973	15	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 Crude Oil Samples

No oil samples are planned to be collected in Yolla 4.

5.5.2 Gas Samples

Gas samples will 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, FMI and VSP 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.

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 4 Proposed Logging Programme

Depth	Suite	Run	Logs to Run	Interval
				No 12 1/4" logs
8 1/2"	Suite-1	1	PEX-HRLA-CMR-SP-GR-LEH-QT (High Resolution). 40m rat-hole required	TD – 9 5/8" casing Shoe (GR through casing to surface) CMR intervals/modes to be finalised
		2	FMI-DSI-HNGS-LEH-QT (DSI-GR logged up through casing until DSI signal lost)	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	CSAT-GR-LEQHT	Offset VSP. 15m intervals plus formation tops. TD to loss of signal. Boat required.
		5	MSCT-GR	min 15 cores
		6 Contingent	CST-GR-L(contingent)	Reservoir section
Thru Csg.	Suite-2	1	CBL-VBL-CCR-GR	Base 6 5/8" to 50m above top of cement

5.7.1 Sidewall Coring

Rotary sidewall cores are planned in the 8 ½" section to primarily evaluate the 2973 sand unit. 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

In the 8 ½" section, an offset VSP is planned. The source is to be placed above the downhole sensor; hence a boat will be required with a suitable crane. Schlumberger will be responsible for navigation during the survey. To reduce rig time, provided the source is within a radius of 50m, it will not be necessary to move the boat.

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 4 development well will be drilled in the Yolla License T/L1 during Q2 of 2004 with a scheduled spud-in date of approximately 3 May, 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 a few 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 17.5” 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 17.5” 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 17.5” hole.

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

6.9 Drilling 17.5” Hole

The 17.5” (444.5mm) hole will be drilled vertically 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 17.5” 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 2400mVDSS according to the attached directional drilling plan. This casing point is selected because it is approximately 50m above a predicted fault, which if penetrated, might result in lost circulation and related problems. The casing point is also selected to be sufficiently deep so it in turn reduces the length of the production casing liner, which should improve cementing conditions for the liner and ensure better cement bonding/isolation between pay zones.

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).

No hard volcanic sills are predicted in this hole section in this well, but such sills are known to exist in the area (ref Yolla 1) and may still occur in this well. They pose no particular safety risk if they are encountered, but they may cause slow drilling and bit damage.

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.

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 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).

Conventional cores are planned for two of the significant gas saturated sands in the well. The number of core barrel runs will depend on the success of the coring operations. Details concerning the coring intervals can be found in section 5 Formation Evaluation. 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 liner as a perforating fluid. 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 test 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 4 well, the rig is scheduled to be skidded to the Yolla 3 well slot and complete the drilling, completion and testing of that well (the drilling programme for that well will be embodied in a separate document package). Once completion operations have been completed on Yolla 3, the rig will 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.

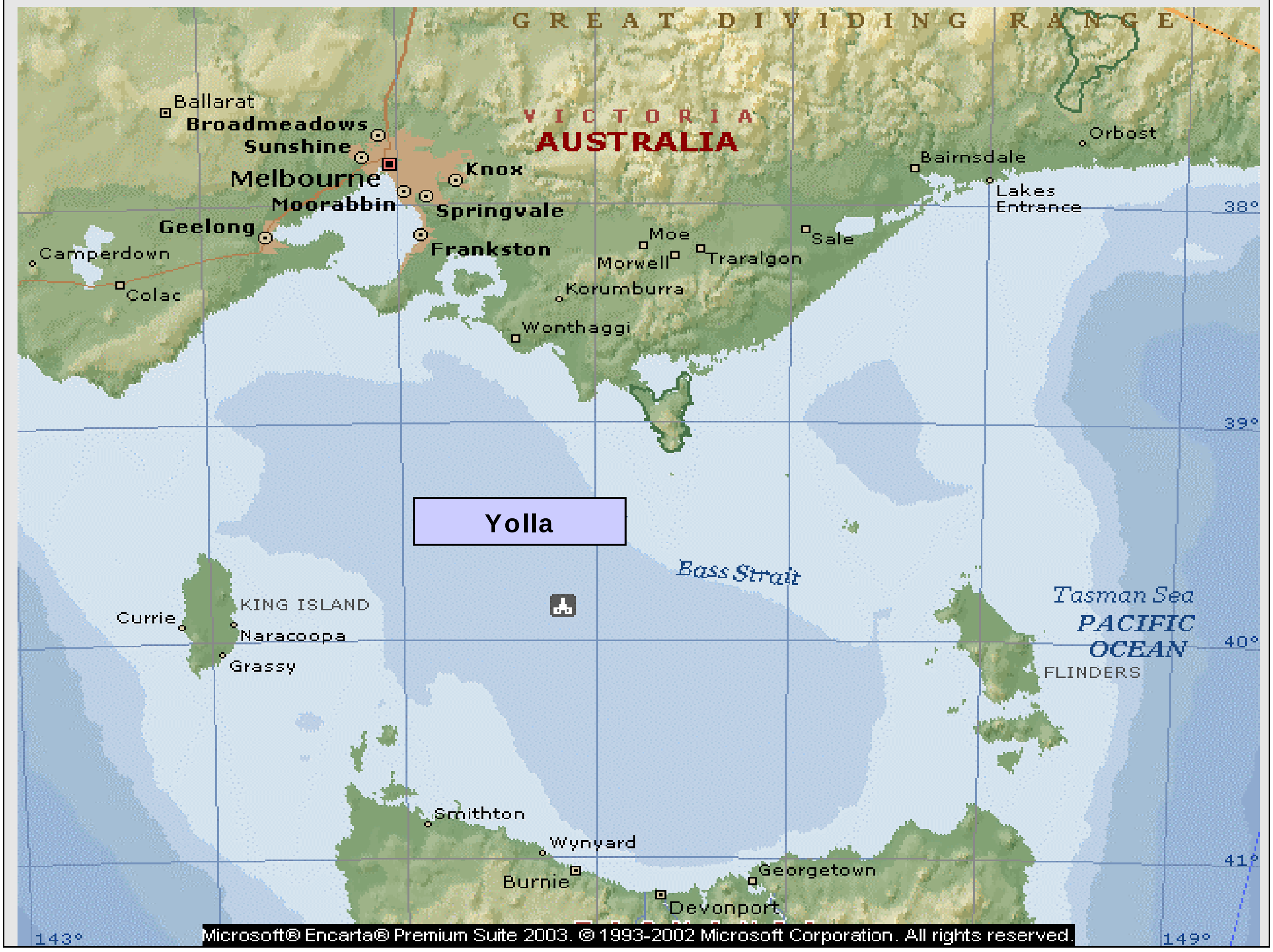
The pre-selected tension loads are constantly maintained by two positive displacement pumps which activate when the applied tension pressure is decayed through the flow divider. Both the P.R.V. and positive displacement pumps provide a totally constant and maintained tension.

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
Melbourne, Victoria	239 / *129*	62
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

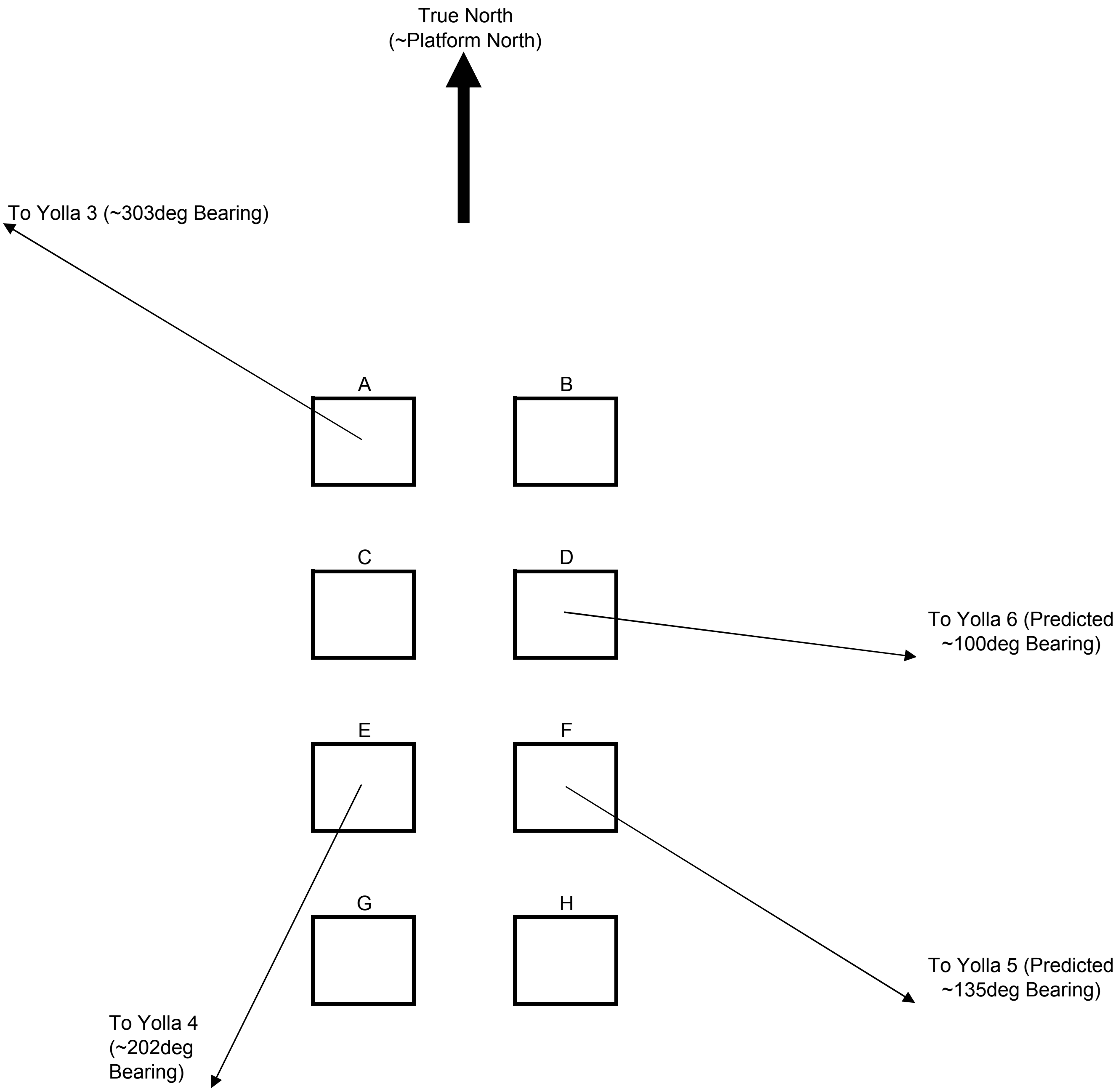


Figure 9.2 - YOLLA 20" DRIVEN CONDUCTOR DRAWING
23 December, 2003

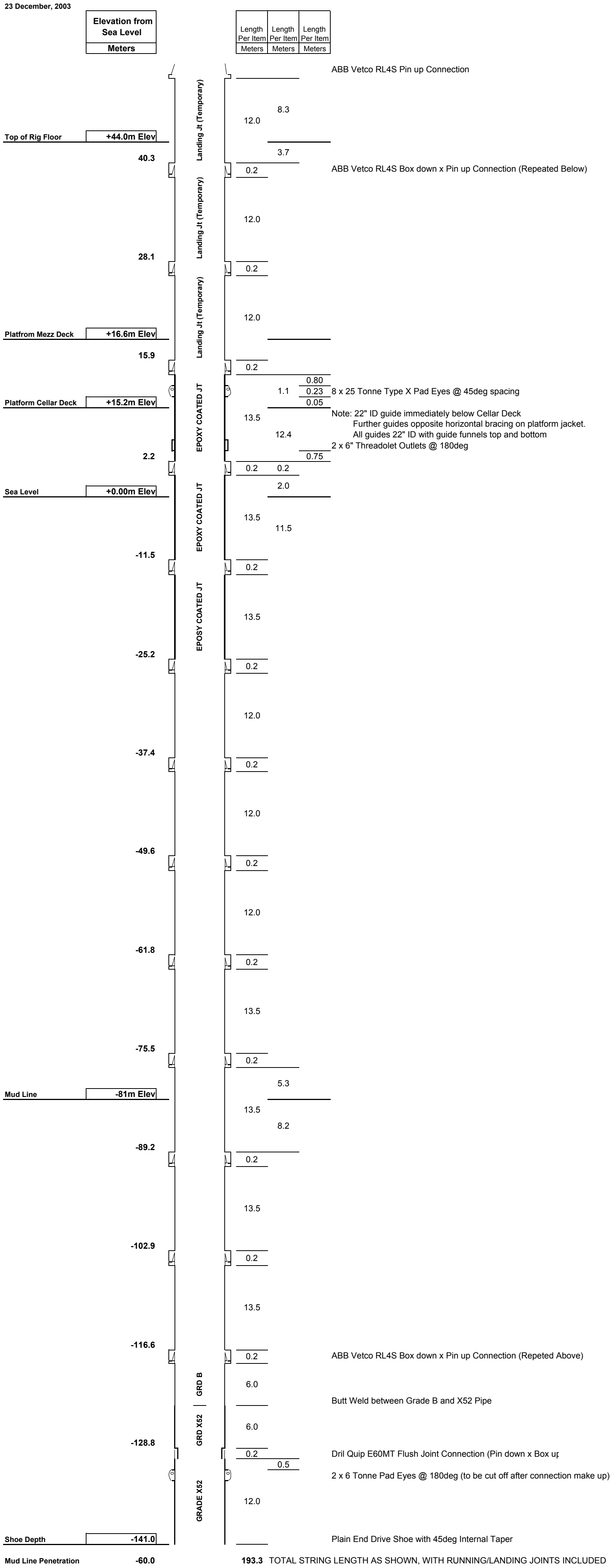


Figure 9.3 - Yolla 3 & 4 Wells Diverter/Low Pressure Riser Configuration
February, 2004

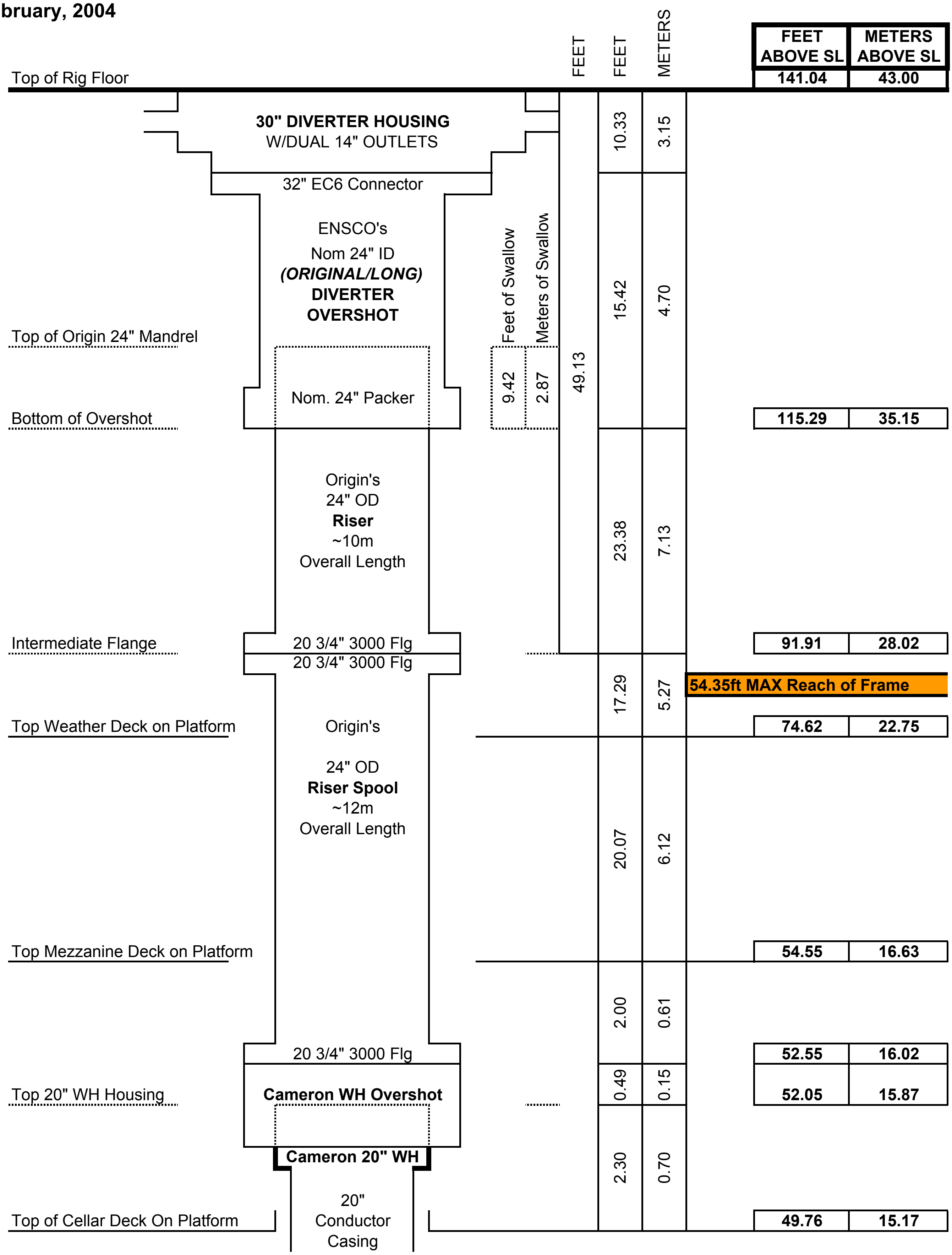


Figure 9.4 - Yolla 3 & 4 Wells High Pressure Riser Configuration February, 2004

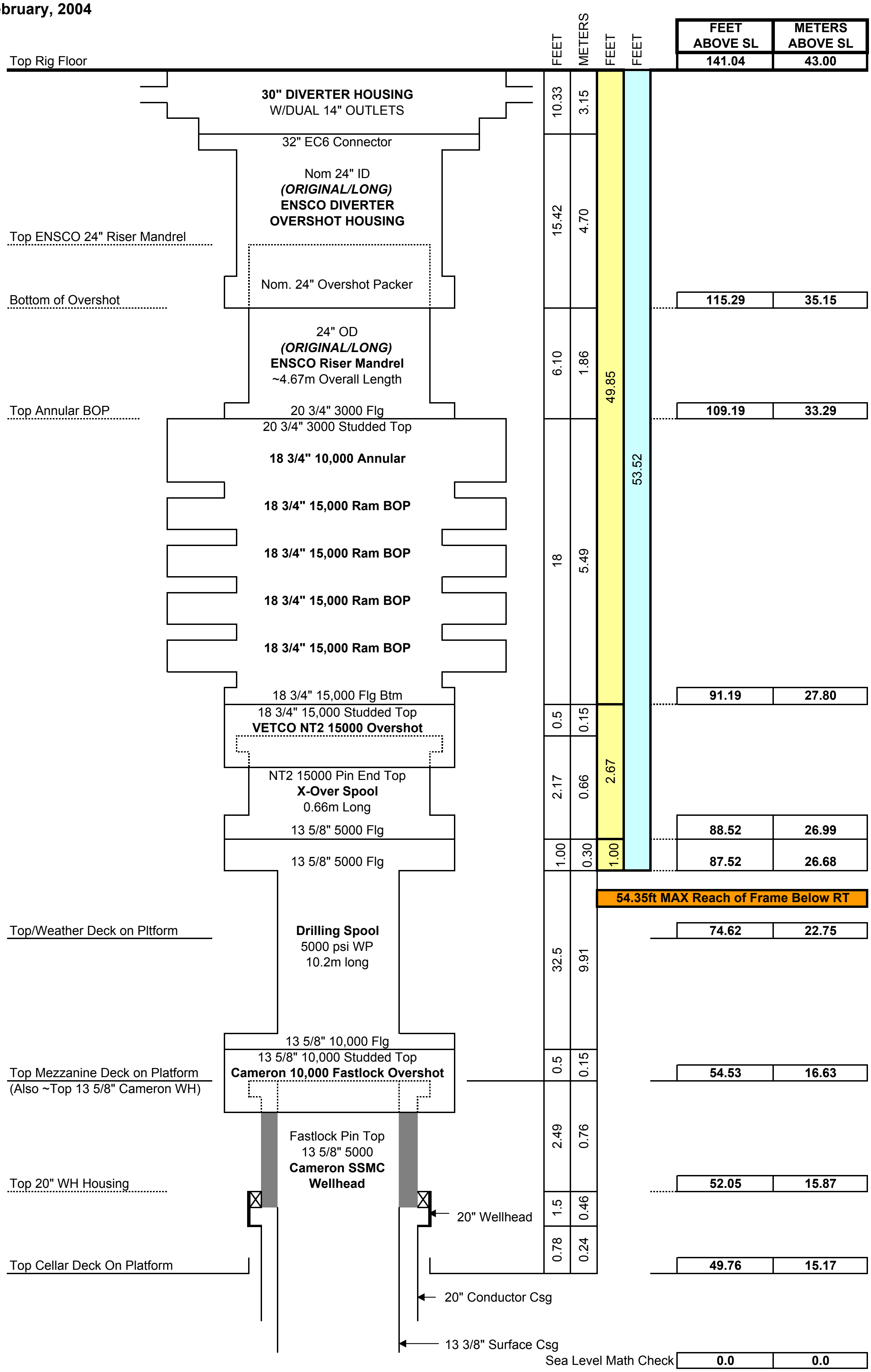


Figure 9.5 - ENSCO 102 BOP Configuration

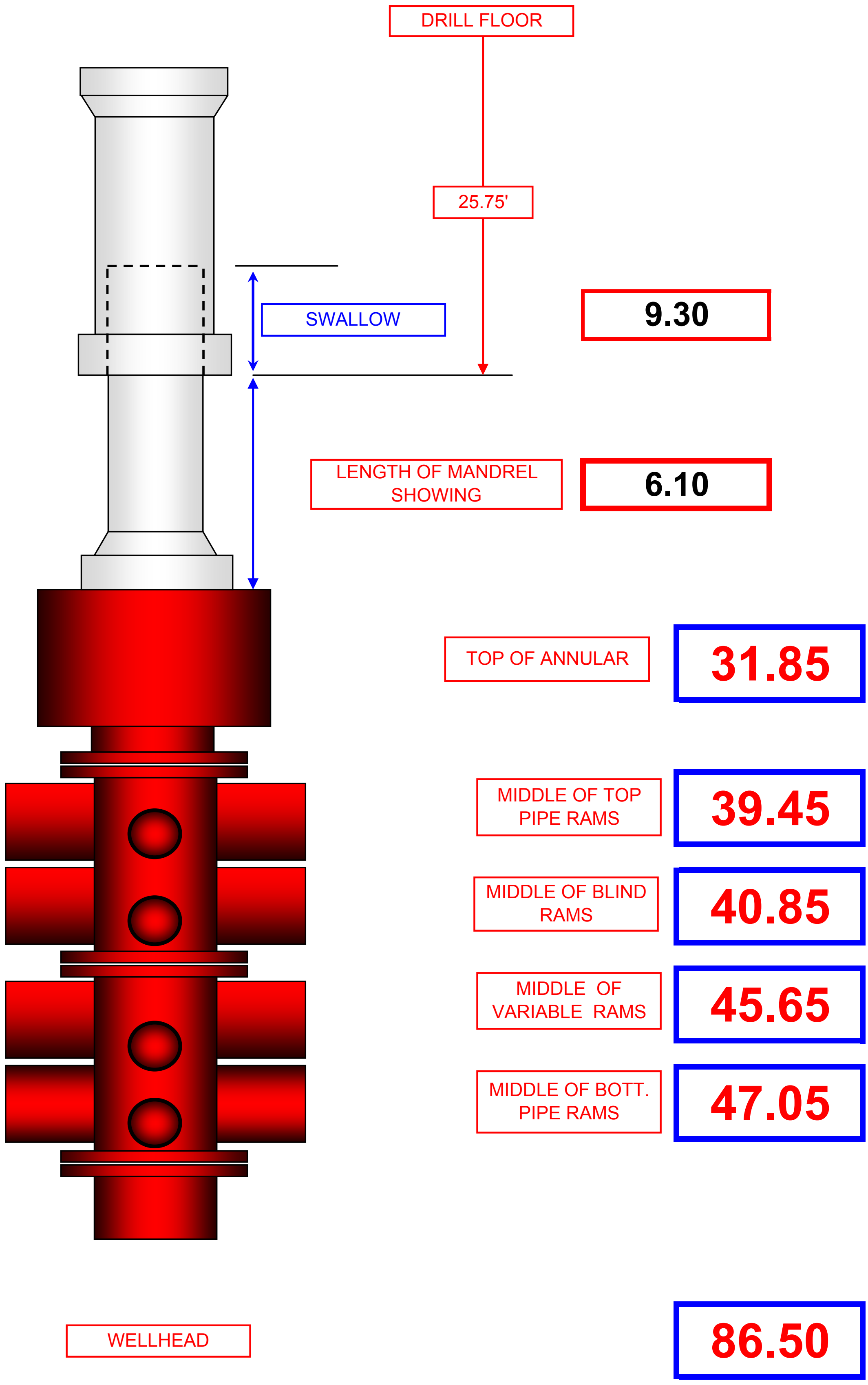


Figure 9.6 - YOLLA 4 CASING PROGRAMME DRAWING

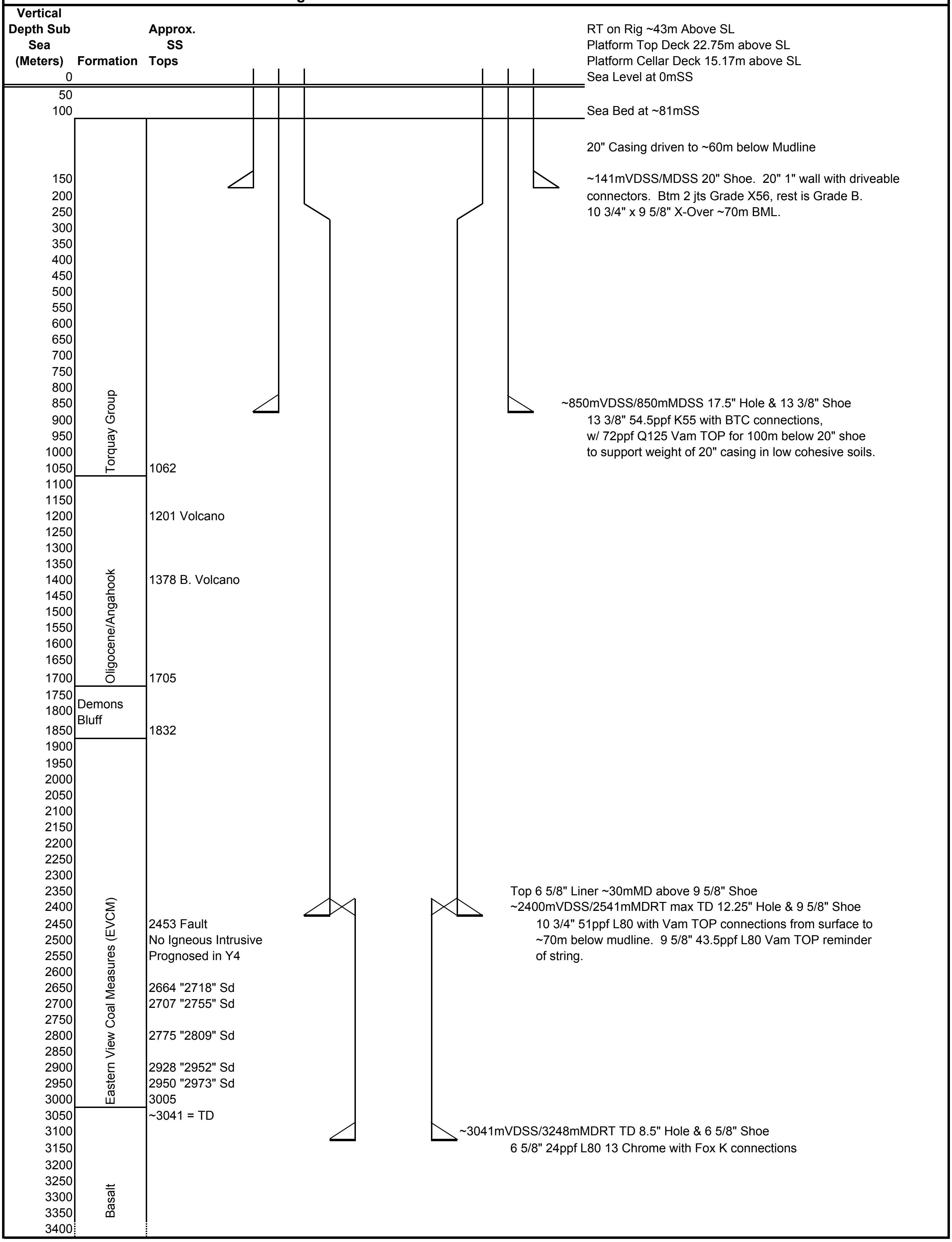
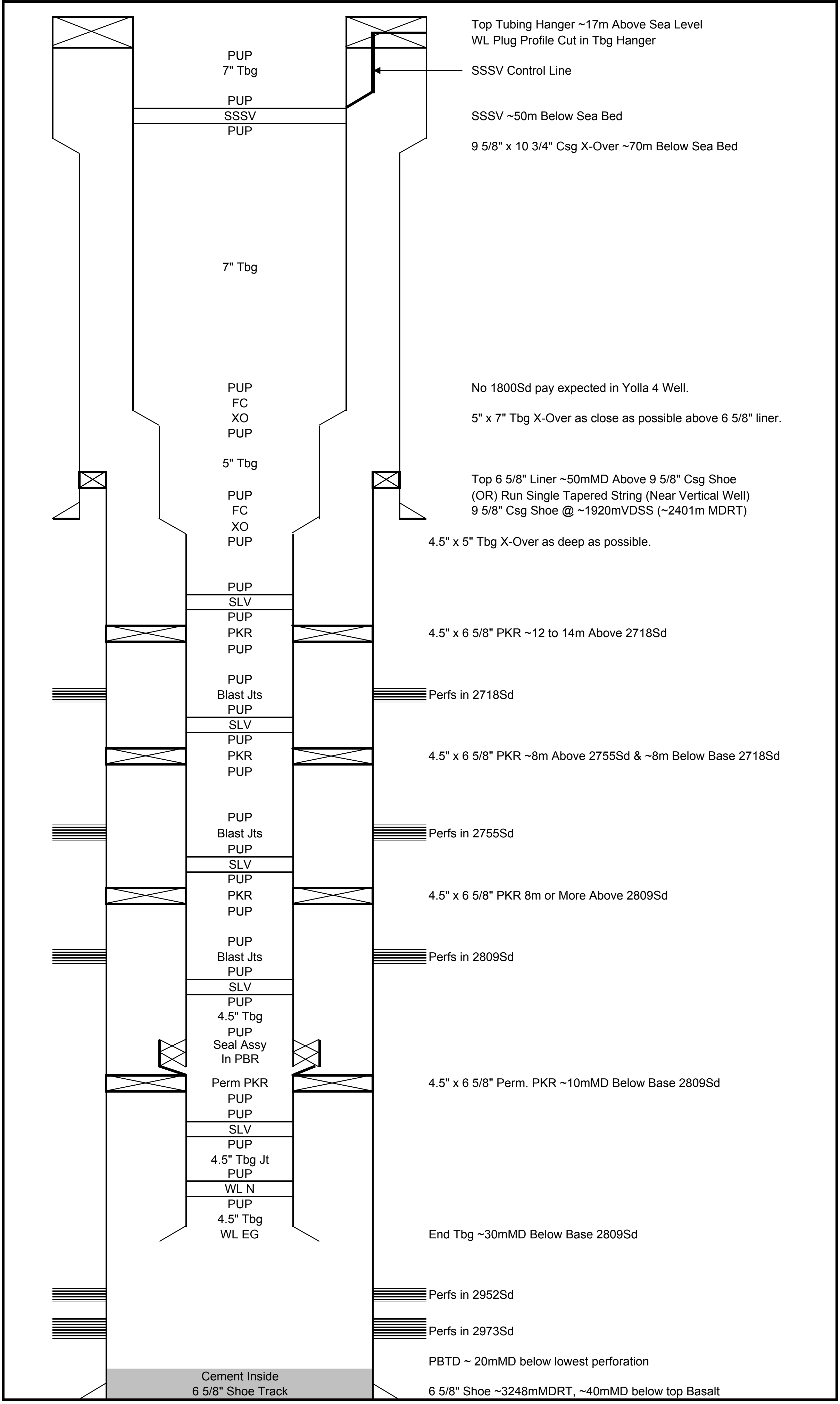


Figure 9.7 - YOLLA 4 TUBING COMPLETION DRAWING



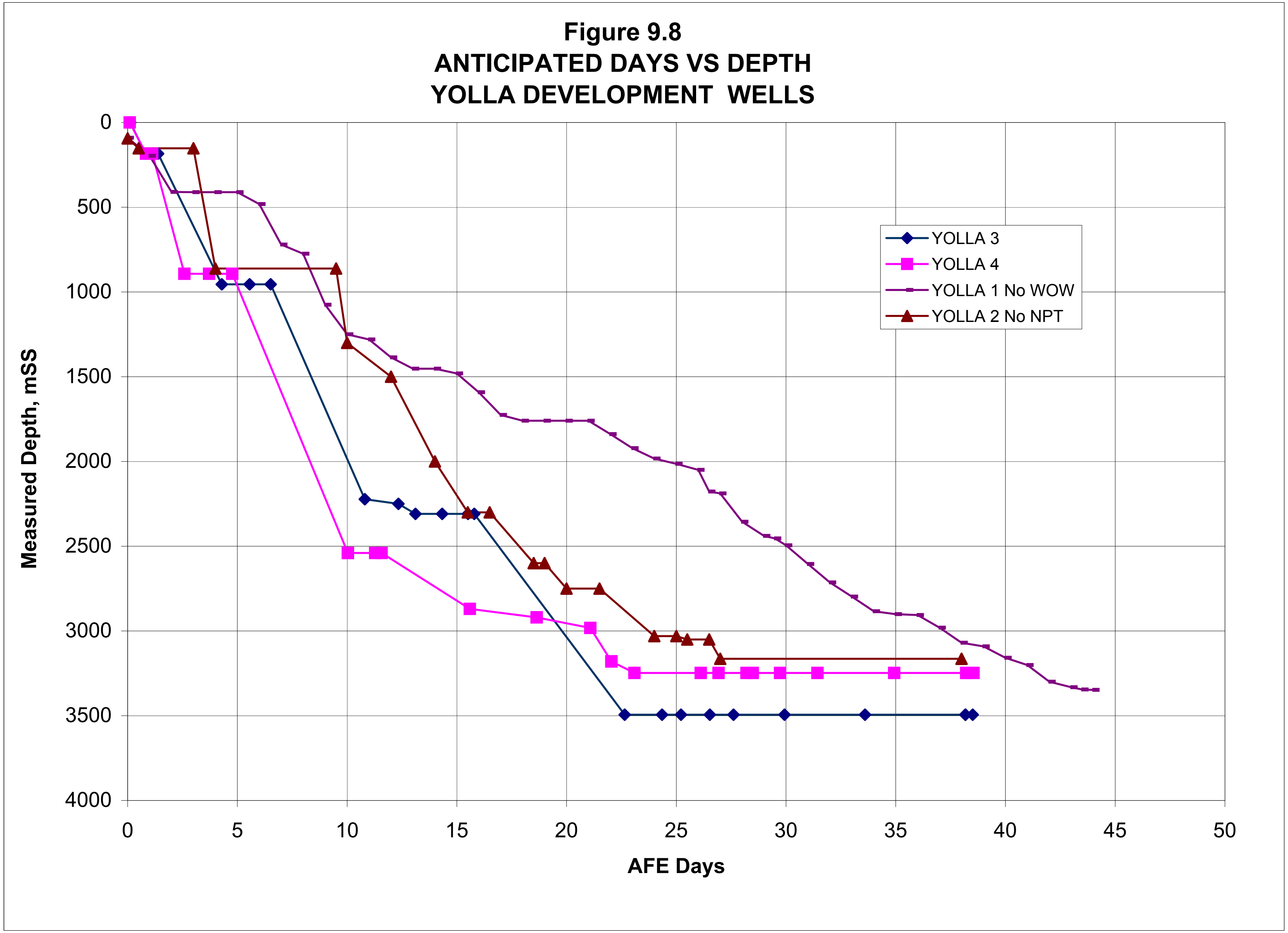


Figure 9.8
ANTICIPATED DAYS VS DEPTH
YOLLA DEVELOPMENT WELLS
Measured Depth, mSS
0
500
1000
1500
2000
2500
3000
3500
4000
0
5
10
15
20
25
30
35
40
45
50
AFE Days
YOLLA 3
YOLLA 4
YOLLA 1 No WOW
YOLLA 2 No NPT

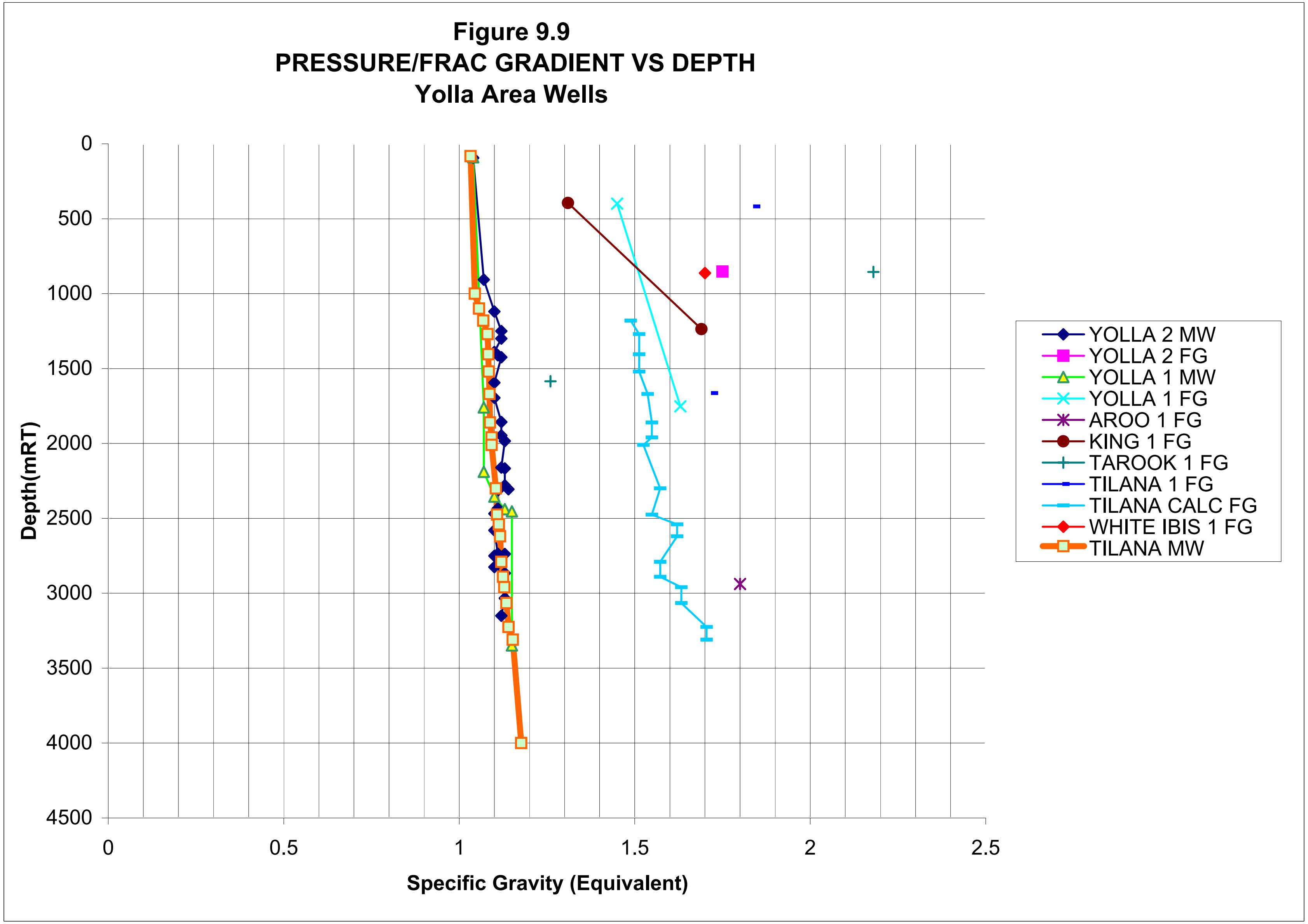


Figure 9.9
PRESSURE/FRAC GRADIENT VS DEPTH
Yolla Area Wells
Depth(mRT)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
0
0.5
1
1.5
2
2.5
Specific Gravity (Equivalent)
YOLLA 2 MW
YOLLA 2 FG
YOLLA 1 MW
YOLLA 1 FG
AROO 1 FG
KING 1 FG
TAROOK 1 FG
TILANA 1 FG
TILANA CALC FG
WHITE IBIS 1 FG
TILANA MW

Table 9.1 - YOLLA POTENTIAL HAZARD LIST
March, 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 4 CASING & TUBING DESIGN TABLE
February, 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%
17.5 *445*	850	850	13.375 *340*	850	850	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*	2400	2541	9.625 *244*	2400	2541	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*	3100	3260	6.625 *168*	3100	3260	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%		
N/A	3100	3250	7 *178*	0	2300	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%
N/A	3100	3250	5 *127*	2300	2700	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%
N/A	3100	3260	4.5 *114*	2700	3000	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 4 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 EXPECTED)	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
17.5 *445*	850	850	13.375 *340*	850	850	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*	2350	2457	9.625 *244*	2350	2457	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*	3100	3260	6.625 *168*	3100	3260	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 4 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
17.5 *445*	850	850	13.375 *340*	850	850	Stage Collar	80	180	100	15.6 *1.87*	water	Possible Calcium Chloride and/or Defoamer.
						Lead	350	750	400	12.5 *1.50*	water	Extender agent, such as gel or sodium silicate. Possible defoamer, friction reducer and/or retarder.
						Tail	750	850	100	15.8 *1.89*	water	Possible defoamer, friction reducer and/or retarder.
12.25 *311*	2350	2457	9.625 *244*	2350	2457	Lead	1957	2357	400	12.5 *1.50*	water	Extender agent, such as gel or sodium silicate. Possible defoamer, friction reducer and/or retarder.
						Tail	2357	2457	100	15.8 *1.89*	water	Likely defoamer, friction reducer and/or retarder.
8.5 *216*	3100	3260	6.625 *168*	3100	3260	Tail	2650	3260	610	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.

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..
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 9.5 - YOLLA 4 CASING & BOP PRESSURE TESTING PROGRAMME
February, 2004

										ON TES 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 DEPTH SUB SEA	MEASURED CASING DEPTH SUB SEA	CASING WEIGHT	CASING GRADE	CASING CONNECTION	BURST RATING (API YIELD)	COLLAPSE RATING (API YIELD)	MAX ANTICIPATE D 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	Inches	Meters	Meters	Lbs/Ft	API	As Shown	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi	Psi
mm	*mm*			*Kg/m*			*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*	*Kpa*
		Note 1	Note 1						Note 2												
CASING STRINGS										Note 3				Note 3				Note 3			
N/A (Driven)	20	141	141	203	Gr B/X56	RL4S / E60MT	3062/4900	2800	50	500	N/A	N/A	N/A	200	N/A	N/A	N/A	200	N/A	N/A	N/A
	508			92.1			21100/33700	19292	*300*	*3400*				*1400*				*1400*			
17.5	13.375	850	850	54.5	K55	BTC	2730	1130	1600	4000	5000	5000	5000	2000	5000	5000	5000	2000	3000	0	3000
445	*340*			*24.7*			*18809.7*	*7785.7*	*11000*	*27600*	*34500*	*34500*	*34500*	*13800*	*34500*	*34500*	*34500*	*13800*	*20700*	*0*	*20700*
12.25	9.625	2400	2541	43.5	L80	Vam TOP	6330	3810	3500	4000	5000	5000	5000	4000	5000	5000	5000	4000	5000	0	5000
311	*244*			*19.7*			*43613.7*	*26250.9*	*24100*	*27600*	*34500*	*34500*	*34500*	*27600*	*34500*	*34500*	*34500*	*27600*	*34500*	*0*	*34500*
8.5	6.625	3100	3260	24	L80	Fox K	7440	5760	3500	4000	5000	5000	5000	4000	5000	5000	5000	4000	5000	0	5000
216	*168*			*10.9*	13Chrome		*51261.6*	*39686.4*	*24100*	*27600*	*34500*	*34500*	*34500*	*27600*	*34500*	*34500*	*34500*	*27600*	*34500*	*0*	*34500*
TUBING STRING (Tapered)																					
N/A	7	2000	2300	26	L80	Fox K	7240	5410	3500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	178			*11.8*	13Chrome		*49883.6*	*37274.9*	*24115*												
N/A	5	2300	2700	15	L80	Fox K	8290	7250	3500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	127			*6.8*	13Chrome		*57118.1*	*49952.5*	*24115*												
N/A	4.5	2700	3000	11.6	L80	Fox K	7780	6350	3500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	114			*5.3*	13Chrome		*53604.2*	*43751.5*	*24115*												

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	Eastern View Coal Measures (EVCM)	Coal w/Sd				1.07	
2250		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 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	Oligocene	Sd/Slt/Clys	7/30/11.1avg				
1650		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							

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

Origin Energy Resources Ltd.
Yolla
Yolla Platform
Yolla #4 : Revision #3

Revised: 24 March, 2004

Sperry-Sun

Proposal Report

24 March, 2004

Surface Coordinates: 5588824.00 N, 398910.00 E (39° 50' 40.5120" S, 145° 49' 06.2655" 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: pro6292

HALLIBURTON

HALLIBURTON

Origin Energy Resources Ltd.
Yolla

Proposal Report for Yolla Platform - Yolla #4 : Revision #3
Revised: 24 March, 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	5588824.00 N	398910.00 E		0.00
124.80	0.000	0.000	81.80	124.80	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
~	Seabed									
185.00	0.000	0.000	142.00	185.00	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
~	20" Casing									
892.00	0.000	0.000	849.00	892.00	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
~	Lmio									
893.00	0.000	0.000	850.00	893.00	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
~	13 3/8" Casing									
1105.00	0.000	0.000	1062.00	1105.00	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
~	Angahook									
1244.00	0.000	0.000	1201.00	1244.00	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
~	Volcano									
1300.00	0.000	0.000	1257.00	1300.00	0.00 N	0.00 E	5588824.00 N	398910.00 E	0.00	0.00
1400.00	8.333	202.018	1356.65	1399.65	6.73 S	2.72 W	5588817.27 N	398907.28 E	2.50	7.26
1421.63	10.136	202.018	1378.00	1421.00	9.95 S	4.02 W	5588814.05 N	398905.98 E	2.50	10.73
~	Base Volc									
1500.00	16.667	202.018	1454.19	1497.19	26.78 S	10.83 W	5588797.22 N	398899.17 E	2.50	28.88
1600.00	25.000	202.018	1547.57	1590.57	59.72 S	24.15 W	5588764.28 N	398885.85 E	2.50	64.42
1600.33	25.028	202.018	1547.87	1590.87	59.85 S	24.20 W	5588764.15 N	398885.80 E	2.50	64.56
1700.00	25.028	202.018	1638.18	1681.18	98.94 S	40.01 W	5588725.06 N	398869.99 E	0.00	106.72
1773.74	25.028	202.018	1705.00	1748.00	127.86 S	51.71 W	5588696.14 N	398858.29 E	0.00	137.92
~	Demons Bluff									
1800.00	25.028	202.018	1728.79	1771.79	138.16 S	55.87 W	5588685.84 N	398854.13 E	0.00	149.03
1900.00	25.028	202.018	1819.40	1862.40	177.38 S	71.73 W	5588646.62 N	398838.27 E	0.00	191.33
1913.90	25.028	202.018	1832.00	1875.00	182.83 S	73.94 W	5588641.17 N	398836.06 E	0.00	197.22
~	EVCM									
2000.00	25.028	202.018	1910.01	1953.01	216.60 S	87.59 W	5588607.40 N	398822.41 E	0.00	233.64
2100.00	25.028	202.018	2000.62	2043.62	255.82 S	103.45 W	5588568.18 N	398806.55 E	0.00	275.95
2200.00	25.028	202.018	2091.23	2134.23	295.04 S	119.31 W	5588528.96 N	398790.69 E	0.00	318.25
2300.00	25.028	202.018	2181.84	2224.84	334.26 S	135.17 W	5588489.74 N	398774.83 E	0.00	360.56
2400.00	25.028	202.018	2272.45	2315.45	373.48 S	151.03 W	5588450.52 N	398758.97 E	0.00	402.86
2500.00	25.028	202.018	2363.06	2406.06	412.70 S	166.89 W	5588411.30 N	398743.11 E	0.00	445.17
2540.76	25.028	202.018	2400.00	2443.00	428.68 S	173.36 W	5588395.32 N	398736.64 E	0.00	462.41
~	9 5/8" Casing									
2599.25	25.028	202.018	2453.00	2496.00	451.63 S	182.64 W	5588372.37 N	398727.36 E	0.00	487.16
~	Fault									
2600.00	25.028	202.018	2453.68	2496.68	451.92 S	182.76 W	5588372.08 N	398727.24 E	0.00	487.47
2700.00	25.028	202.018	2544.29	2587.29	491.14 S	198.62 W	5588332.86 N	398711.38 E	0.00	529.78
2800.00	25.028	202.018	2634.90	2677.90	530.36 S	214.48 W	5588293.64 N	398695.52 E	0.00	572.08
2832.12	25.028	202.018	2664.00	2707.00	542.95 S	219.57 W	5588281.05 N	398690.43 E	0.00	585.67
~	2718 Sand									
2879.58	25.028	202.018	2707.00	2750.00	561.57 S	227.10 W	5588262.43 N	398682.90 E	0.00	605.75
~	2755 Sand									
2900.00	25.028	202.018	2725.51	2768.51	569.58 S	230.34 W	5588254.42 N	398679.66 E	0.00	614.39
2954.62	25.028	202.018	2775.00	2818.00	591.00 S	239.00 W	5588233.00 N	398671.00 E	0.00	637.50
~	2809 Sand, Target - 2809 Sand, Current Target									
3000.00	25.028	202.018	2816.12	2859.12	608.80 S	246.20 W	5588215.20 N	398663.80 E	0.00	656.69
3019.74	25.028	202.018	2834.00	2877.00	616.54 S	249.33 W	5588207.46 N	398660.67 E	0.00	665.05
~	GWC2									
3100.00	25.028	202.018	2906.73	2949.73	648.02 S	262.06 W	5588175.98 N	398647.94 E	0.00	699.00
3123.48	25.028	202.018	2928.00	2971.00	657.22 S	265.78 W	5588166.78 N	398644.22 E	0.00	708.93
~	2952 Sand									
3147.76	25.028	202.018	2950.00	2993.00	666.75 S	269.63 W	5588157.25 N	398640.37 E	0.00	719.20
~	2973 Sand									
3174.24	25.028	202.018	2974.00	3017.00	677.14 S	273.83 W	5588146.86 N	398636.17 E	0.00	730.41
~	2973 Base									
3199.63	25.028	202.018	2997.00	3040.00	687.09 S	277.86 W	5588136.91 N	398632.14 E	0.00	741.15
~	GWC3									
3200.00	25.028	202.018	2997.34	3040.34	687.24 S	277.92 W	5588136.76 N	398632.08 E	0.00	741.30
3208.46	25.028	202.018	3005.00	3048.00	690.55 S	279.26 W	5588133.45 N	398630.74 E	0.00	744.88
~	Basalt									
3248.46	25.028	202.018	3041.25	3084.25	706.24 S	285.60 W	5588117.76 N	398624.40 E	0.00	761.81

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 202.018° (Grid).

Coordinate System is UTM Zone 55S on Geocentric Datum of Australia 1994, Meters.

HALLIBURTON

Origin Energy Resources Ltd.
Yolla

Proposal Report for Yolla Platform - Yolla #4 : Revision #3
Revised: 24 March, 2004

Grid Convergence at Surface is 0.757°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 3248.46m.,
The Bottom Hole Displacement is 761.81m., in the Direction of 202.018° (Grid).

Formation Tops

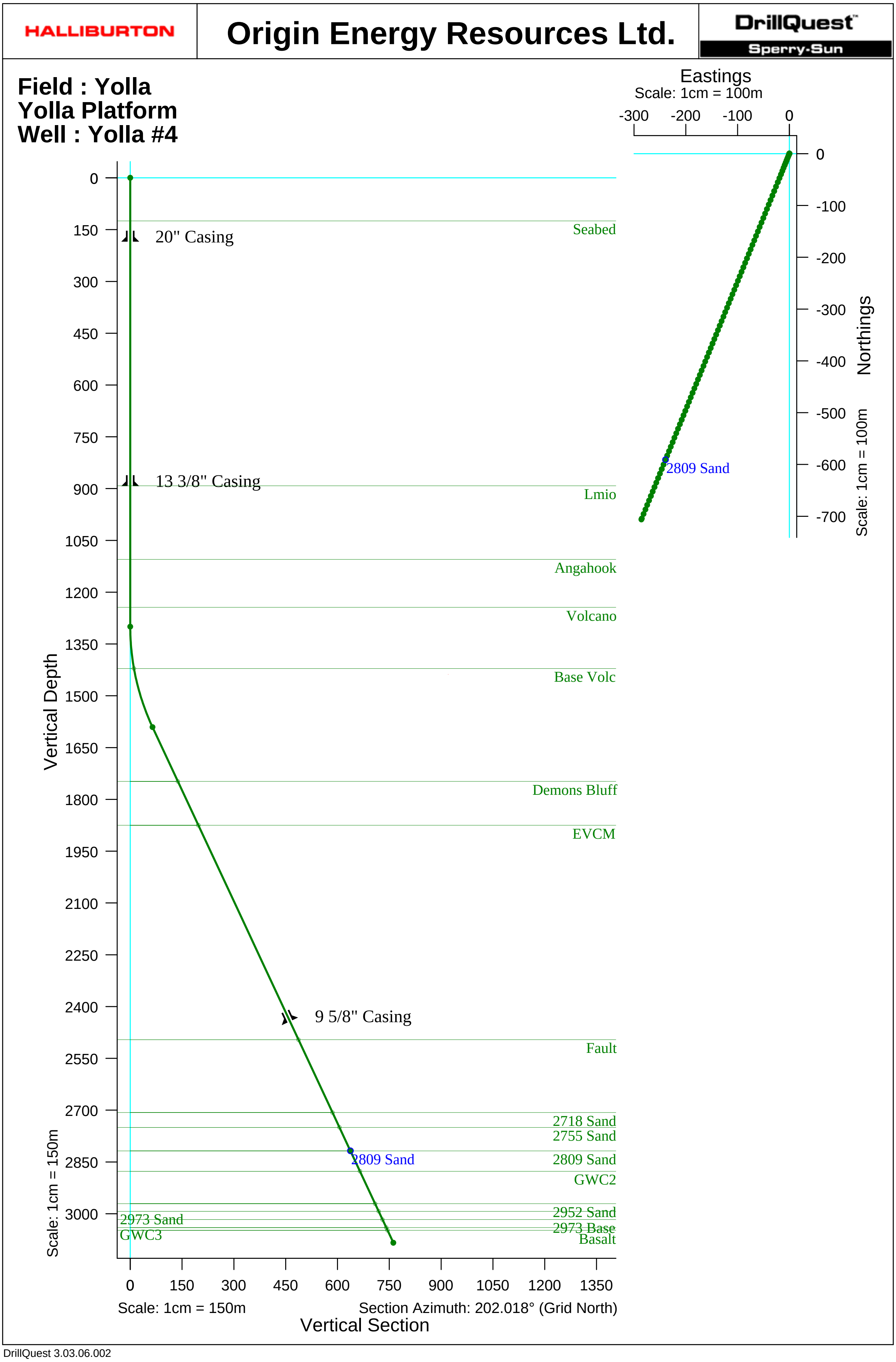
Formation Plane (Below Well Origin) Sub-Sea (m)	Dip Angle	Up-Dip Dirn.	Profile Measured Depth (m)	Vertical Depth (m)	Penetration Point Sub-Sea Depth (m)	Northings (m)	Eastings (m)	Formation Name
81.80	0.000	0.000	124.80	124.80	81.80	0.00 N	0.00 E	Seabed
849.00	0.000	0.000	892.00	892.00	849.00	0.00 N	0.00 E	Lmio
1062.00	0.000	0.000	1105.00	1105.00	1062.00	0.00 N	0.00 E	Angahook
1201.00	0.000	0.000	1244.00	1244.00	1201.00	0.00 N	0.00 E	Volcano
1378.00	0.000	0.000	1421.63	1421.00	1378.00	9.95 S	4.02 W	Base Volc
1705.00	0.000	0.000	1773.74	1748.00	1705.00	127.86 S	51.71 W	Demons Bluff
1832.00	0.000	0.000	1913.90	1875.00	1832.00	182.83 S	73.94 W	EVCM
2453.00	0.000	0.000	2599.25	2496.00	2453.00	451.63 S	182.64 W	Fault
2664.00	0.000	0.000	2832.12	2707.00	2664.00	542.95 S	219.57 W	2718 Sand
2707.00	0.000	0.000	2879.58	2750.00	2707.00	561.57 S	227.10 W	2755 Sand
2775.00	0.000	0.000	2954.62	2818.00	2775.00	591.00 S	239.00 W	2809 Sand
2834.00	0.000	0.000	3019.74	2877.00	2834.00	616.54 S	249.33 W	GWC2
2928.00	0.000	0.000	3123.48	2971.00	2928.00	657.22 S	265.78 W	2952 Sand
2950.00	0.000	0.000	3147.76	2993.00	2950.00	666.75 S	269.63 W	2973 Sand
2974.00	0.000	0.000	3174.24	3017.00	2974.00	677.14 S	273.83 W	2973 Base
2997.00	0.000	0.000	3199.63	3040.00	2997.00	687.09 S	277.86 W	GWC3
3005.00	0.000	0.000	3208.46	3048.00	3005.00	690.55 S	279.26 W	Basalt

Casing details

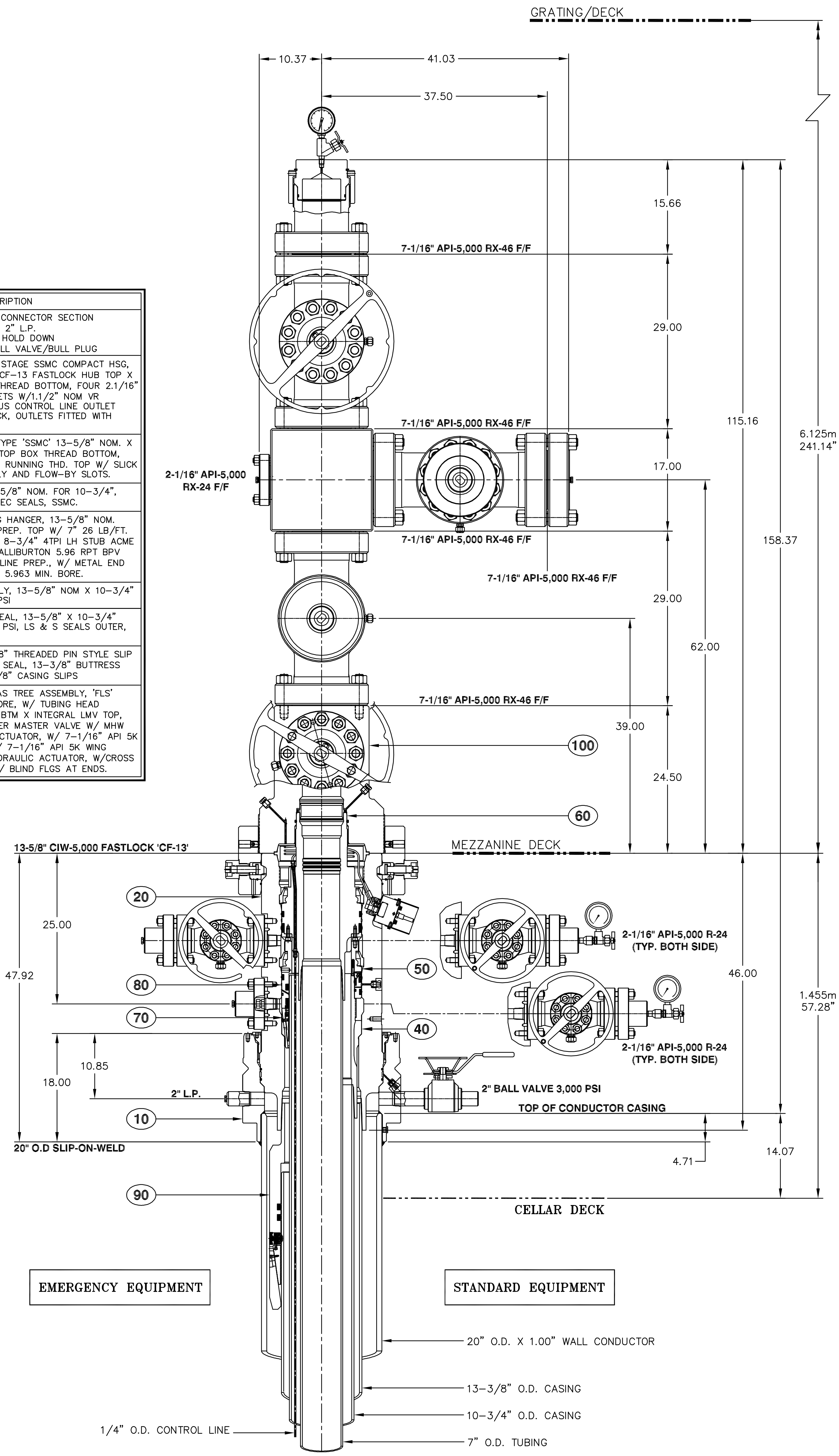
From Measured Depth (m)	From Vertical Depth (m)	To Measured Depth (m)	To Vertical Depth (m)	Casing Detail
<Surface>	<Surface>	185.00	185.00	20" Casing
<Surface>	<Surface>	893.00	893.00	13 3/8" Casing
<Surface>	<Surface>	2540.76	2443.00	9 5/8" Casing

Targets associated with this wellpath

Target Name	Target Entry Coordinates TVD (m)	Northings (m)	Eastings (m)	Target Shape	Target Type
2809 Sand	2818.00	591.00 S	239.00 W	Point	Current Target
Mean Sea Level/Global Coordinates:	2775.00	5588233.00 N	398671.00 E		
Geographical Coordinates:		39° 50' 59.5751" S	145° 48' 55.8813" E		


HALLIBURTON
Origin Energy Resources Ltd.
DrillQuest
Sperry-Sun
Field : Yolla
Yolla Platform
Well : Yolla #4
Eastings
Scale: 1cm = 100m
-300 -200 -100 0
0 -100 -200 -300 -400 -500 -600 -700
Northings
Scale: 1cm = 100m
2809 Sand
0 150 300 450 600 750 900 1050 1200 1350 1500 1650 1800 1950 2100 2250 2400 2550 2700 2850 3000
Vertical Depth
Scale: 1cm = 150m
20" Casing
13 3/8" Casing
9 5/8" Casing
Seabed
Lmio
Angahook
Volcano
Base Volc
Demons Bluff
EVCM
Fault
2718 Sand
2755 Sand
2809 Sand
GWC2
2952 Sand
2973 Base
Basalt
2973 Sand
GWC3
0 150 300 450 600 750 900 1050 1200 1350
Scale: 1cm = 150m
Section Azimuth: 202.018° (Grid North)
Vertical Section
DrillQuest 3.03.06.002

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.

01 REV

CAD PRODUCED DOCUMENT – NO MANUAL REVISIONS ALLOWED

TOLERANCE UNLESS OTHERWISE SPECIFIED: .X ± ~ ; .XX ± ~ ; .XXX ± ~ ; ANGLES ± ~ ; ~ AA ON ALL MACHINED SURFACES

SURFACE TREATMENT ~ ; MATERIAL & HEAT TREAT ~ ; SUPERSEDES

DO NOT SCALE

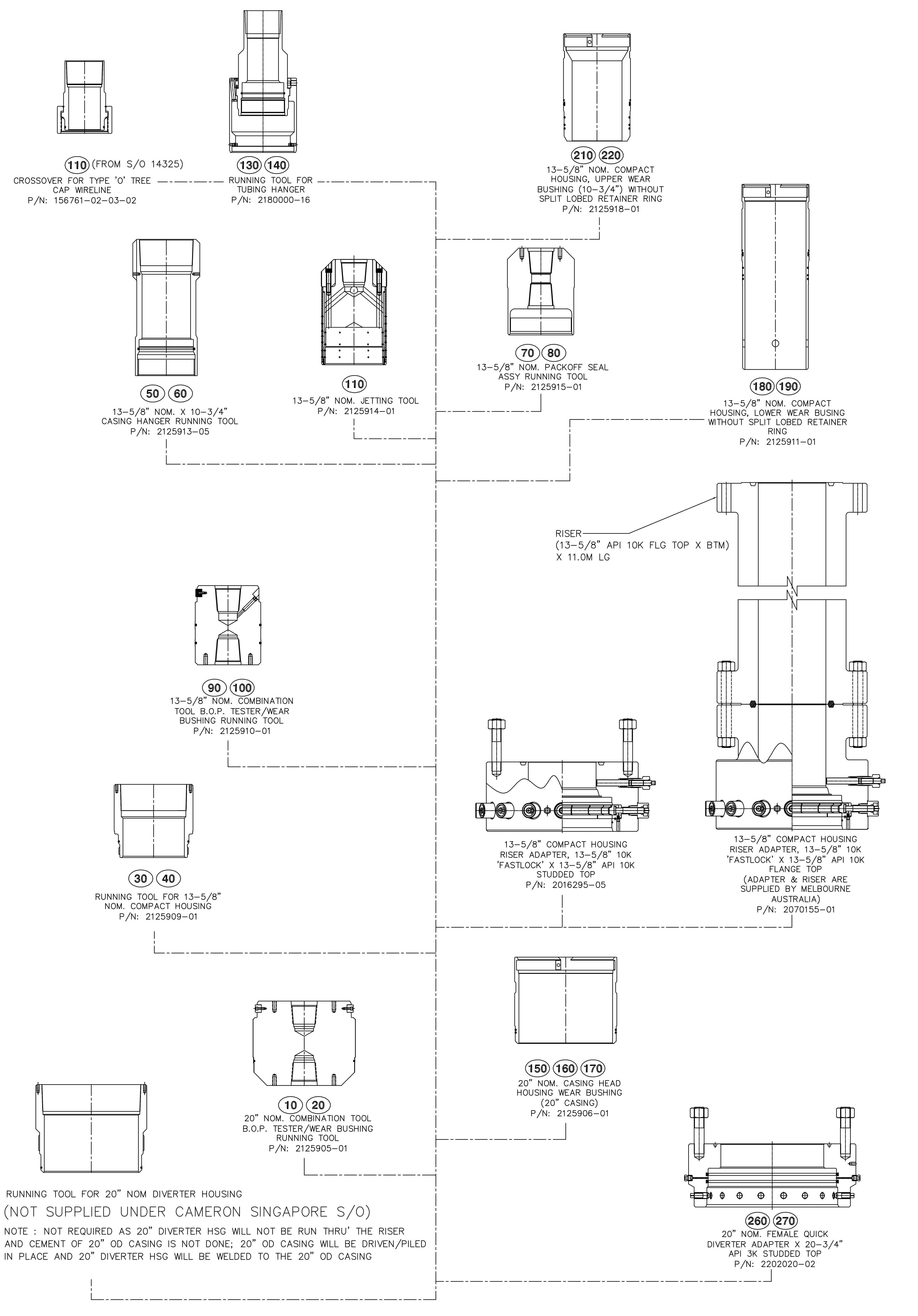
DRAWN BY	SAMSIAH	DATE 12 JAN '04
CHECKED	JOSHUA LIM	DATE 14 JAN '04
APPROVED	JOSHUA LIM	DATE 14 JAN '04

CAMERON — Cooper Cameron (Singapore) Pte Ltd. Subsidiary of Cooper Cameron Corp. 2 Gul Circle, Singapore 629560

SEE LEFT HAND CORNER

SHEET 1 OF 2 — SK–081893–01

~ 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: .X ± ~; .XX ± ~; .XXX ± ~; ANGLES ± ~°; ~ AA ON ALL MACHINED SURFACES

SURFACE TREATMENT ~

MATERIAL & HEAT TREAT ~

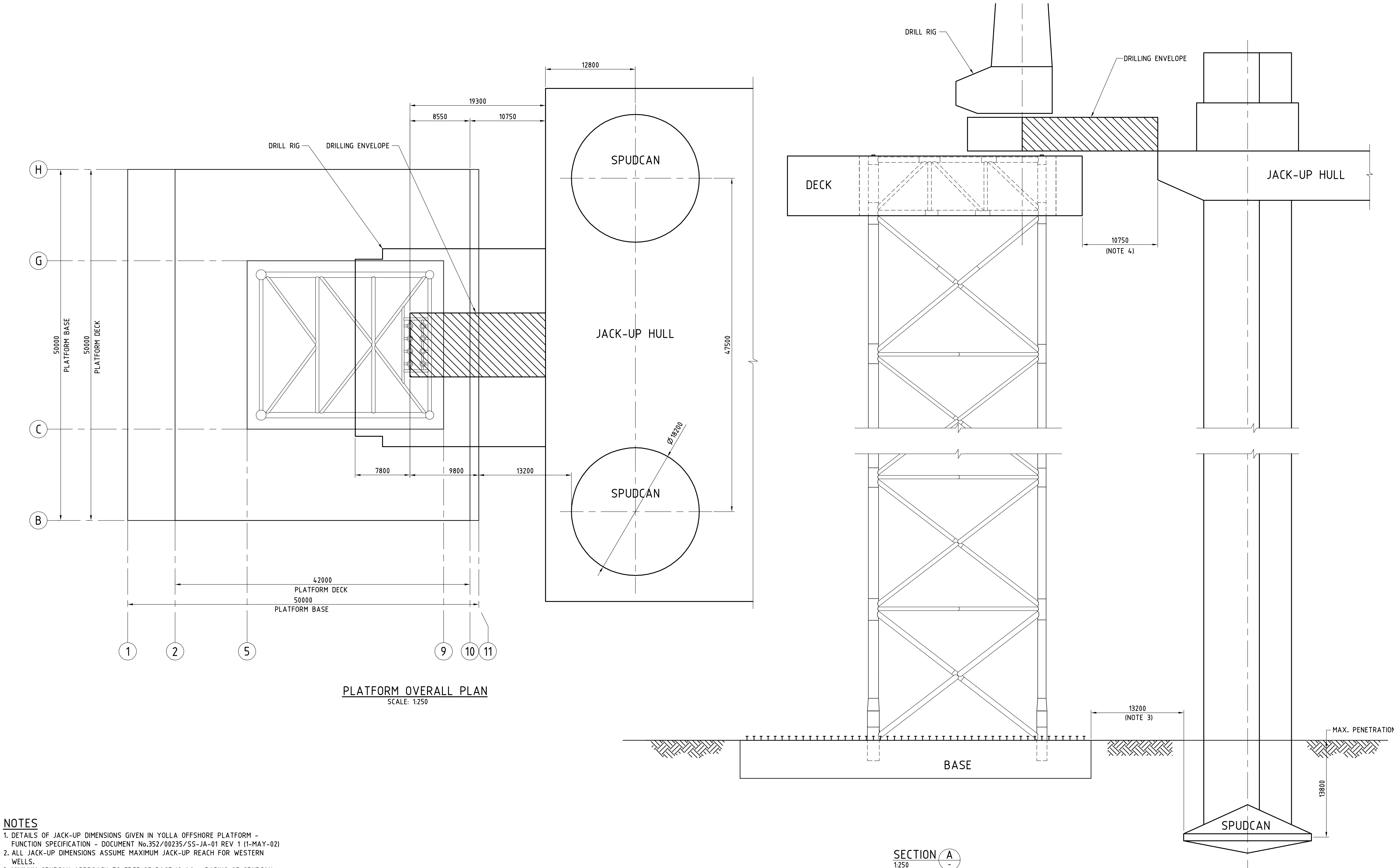
DO NOT SCALE

DRAWN BY	SAMSIAH	DATE 12 JAN '04
CHECKED	JOSHUA LIM	DATE 14 JAN '04
APPROVED	JOSHUA LIM	DATE 14 JAN '04
SUPERSEDES	DATE	INITIAL USE B/M ~

CAMERON — Cooper Cameron (Singapore) Pte Ltd. Subsidiary of Cooper Cameron Corp. 2 Gul Circle, Singapore 629560

SEE PAGE 1 OF 2

SHEET 2 OF 2 — SK-081893-01



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

May. 02. 2003 16:17:14 g:\PROJECTS\5333\C\DWG\A50\50A_0010.dgn