



COMMONWEALTH OF AUSTRALIA

Offshore Petroleum and Greenhouse Gas Storage Act 2006

Royal Commissions Act 1902

COMMISSION OF INQUIRY

MONTARA WELLHEAD PLATFORM UNCONTROLLED HYDROCARBON
RELEASE

DIRECTION NOT TO PUBLISH

I, DAVID BORTHWICK AO PSM, appointed pursuant to section 780A of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* to conduct a Commission of inquiry (the **Inquiry**) into the uncontrolled release of hydrocarbons at the Montara Wellhead Platform on 21 August 2009 and subsequent events, pursuant to 6D(3) of the *Royal Commissions Act 1902*, hereby direct that:

- 1) Subject to paragraph 2 of this direction, the following documents shall not be published other than in redacted form as annexed to this direction and marked 'A' and 'B' respectively, except to parties granted authorisation to appear before the Inquiry:
 - a) any copy of the email dated 8 March 2009 from Chris Wilson to various recipients entitled 'Montara Platform Wells Morning Update'; and
 - b) any copy of the document entitled Coogee Resources Drilling Supervisor Induction.
- 2) Paragraph 1 of this direction shall not preclude the Inquiry from relying upon referring to, quoting from or otherwise using the documents listed therein in the preparation and presentation of my report to the Minister for Resources and Energy.

Dated this 30th day of March 2010

A handwritten signature in blue ink, appearing to read 'David Borthwick'.

David Borthwick AO PSM
Commissioner

'A'

From: Sims, Colleen [Colleen.Sims@██████████]
Sent: Thursday, February 25, 2010 1:49 PM
To: Wilson, Chris
Subject: FW: Montara Platform Wells Morning Update

Colleen Sims
Project Secretary

PTTEP Australasia

colleen.sims@██████████

From: Wilson, Chris
Sent: Sunday, 8 March 2009 6:06 AM
To: (martinv@██████████); !All PTTEP AA; Andrew Rolands; Brad Shearer; Brett.Struck@██████████; Chalemkiat Tongtaow; Chris Klein; Clinton Duncan; Colin Lane; Craig and Lorelle Klumpp; Daltons Offshore; Dan Smith; dwnops@██████████; Dominic.Marozzi@██████████; Donald.Millar@██████████; fobranagain@██████████; Garrett Decock; Graham Bowles; H. Spoljaric (spoljaric@██████████); Iain Somerville; 'Jason French'; Jim Savage; Jose Orellana; Lindsay Wishart; Lorne Craigie; narisara@██████████; narongpols@██████████; nsexton@██████████; ntreasure@██████████; pattanapongt@██████████; Paul O'Shea; Peter Geste; petroleum operations nt gov; Ratchev, Ivan; Robert Hankinson; Rod Walton; Simon Johnson; Thompson, Joseph; Truscott Base Manager - CHC; tstops@██████████; Westatlas@██████████
Subject: Montara Platform Wells Morning Update

HSE

One Incident Reported – no injuries

Whilst attempting to free the jammed Casing Drive System (CDS) which would not release from the casing string, an air hoist was routed through a sheave block attached to a Samson post and connected to the CDS to assist in trying to work it free. While applying tension to the CDS the sheave block failed with the sheave section being flung into the air although still attached to the tigger line. On investigation it was noted that the SWL for the sheave block was .8t being used on an air hoist with the lifting capacity of 5t SWL. The decimal point on the SWL is difficult to see and it was thought this sheave arrangement was rated for 8T. All similar sheave arrangements on the rig have been taken out of service.

38 STOP Cards – Seadrill 28, PTTEPAA 3, 3rd party 7

Saturday 7th March

Montara H1 ST-1

Continued to run in the hole with 9 5/8" casing from 3676m to 3726m (average 14 joints/hr)
Encountered tight hole. Attempted to work through and started loosing ground. After work casing for 1 hour broke through obstruction and continued to run in the hole to 3754m

Attempted to remove the PS21 hydraulic slips – unable to remove same – 1 hour to troubleshoot
Made-up the MLS joint and ran in the hole to 3779m – unable to pass. MLS hanging-up in the wear bushing

Started to lay out casing – this is when the incident described above occurred.

Held Time Out for Safety meeting – inspected all other equipment involved in the incident – OK.
Laid out landing string joint and recovered the MLS – had wear bushing attached to the MLS and MLS collet was damaged

Removed wear bushing and laid out the MLS

Made-up back-up MLS joint, ran in the hole and landed out – finally!

Circulated the casing with mud
 Attempted to release the casing running tool from the casing – no go.
 Backed out the MLS and lifted the casing high enough above the rig floor to break a connection and attempt to remove the casing running tool from the joint.
 Made-up back-up pup joint and reconnected the MLS
 Rigged-up the cement head
 Cemented the 9 5/8" casing – plugs bumped and the casing was pressure tested to 4000psi – OK.
 When bleeding-off the pressure after testing the casing the float appeared to let go. Held pressure on the casing and waited on cement. Prepared to skid and serviced top drive whilst waiting on cement.
 Checked floats on casing – OK
 Released the 9 5/8" casing at the MLS and laid out the landing string
 Made-up pressure containing corrosion cap, ran in the hole and installed same
 Rigged-down diverter assembly

Sunday 8th March

Montara H1 ST-1
 Nippled down BOP's – Finished this section of Montara H1 ST-1

Montara H4
 Skidded the rig over the Montara H4 slot
 Nippled-up BOP's
 Currently pressure testing the BOP's

Batch Drilling Status

	Montara G1	Montara H1	Montara H4
26" Hole	Complete	Complete	Complete
20" Conductor	Complete	Complete	Complete
17 1/2" Hole	Complete	Complete	Complete
13 3/8" Casing	Complete	Complete	Complete
12 1/4" Hole	Complete	Complete	
9 5/8" Casing	Complete	Complete	

Workboats

Lady Gerda – On Location
 Lady Valisia – En route to the West Atlas – Arriving this morning

Weather

The weather remains good on the rig.

Comment / Forward Plan

The incident with the sheave assembly was an unfortunate one. The way the SWL was marked on the sheave made it look like 8T SWL when in fact it was 0.8T. It is also a similar size to higher rated sheaves. This will be investigated over the next few days.

It was good to get the casing cemented yesterday and off Montara H1.

We will be tripping in the hole with a drilling assembly this afternoon.

Have a great and safe day

Regards

Chris

Chris Wilson

Drilling Superintendent

Direct: [REDACTED]

Mobile: [REDACTED]

Email: [chris.wilson@\[REDACTED\]](mailto:chris.wilson@[REDACTED])

PTTEP Australasia

Ground Floor 53 Ord Street

West Perth WA 6005

Tel: [REDACTED]

Fax: [REDACTED]

'B'

COOGEE RESOURCES

DRILLING SUPERVISOR INDUCTION

MANUALS

All documents associated with a well are listed in the front of the drilling program. Prior to drilling the well, the list must be checked-off, signed and faxed/scanned and e-mailed back to Coogee Resources Perth (Attn: Chris Wilson). Most of the documents required for a well can be found on the Drilling Manuals and Procedures CD that is sent out at the beginning of the well.

Well Construction Management System

This comprises the following manuals

Well Construction Management Framework

The Well Construction Management Framework describes the Well Construction related fundamentals of the Coogee Management System Framework..

Construct, Service or Abandon Well Process Manual

The process manual outlines the processes to be followed whilst planning and conducting drilling and workover operations. It details the required inputs and outputs for a variety of tasks and provides links to required reference documents and company templates.

Well Construction Standards Manual

The standards manual describes the standards to which the company's operations shall be conducted. It also references the appropriate legislation to be adhered to when conducting drilling and completions operations.

Safety Case Bridging Document

The Safety Case Bridging Document bridges the Coogee Resources and Drilling Contractors Safety Management Systems. It also identifies interface issues and any new hazards not identified in the Vessel Safety Case. This document can be found in hard copy and also on the Drilling Program CD.

Environmental Management Plan

The Environmental Management Plan can also be found on the Drilling Program CD. The plan outlines a description of the environment and the responsibilities of all personnel involved in drilling operations.

Emergency Documentation

The Emergency documentation includes the Emergency Response Plan and the Oil Spill Contingency Plan. All of this documentation can be found on the drilling program CD.

Emergency Notification

Coogee Resources operates permits in commonwealth waters. The notification to NOPSA is therefore conducted by the OIM. The notification to Coogee Resources Drilling Superintendent or Well Construction Manager is through the Drilling Supervisor.

SAFETY

Safety Plan

The Coogee Resources Well Construction Department is currently developing a safety plan. The plan will have measurable tasks for various members of the Well Construction Department. The Drilling Supervisor, being at the forefront of the Coogee Resources operation will have a number of commitments. Although the plan is currently unpublished, a list of the commitments required of the Drilling Supervisor are listed below.

Safety Visibility

As Drilling Supervisors and Coogee Resources Representatives it is imperative that we are visible in our safety efforts. We can't just talk the talk, we must walk the walk also. This means being present at major (and minor) JSA's, attending pre-tour meetings, making sure 3rd party people attend pre-tour meetings and attending and presenting at safety meetings.

A Drilling Supervisor must also be visible in shutting the job down if it is not being performed safely and encouraging others to stop jobs.

A meet and greet is another good way of spreading the safety message from the moment the crew arrive on the rig. It can be onerous to meet every helicopter, however it does get the attention of the crew and visitors to the rig.

Audits

Each hitch Drilling Supervisors are required to perform an audit. No formal audit schedule is in place however it is advised to audit high risk, high consequence activities. All audits are to be forwarded to the Drilling Superintendent. As you are usually auditing the drilling contractors equipment or procedures, it is a courtesy to review the audit with the OIM and send them a copy of it.

Audits must be followed-up or else they do not become useful. Report all audit follow-up to the Drilling Safety Advisor.

Stop Cards

Stop card participation by Drilling Supervisors is mandatory. The drilling contractor reports all Stop card statistics to the Well Construction Manager. It is not hard to do one Stop card per day.

OPERATIONS

Shore Base

Coogee Resources shorebase for Timor Sea operations is in Darwin using Shorebase's Tivendale Road Supply Base. The base has 1 Coogee Resources person (Natalie Scarffe) operating it. The

wharf used for loadout is the East Arm Wharf. Wharf bookings are handled by the Coogee Resources Shorebase Logistics Coordinator. The East Arm Wharf is a public wharf and competition for space can be tight so as much advanced planning as possible will help secure space. As a rule, we aim to keep bookings to daylight hours only unless in an emergency due to the limited wharf labor available.

Boats

For the Wilcraft Coogee Resources will be using the two vessels on hire to AGR (Peak) for the Wilcraft Program. [REDACTED]

[REDACTED] This vessel may be available on an adhoc basis. It is recommended to give as much notice as possible to secure a slot on this vessel.

Planning boat movements has some obvious advantages. A six day lookahead will be used (Same as is currently being used on Wilcraft) and this has with it a boat plan.

Drilling Learning Forum

The Coogee Well Construction Department has a learning forum on the internet

www.avonova.com.au/default.htm

This forum is used to communicate ideas, relay lessons learnt (good and bad) and provide hints and tips on unusual operations. The forum is also used to provide feedback to users on their ideas or comment their concerns. The forum has the ability to accept attachments (keep the size to a minimum though)

If approaching an aspect of the operation you are not familiar with, or using some equipment you have not seen before, check the forum to see if anyone has used it before and provided some hints and tips.

EQUIPMENT

Bill of Materials

Equipment to be used on a well is listed in a Bill Of Materials (BOM). The BOM is generated in Coogee Resources logistics software called DIPS. Each item in DIPS has a model number – this includes third party and drilling contractor equipment.

Prior to each well a BOM is generated. It is highly recommended that the Drilling Supervisor review the BOM as soon as it becomes available to ensure that all equipment is accounted for.

Manifests

The DIPS software is also used to generate manifests to and from the rig. The location of equipment can also be tracked in DIPS (ie Perth, Darwin, Boat or Rig)

ROUTINE

Daily

Morning report to be submitted (via e-mail) together with appropriate supporting material by 06:30hrs (Perth Time). Include a brief summary of what is actually happening when sending in the report.

+/-07:30hrs – Morning call to the Drilling Superintendent

16:00hrs – Afternoon call to the Drilling Superintendent

All Day – Maintain an electronic safety diary (see below).

Drilling Supervisors are to look after critical business and not shut down operations to call town unless for advise.

Weekly

For each week of your hitch you SHOULD keep a safety diary. This is an electronic record of all discussions on safety that you have had with personnel on the rig. This diary needs to be printed out and filed at the end of the week. It should also be sent to the Drilling Superintendent. For more details on this see below in Record Keeping.

Per Hitch

Senior Drilling Supervisor to sign all IADC reports (if all timing has been agreed – otherwise leave for town to sort out).

Each Supervisor (Day, Night and Logistics) is to complete a hitch audit as described above in Safety.

SPREADSHEETS

Daily Drilling Report

The Daily Drilling Report is in MS Excel and consists of 3 tabs – General Well Data, Time Breakdown and Personnel, Bulks & Weather.

Data in red is calculated so do not overwrite those cells.

In the time breakdown section, type all of the activity for one time on one line. The cells can be increased in size to accommodate a lot of text. By typing it into one cell, it makes it easy to create an overall operations list at the end of the well. The codes are listed to the right of the report.

7 Day Lookahead

Throughout the drilling of a well, it is the responsibility of the Drilling Supervisor to maintain the 6 day lookahead that predicts the time that operations are going to commence. This timeline drives the boat and people plan and during cyclone season can drive the cyclone critical path spreadsheet.

Rig Positioning QC

Coogee Resources does not use Rig Positioning QC personnel. The onus is on the Drilling Supervisor to ensure the rig is positioned correctly. This is done by using a hand held GPS and the rig positioning QC spreadsheet. This process is also covered by Coogee Resources rig positioning QC manual. When the rig is positioned, the handheld GPS is taken to the rig floor and placed over

well centre. If satellite signals are possible at the well centre, take a reading from the top of the V door (need to take the distance from well centre to the V door into account). A reading is taken (take a few readings as the accuracy changes with the number of satellites in use) and then placed into the rig positioning QC spreadsheet. The surveyors coordinates are then placed into the spreadsheet. If the difference is less than 5, the rig position can be accepted. If it is more than 5, the issue needs to be resolved with the surveyor.

Blank Casing Tally

The blank casing tally sheet is an MS Excel spreadsheet with several worksheets. On the first sheet change the well name and casing size. These two pieces of information are then translated to all of the other sheets. The amount of casing dictates the number of sheets needed – one sheet for 100 joints of casing (ie. Sheet 1 is for joints 1 to 100, sheet 2 is for joints 101 to 200etc.). The final sheet is used for all of the casing jewelry (shoe, float and pup joints etc.). The casing connections should be checked and confirmed when the casing arrives on the rig.

When casing is being offloaded, print out and give the blank tally sheet to the dogman.

NOTE: Casing is measured without the threads, ie Use a jig that is set on the tape so we measure from the top of the threads or diamond to the end of the box. The Drilling Supervisor is to check the jig prior to measuring casing and perform random checks during the tallying of casing.

Casing Tally / Report

Before doing the casing tally, measure the ID of ~10% of the number of joints. This will ensure the displacement calculation is more accurate than using the book value.

The first tab to fill-in is the Control tab. This has general well, casing and heighting information.

Under the initial tally tab, list all of the jewelry in the grey area and give everything an “index” number. For jewelry the index number must be a decimal number less than 1 and not 0.5. This number is used to create the tally. The MLS or hang-off point **MUST** have an index number of 0.5. Jewelry includes float, collar, intermediate joint, pup joints and cross-overs

Below the jewelry is the list of pipe. List the pipe by joint number from 1. Give the pipe an index number that is a whole number (1, 2, 3...)

After completing the initial tally, move to the Drilling Tally tab. Place the index number for the shoe track in the index number column and the items should appear in the tally. This is the drillers tally so it is the run in the hole tally. Enter the first 3 index numbers from the casing to be run and use the MS Excel “drag” function to fill in the remaining index numbers.

Once you include the MLS (in particular the hang-off point with 0.5 index number), the shoe depth is calculated (sums the length of all of the joints below the hang-off point). The stick-up is calculated from the difference between the depth of the hang-off point and the sum of all the casing or running string above the hang-off point.

The “As Run” sheet is generated automatically when the drillers tally is completed.

After running the casing, the casing report is to be completed. The spreadsheet is to be forwarded to the Drilling Superintendent the day after the casing is run.

Cementing

The cementing spreadsheet has a detailed instructions page

The spreadsheet is made-up of 6 tabs including the instructions tab.

The cement calcs tab is used to calculate the volume of cement required. The pumping schedule tab can be printed and filled in during the cement job. After the job, type in all of the data into the pumping schedule tab – this feeds the cementing report. The Casing Test & FIT tab allows you to enter the casing pressure test information (gives you a trend line for the FIT) and also the FIT values. Once you shut the pumps down record the pressure every minute for 5 minutes.

Once all of the data is entered into each tab *most* of the data for the cement report is carried over. All data that is red is data that is carried over. Anything black needs to be entered. The text at the bottom of the report needs to be entered.

The metric cement report is automatically generated once the imperial report is complete with the exception of the text at the bottom of the report. The text needs to be added with all references to volume and pressure in metric.

Estimate TOC

At the end of circulating and after installing the cement head circulate with the rig pumps at 50SPM and record the pressure. Towards the end of the displacement slow the pumps down to 50SPM and record the final circulating pressure. Enter this data into the Estimated TOC spreadsheet. Include the height of the tail cement including the excess cement and the mud weight in the hole. The spreadsheet will calculate the estimated TOC.

Include the estimated TOC in the DDR after each cement job.

P&A Cement Calculations

NOTE: This report works well for a single hole size – ie it is not accurate when calculating the volume or height of cement across a liner casing, casing open hole, or casing cut-off by casing interface. It is recommended that all cement calculations be performed by hand and verified against the cement calculations performed by the cementing hand.

Enter the required data in the control sheet.

For each plug enter the required data that is **blue**. The cement volume and chase volume is calculated for each plug – remember to verify this with hand calculations.

All of the data entered into the cement plug calculation sheets is then transferred to the P&A plug report. Enter operations and times for each plug. The report is complete. Send the report to the Drilling Superintendent at the end of the well.

Environmental Report

The environmental report is largely completed by the Mud Engineer. At the end of the well the Mud Engineer submits the report to the Materials and Logistics Coordinator (MLC). The MLC will enter in all of the data on rubbish transfers, dope usage, fuel transfers and mega fauna sightings etc.). This report is then submitted to the Drilling Superintendent. It is the responsibility of the Drilling Supervisor to ensure that this report is completed in a timely manner and submitted.

When batch drilling this report will be submitted monthly.

MORNING REPORTS & DATA

Morning reports are made-up of several reports. All of these reports must be e-mailed to the office by 06:30hrs (Perth time).

File Naming Standards

The file naming convention for all reports sent to the office is;

YY-MM-DD Wellname Report Type

This allows reports to appear in order when stored on the server.

E-Mail Subject Lines

E-mails to and from the rig that relate to a well are to have the subject line completed as follows;

Well Name Rig Name Description of content (eg. Sea Eagle-1 Wilcraft Morning Reports). This allows for archive e-mails to be searched for via a database. Do not use any punctuation.

E-mails relating to an incident or accident are to have the subject line completed as follows;

UPE Incident Classification (LTI, MT, FA, NM, EI) Description of incident Rig Name DS' surname (eg. UPE LTI Broken Arm falling from BOP Wilcraft Wilson)

Units

The units reported by Coogee Resources are metric.

MORNING E-MAILS

The morning e-mail to the office needs to be sent by 06:30hrs and should include the following;

- DDR (including STOP card numbers etc)
- POB
- Mudlogging Morning Report
- Bulk Report
- Directional Report
- Mud Report
- BHA Sheets

It is important to include a brief narrative about what is actually happening on the well.

PLANNING

Forward Plans / Standing Instructions For Drillers

It is the responsibility of the Drilling Supervisor to write and issue a forward plan for an operation. The forward plans are to include detailed instructions, hints, tips and things to watch out for. They should also include safety reminders, such as JSA's etc. It is also imperative that either the OIM or Toolpusher have read the forward plan and agree with the plan of attack.

Once the forward plan is agreed, each copy should be signed by the Drilling Supervisor and placed on the office door for collection by crew members and 3rd party personnel.

People Plan / Heli Schedule

The Radio Operator will maintain a Helicopter Schedule. A copy is e-mailed daily to the Drilling Supervisor. It is the responsibility of the Drilling Supervisor to update the heli-schedule and pass it on to the Radio Operator so they can make the necessary helicopter and fixed wing bookings and issue travel plans to all personnel coming to the rig. The Heli schedule is also included as part of the 6 day lookahead.

Boat Plan

A boat plan is generated to show the movement of each boat for the next 6 days. The boat plan includes a brief description of the daily operation for the next 6 days so people can see the link between a boat movement and an operation.

DAILY UPDATES


The Drilling Superintendent will issue a company wide (and also to 3rd party contractors) update of drilling activities.

WEATHER

Forecasts

Weather forecasting is performed by the Bureau of Meteorology twice per day. Weather reports are accessed via the internet on;

<http://ssu1.bom.gov.au/pub/index.html>



Cyclones

During cyclones, extra reports are issued by the BoM SSU. The information from these reports is entered into a Cyclone Critical Path spreadsheet (Premium Drilling and Seadrill have these). When entering weather data into this spreadsheet, be use to the confidence factor (ie if the confidence on position of the storm is 45nM, then assume the storm is 45nM closer to the rigs location).

Use the data from the timeline to work out how long it will take to undertake operations required to secure the rig. Every time the timeline is updated, it should be printed out and filed. It should also be discussed with the OIM and the Drilling Superintendent.

It is VERY important to use the Safety Diary when planning a cyclone evacuation. NOPSA pays close attention to cyclone evacs and these can (and will) be used as evidence (usually in your defence).

With the OIM determine the evacuation list of priorities and group these into 15. Check with the helicopter contractor on what they feel is a suitable number. It may be as little as 10 if the weather at Truscott is bad.

Whilst it is ideal for Drilling Supervisor to suggest an evacuation time, it is ultimately up to the Helicopter contractor as they know the weather limitations of their aircraft and the crew flying hour limitations.

Coogee Resources is fortunate enough to have access to a CHC helicopter from the Production side of Operations. Once one of the FPSO's has been evacuated it is likely that Well Construction will have access to this helo to assist in an evacuation. [REDACTED]

[REDACTED] **NOTE:** All critical path calculations should be based on one helo only.

During cyclone season the rig should have 10,000 litres of heli fuel in the field, either on the rig or on a work boat. It is likely most of the fuel on the rig will be used during the evacuation and the rig will need more helifuel for the man-up operations.

The Timor sea is a breeding ground for cyclones, however the most destructive cyclones for the Timor sea come from the East of Darwin.

For Cyclone Evacuations the Drilling Supervisor must take the Coogee Resources Satellite Telephone, GSM Phone and associated chargers;

- [REDACTED]
- [REDACTED]

Tides

The Tide charts for all drilling in the Montara area have been sourced from WNI and are supplied on the Drilling Program CD..

RECORD KEEPING

Record keeping is imperative. All Drilling Supervisors must keep an electronic safety diary. This diary must show all safety related conversations that took place and safety related decisions that were made. The diary must be printed and filed and an electronic copy sent to the Drilling Superintendent.

The safety diary would be used if an incident occurred to see if any decisions that were made resulted in the incident. It will also be used to see if personnel were warned of potential hazard or of if it was discussed etc.

COOGEE RESOURCES EQUIPMENT

Drilling Shack (House of Plenty)

Coogee Resources has rented a purpose built tool shed for all Coogee drilling equipment, such as X/O's, gaskets, nozzles etc. Keep the shed tidy.

Hi-Force Torque Wrench

Coogee Resources has purchased a Hi-Force hydraulic torque wrench to be used in addition to the drilling contractors torque wrench for nipping-up the BOP's. Please look after this equipment and make sure ALL of it is returned into its container and then into the Coogee Drilling Shack.

NOTE: If the house of plenty is kept neat, with the equipment inside organized, items can be found quickly. It also aids in stock taking – so you can see when you are running low.

Rental Equipment

A register of the rental equipment on board and bits is maintained by the Materials and Logistics Coordinator on the rig. This register includes the following;

- Bits
- Jars
- Subs
- Casing Cutter Blades

Computer System

The computer system supplied by Coogee Resources consists of the following;

- "Bandwidth Accelerator" which is essentially a server that compresses files and sends them to town
- 3 x PC's (Drilling Supervisor, Logistics & Drilling Engineer – which could be used by the Night Drilling Supervisor)
- 2 x printers (one doubles as a photo copier)
- Digital Camera
- Various cables and power adaptors

The e-mail system will only work when the connection to the internet is working (ie only when comms are working). The inbox size (including sent and deleted items) is 90MB and it does not take long to fill-up. A personal folder should be set-up and mail moved to the personal folder as you deem required to keep the size of you "inbox" down.

Each person will have their own log-in and everyone should have filled-in a Coogee Resources IT form to gain access.

E-mail addresses will be;

- Drilling Supervisor – [REDACTED]
- Drilling Engineer – [REDACTED]
- Logistics – [REDACTED]
- Geologist – [REDACTED]

DRILLING SUPERVISOR INDUCTION

DRILLING OPERATIONS INDUCTION

PRIOR TO MOVING OFF LOCATION

Personnel Required

- MO47 Crew – This is a marine crew that is required by law to be on a vessel under tow. For a tow of less than 24 hours a crew of 3 is required, which includes a tow master. For a tow of more than 24 hours, a crew of 6 is required, which includes the tow master and a mate.
- Rig positioning surveyors (usually 2)
- ROV crew – must arrive in time to perform a seabed survey prior to the rig departing
- Rig Superintendent or Rig Manager may come out for the move.

Jobs to do

- Hold a rig move meeting as stated in the drilling program
- Check the weather forecast for the tow
- Ensure the weather for the new location is posted on the internet
- Radio Operator to issue rig move notification faxes
- Review drilling program for any special rig move requirements
- Review the Bill of Materials (BOM) for spud gear and select what needs to be on the rig for the tow.
- Notify the Barge Captain of spud gear weights and sizes and also the weight and size of any gear to be recovered from the current well.
- Perform a rough calculation of bulk gel, cement and water required to spud and ensure the rig can move with that volume of bulk on board – if you can load it before the move.
- Obtain tide tables for the new location.
- Check coordinates for the new location
- Complete the “Manuals” checklist in the front of the drilling program

Things to avoid

- Don't surprise the rig with an unexpected shipment of gear just prior to the rig move. This can delay departure and cause a lot of headaches.

Hints and Tips

- If the rig can move with pipe in the derrick, sacrifice some drillpipe for collars. It takes longer to make-up collars than drillpipe and there is a good chance you will be able to spud quicker.

If moving to a Platform

- Have anchors set at platform a few days prior to departure from current location if anchors are required
- Read any Simops manuals issued prior to the rig move
- Notify production facility of intended departure time from current location and anticipated arrival time at soft pin location.
- Ensure production has been shut down – if required.
- Obtain permission to move within 500m of platform during the move
- Obtain necessary well handover documents from Production Supervisor

DURING RIG MOVE

- Continuously monitor the tow speed and how the rig is handling the weather

- Make necessary notifications if moving through a field area, towards a platform or over a pipeline
- Prepare forward plan for spud and for the surface hole section (this usually comes around quick so good to be prepared)
- Inspect casing and ensure you have all required X/O's. Ensure the MLS is in the correct place and no junk is in the shoe or float joints
- Inspect remainder of spud loadout
- Have the casing measured and prepare the casing tally
- Check the make-up torque of the casing - **Careful, there are two types of Swift casing and they have different torques.**
- Check the ID of the casing connections against the MLS.
- Check the O rings on the casing if it has any. Note any that are damaged but do not replace them until the casing is run in case they can get damaged when being handled.
- Ensure the TDS is serviced during the rig move
- Slip and cut drill line before arriving on location
- Check on hours for the washpipe and change if required.
- Check strainers in the mud pumps and clean as required
- Check / change fluid ends or valve seats as required.
- Make sure you have as much fuel as possible.
- Ensure pot water is topped up on the 19k kips single pre load. (14hrs) open water preloads.

FINAL RIG POSITIONING

- The North West Shelf / Timor Sea is renowned for having a hard bottom. It is not unusual to only achieve 6' of leg penetration.

Open Water

- Once within 1km of location, monitor the rig move onto location from the control room
- The rig speed (K-Fels Mod V Class B) needs to be less than 1 knot to pin.
- If the rig is pinned within the target tolerance use portable GPS to verify location
- Use the QC spreadsheet to accept location
- Once the location is accepted, notify the Barge Captain and the OIM.
- DO NOT let boats go until the Rack Phase Differential's have been checked
- Once the RPD's are all OK, the boats may be released and pre-loading can commence.

Platform

- When moving onto a platform, the surveyors re-locate to the stern of the rig. The move is controlled from there.
- The surveyors screen should have a picture of the platform, the rig and the texas deck. The rig should be able to be positioned such that the texas deck can be lowered without hitting the platform.
- If the rig has been to that platform before, the existing spud can locations should also be shown on the survey screen.
- The survey contractor has laser measuring devices. These are used to verify the distance from the stern of the rig to platform caissons.
- When approaching the platform the speed needs to be less than 0.6 knots
- Once on location, verify that the rig has acceptable hookload capability with a known setback weight for the skid out and across that is required.
- DO NOT let boats go until the RPD's have been checked
- Once the RPD's are all OK, the boats may be released and pre-loading can commence.

PRELOADING

- Continuously monitor the pre-loading operation to ensure we are not suffering any delays such as;
 - Deepwells not being hook-up efficiently
 - Waiting on tides – Review with Barge Engineer plan for pre-loading and chasing tides
- Issue the forward plan for spudding the well to the crew (~10 copies)

DRILLING SUPERVISOR INDUCTION

DRILLING OPERATIONS INDUCTION

PRIOR TO MOVING OFF LOCATION

Personnel Required

- MO47 Crew – This is a marine crew that is required by law to be on a vessel under tow. For a tow of less than 24 hours a crew of 3 is required, which includes a tow master. For a tow of more than 24 hours, a crew of 6 is required, which includes the tow master and a mate.
- Rig positioning surveyors (usually 2)
- ROV crew – must arrive in time to perform a seabed survey prior to the rig departing
- Rig Superintendent or Rig Manager may come out for the move.

Jobs to do

- Hold a rig move meeting as stated in the drilling program
- Check the weather forecast for the tow
- Ensure the weather for the new location is posted on the internet
- Radio Operator to issue rig move notification faxes
- Review drilling program for any special rig move requirements
- Review the Bill of Materials (BOM) for spud gear and select what needs to be on the rig for the tow.
- Notify the Barge Captain of spud gear weights and sizes and also the weight and size of any gear to be recovered from the current well.
- Perform a rough calculation of bulk gel, cement and water required to spud and ensure the rig can move with that volume of bulk on board – if you can load it before the move.
- Obtain tide tables for the new location.
- Check coordinates for the new location
- Complete the “Manuals” checklist in the front of the drilling program

Things to avoid

- Don't surprise the rig with an unexpected shipment of gear just prior to the rig move. This can delay departure and cause a lot of headaches.

Hints and Tips

- If the rig can move with pipe in the derrick, sacrifice some drillpipe for collars. It takes longer to make-up collars than drillpipe and there is a good chance you will be able to spud quicker.

If moving to a Platform

- Have anchors set at platform a few days prior to departure from current location if anchors are required
- Read any Simops manuals issued prior to the rig move
- Notify production facility of intended departure time from current location and anticipated arrival time at soft pin location.
- Ensure production has been shut down – if required.
- Obtain permission to move within 500m of platform during the move
- Obtain necessary well handover documents from Production Supervisor

DURING RIG MOVE

- Continuously monitor the tow speed and how the rig is handling the weather

- Make necessary notifications if moving through a field area, towards a platform or over a pipeline
- Prepare forward plan for spud and for the surface hole section (this usually comes around quick so good to be prepared)
- Inspect casing and ensure you have all required X/O's. Ensure the MLS is in the correct place and no junk is in the shoe or float joints
- Inspect remainder of spud loadout
- Have the casing measured and prepare the casing tally
- Check the make-up torque of the casing - **Careful, there are two types of Swift casing and they have different torques.**
- Check the ID of the casing connections against the MLS.
- Check the O rings on the casing if it has any. Note any that are damaged but do not replace them until the casing is run in case they can get damaged when being handled.
- Ensure the TDS is serviced during the rig move
- Slip and cut drill line before arriving on location
- Check on hours for the washpipe and change if required.
- Check strainers in the mud pumps and clean as required
- Check / change fluid ends or valve seats as required.
- Make sure you have as much fuel as possible.
- Ensure pot water is topped up on the 19k kips single pre load. (14hrs) open water preloads.

FINAL RIG POSITIONING

- The North West Shelf / Timor Sea is renowned for having a hard bottom. It is not unusual to only achieve 6' of leg penetration.

Open Water

- Once within 1km of location, monitor the rig move onto location from the control room
- The rig speed (K-Fels Mod V Class B) needs to be less than 1 knot to pin.
- If the rig is pinned within the target tolerance use portable GPS to verify location
- Use the QC spreadsheet to accept location
- Once the location is accepted, notify the Barge Captain and the OIM.
- DO NOT let boats go until the Rack Phase Differential's have been checked
- Once the RPD's are all OK, the boats may be released and pre-loading can commence.

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PRELOADING

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JACK-UP AND SKID OUT

- On some rigs it is quicker and easier to lower the texas deck and install stairs and tensioner before skidding out using the aft crane. It is often possible to achieve this when dumping the stern pre-load.

SPUDDING

- Make-up any wellhead running tools or Braden Head joints prior to spud.
- Paint the bit white so the ROV can see it.
- The tensioner bushing should be left in for drilling to keep the string from swinging out too far. They need to be tied together with a sling.
- The ROV can watch the tag but can't be in the water for drilling operations. It is too small.
- Once tagged, rack chocks can be installed. On some wells it may be best to wait until the surface casing has landed.
- Check for verticality from the RT
- The surface hole is usually very hard.
- Issue casing tally
- Perform cement calculations
- If performing a stinger cement job inspect the stinger – make sure seals are OK and make sure a drillpipe centralizer is available. Space-out stinger string to only allow stabbing-in once.
- Be sure to have sufficient cement stinger to perform an annulus top-up job if required.
- Finalize the well schematic with seabed tag depth

Hints and Tips

- If drilling in shallow water, install a X/O and a drillpipe pup joint on top of each stand of the BHA. This allows you to spud with collars above the rotary table if required.

RUNNING SURFACE CASING / CONDUCTOR

- Attend the JSA
- Lock tensioner open 100mm
- Inspect the shoe joint for junk when it comes to the floor
- Inspect the O ring if it has one and replace as required.
- Count casing left on deck when making-up running tool / braden head joint

SURFACE CASING / CONDUCTOR TYPES

Lynx

- A snap ring style casing. The snap ring is expanding by screwing in wind-in bolts. Start on the opposite side to the opening on the snap ring.
- Line-up the anti-rotation lugs
- Lower joint of casing (or running tool) and release bolts
- Check that the snap ring is fully engaged by looking
- Run around the snap ring with a sledge hammer
- Pick-up casing and make sure it holds before removing slips

Leopard

- Less than one turn to make-up
- Make-up torque varied from 26000 to 45000ftlbs. Check specifications of threads sent to the rig.
- Check the ID of the Leopard connection and make sure the MLS for the next hole section will fit through.

Swift

- Two types of Swift exist – DW and HE, each has a different make-up torque, so be sure you know which one you are running
- Has an O ring seal

Big Omega

- Two turns to make-up
- Low make-up torque (9500 to 16000ftlbs depending on the weight and grade)

RL4S

- Quarter turn to make-up
- Make-up torque 25000ftlbs
- **CAUTION – Looks like a Swift Connection**
- Has 11 threads and anti rotation lugs

RL4C

- Quarter turn to make-up
- Make-up torque 25000ftlbs
- **CAUTION – Looks like an RL4C connection, only it has 9 threads and no anti rotation lugs**

CEMENTING CASING

- Space out cement stinger to avoid having to sting into the shoe more than once
- Float on a Rope**
 - When casing is landed fill with seawater – it will drain out of the shoe and settle at sea level
 - Sting into the shoe (only sting in once otherwise the seals may get damaged)
 - Lower a ½ full bottle of water on a light rope so it floats on the water inside the casing
 - Tie a knot in the rope so the level can be monitored.
 - Once pumping commences, if the rope goes slack, the seal in the stinger is leaking
 - Once the cement job is complete, bleed-off and check the float is holding. Sting out of the shoe and monitor if the float on a rope rises
 - If the float rises more than 3ft, sting back into the shoe and hold some pressure on the cement till it sets
 - If the float does not rise – the float is holding

SURFACE HOLE

Personnel Required

- MWD and directional driller if using MWD and drilling a directional hole.
- Mud Engineer
- Casing crew towards the end of the hole section

Jobs to do

- Install / engage rack chocks
- Prepare casing and cementing reports for the conductor
- Check bulks and make sure sufficient mud (Gel) and drillwater on board
- Make sure sufficient cement on board
- Prepare casing tally to determine section TD
- Count Casing
- Prepare cement calculations
- Calliper the ID of 10% of the casing
- Check the BOM against what equipment is on board for the hole section and casing run
- Check wellhead manual for installation procedure
- Coordinate with the AD to ensure all wellhead gear is prepared ready to go

- Install the drive lock adaptor spool to the wellhead
- Lower wellhead to the texas deck
- Prepare boat plan for picking-up MWD tools for next hole section and returning the ones in the hole
- Make sure fishing tools exist for any exotic tools run in the hole.
- Witness loading of cement plugs into the cement head
- Stay on the rig floor whilst pulling out of the hole

Things to avoid

- Don't use Guar to spot around the BHA on a connection. If you have sufficient Gel and drillwater, just use PHG sweeps and keep the Guar for emergencies. Guar should only be used for mid stand sweeps.

Hints and Tips

- If drilling the Bare Sands consider the following
 - Use large sweeps mid stand and on connection
 - As soon as losses occur, pick-up and make sure the pipe is free
 - Add 5lb/bbl LCM to the sweeps
- Review offset wells in DIMS for any surprises or suggestions
- Check space-out of casing tally to ensure no casing collars are across the wellhead.
- Ensure stick-up of casing in casing tally is low to allow easy access and installation of the cement head.
- Check if the same BHA will be run in the next well – could leave collars racked in the derrick if OK with the OIM.

SURFACE CASING

Personnel Required

- Casing crew
- Cementer

Jobs to do

- Issue casing tally
- Casing fill-up tool to be dressed for casing size
- Lock the tensioner, record pressure and measure the height of the tensioner.
- Confirm rough cut and final cut heights in the wellhead manual
- Take wellhead pressure testing equipment to the wellhead deck
- Record and plot up and down weights if well is directional
- Once casing is landed, record the new tensioner pressure and height.
- Backload MWD tools from previous hole section
- Ensure MWD tools for the next hole section are mobilized

Things to avoid

- Don't pull much tension into the casing slips as this adds weight to the tensioner / texas deck. The MLS is designed to support casing. Only set slips in tension if the program recommends this.

Hints and Tips

- Count casing just prior to picking-up the MLS
- Count the casing after landing out
- Check for appropriate cross-overs

CEMENT CASING

- Circulate casing at 50SPM after installing cement head – record SPP for calculating top of cement later
- Slow displacement down to 50SPM towards the end and record final circulating pressure
- Determine final circulating pressure from MWD if used, otherwise calculate final temperature from the Drilling Program.

Hints and Tips

- If you haven't circulated the full annulus volume prior to recording the pressure at 50SPM, establish what the back-pressure is.

NIPPLE-UP WELLHEAD AND BOPS

Jobs to do

- Double check casing collapse pressure for wellhead test
- Take pump and test manifold to the wellhead deck
- Pressure test wellhead seals
- Check cement samples
- Once the BOP's are on (if cement is hard), pressure-up on the tensioner to the required pressure. Measure the tensioner distance and final pressure
- Set bleed-off on tensioner. Maximum pressure on tensioner is 3900psi.
- Prepare forward plan for next hole section
- Check hydraulics with mudloggers and or MWD personnel.
- Check shakers are dressed with appropriate screens.
- Ensure all equipment to be pressure tested is ready (eg – valves and lines)

Things to avoid

- Don't pull much tension into the casing slips as this adds weight to the tensioner / texas deck. The MLS is designed to support casing. Only set slips in tension if the program recommends this.

Hints and Tips

- Count the casing after landing out
- Fill the void with oil prior to landing wellhead – this saves having to pump it in with a hand pump

DRILL PRODUCTION HOLE

Personnel Required (Exploration)

- Geologists
- Wireline Crew
- PetroTech if running RDT's
- Coring hand – if programmed

Personnel Required (Production Well)

- Geologists
- Wireline Crew
- PetroTech if running RDT's
- Liner Hanger hand
- Casing Crew

Jobs to do

- Prepare Casing, Cementing and FIT/LOT reports
- Check how shakers are handling the cuttings

- Check the shape, size and quantity of cuttings regularly
- Monitor the tensioner pressure and height daily
- Prepare kill sheet
- Check kill sheet on the rig floor
- Check the knives on the casing cutter – make sure correct knives on board to P&A well
- Stay on the floor whilst tripping in open hole
- Monitor trip sheet
- Get wireline tools to the rig (PetroTech tools stay on the rig)

Hints and Tips

- Keep torque limit low whilst drilling out of the shoe track and cement plugs
- Have trip tank half full
- Have LCM recipe ready and products near the hopper

LOGGING

Personnel Required

- Logging Crew
- PetroTech (if running RDT's)
- Geos

Jobs to do

- Prepare forward plan for P&A
- Have casing cutting tools made-up ready to go
- Make-up casing spear on catwalk
- Keep an eye on the trip tank

P&A

Personnel Required

- ROV crew – must arrive in time to perform a seabed survey prior to the rig departing

Jobs to do

- Dress Casing Cutter(s) with new blades
- Dress Casing grapples
- Have tongs (power or manual) for casing ready
- Have casing cutting tools made-up ready to go

Things to avoid

- Don't cut the casing on a casing collar. Space out your cut just below or just above a casing collar (one less joint to back out)

Hints and Tips

- **The 3 ½" cement stinger (5 stands) can be made-up whilst drilling the last hole section. It should also be able to be left in the derrick during rig moves.**
- **On the last cement plug before coming out of the hole pump down a pipe wiper ball to clean out any cement from the drillstring.**

COMPLETIONS

Personnel Required

- Completion Supervisor(s)
- Casing Crew to run tubing
- Wellhead hand to install the tubing hanger and Christmas tree
- Slickline crew
- Production operator for tree orientation
- TCP hand if perforating.

Jobs to do

- Mobilize all completions equipment
- Jet wellhead and BOP's with jetting tool

Things to avoid

Hints and Tips

- Bring the filtration unit out early. Up to 1000bbls of brine can be stored in a brine tank so that job can be done early.
- A PVC pipe in the mousehole can be used to protect the chrome tubing whilst running
- Use a set of turn buckles on the slings for the tree. This will allow the tree to be straightened before lowering onto the wellhead.
- Rubber matting should be installed on the catwalk and V door for chrome tubulars.