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CMID ANNEX (BP REQUIREMENTS FOR MODUS) WITH GUIDANCE NOTES

MODU name:	Deepwater Horizon
Date inspected:	September 13 – 17 2009

Issue 3
July 2009

REVISION INFORMATION

Issue	Revision	Date
0	First Issue	August 2006
1a	Formatting changes and duplication removed	October 2007
1b	Section 6.8 added and 10.4 updated	June 2008
1c	Sections 3.11 and 8.1 updated	September 2008
2	Audit process updated and ARAS table added	January 2009
3	Updated to align with CMID Version 7	July 2009

CMID ANNEX (BP REQUIREMENTS FOR MODU) GUIDANCE NOTES

Introduction

The purpose of this document is to adopt a common marine auditing standard for mobile offshore drilling units. The objective is to assess marine assurance in accordance with Group Marine Standard.

The Rig Audit Group utilises a team approach of multi-disciplined engineers and specialists when performing rig audits. The marine auditor within the Audit Team will use the CMID ANNEX (BP REQUIREMENTS FOR MODU) to adopt a common marine auditing standard for mobile offshore drilling units (MODU).

This document was developed by amending a publication issued by the International Marine Contractors Association (IMCA) Common Marine Inspection Document (CMID), IMCA M 149 Issue 7, March 2009.

For the purposes of this document a MODU is defined as a vessel capable of engaging in drilling operations for the exploration for or exploitation of resources beneath the sea bed such as liquid or gaseous hydrocarbons, sulphur or salt.

This document is subject to review at regular intervals and whenever circumstances dictate. All amendment proposals should be forwarded to the Manager Specialist Technical Support - Rig Audit.

Reporting Guidance

The IMCA CMID is to be used as the basis for the marine systems audit. In addition, the CMID ANNEX (BP REQUIREMENTS FOR MODU) provides additional questions which will address issues particular to a MODU or those items over and above the CMID that are required to be addressed by the BP assurance requirements.

Audit Process

The audit is to ensure that marine related operations are being conducted in accordance with national and international regulations and established industry guidelines. In addition the audit will review the emergency response and pollution prevention arrangements.

The key elements in the rig audit process are

- Competency of personnel
- Management processes and their implementation
- Integrity and operability of equipment

The marine auditor can utilise his own reference material or checklist but as a minimum all chapters within the CMID ANNEX (BP REQUIREMENTS FOR MODU) should be reviewed. The marine auditor will complete this report and any recommendations will be captured in the Audit Report Action Sheet (ARAS) section report at the end of this report. In addition the marine auditor should describe in the Rig Audit Group's report summary with all marine assurance work performed during the audit including the results of any tests on equipment or systems.

The marine auditor should review previous audit reports and verify that appropriate corrective action has been taken on any observations/recommendations. Actions not closed-out are to be carried forward to the audit report.

The Wells Team should review the "CMID ANNEX (BP REQUIREMENTS FOR MODU) REPORT" with the rig owner. A program to mitigate any identified risk associated with marine assurance should be utilised.

Recommendations from the marine assurance audit should be reviewed by the Wells Team and the SPU Marine Authority to accept, change or reject the recommendations. If a recommendation is not accepted the reason for the decision should be documented, filed and the Rig Audit Group notified. Rig Audit Group consider that implementation of all recommendations will; improve safety/environmental performance, comply with industry standards and best practice, and enhance operational integrity.

Marine auditor qualifications

Self propelled MODU requires two marine auditors
Master Mariner STCW95 and
Chief Engineer STCW95.

Moored or self elevating MODU requires a minimum of one marine auditor
Chief Engineer STCW95 (mandatory) and
Master Mariner STCW95 (discretionary)

Marine auditor experience

Minimum 5 years seagoing experience
Minimum 5 years experience of MODU operations
Demonstrate recent experience of marine auditing
Audit training/qualifications

Marine auditor knowledge

Current maritime legislation
Classification Society requirements and standards
MODU type being audited
Technological advances in vessel/equipment/MODUs
BP safety rules and expectations

CMID ANNEX (BP REQUIREMENTS FOR MODU)

The sections in the CMID ANNEX (BP REQUIREMENTS FOR MODU) reflect the numbering system of the IMCA CMID and should be read and completed in conjunction with the latest revision of that document.

CHAPTER 2 PREVIOUS INSPECTIONS

AMENDED QUESTION

2.4 Does the vessel have onboard a copy of the most recent DP trials report?

When assessing DP system, marine auditor to work in conjunction with the technical services auditor to assess condition of equipment, that is engines and ancillary equipment, electrical distribution including emergency and back up supplies, hydraulic system, etc .

When performing Integrated Acceptance Tests (IAT) on a MODU a more robust testing and inspection protocol will be used but all other aspects of the marine audit process remain the same.

Comments:
Independent DP trials were conducted in May 2007. (Ref PMC10800/rev 0). It is reported that diesel generator #1 is out of service awaiting an engine mounted fuel pump replacement. Thruster T2 is out of service pending investigation of a current imbalance seen on the inverters at speeds in excess of 50%. It was also noted that on restart this thruster would not initially stay in DP control.
A history file of field arrival DP trials is maintained onboard. Five transponders were deployed in the array. One requires change out as communication problems have occurred. The rig had a UPS 11 fault and this has caused the loss of the Trimble receiver. This has impacted on DGPS 2 reference signal for the DP system.
There is an update FMECA available (ref A5410-0 report June 2009). This covers key systems on the rig associated with the DP station keeping.
Annual DP trials are not conducted but field arrival trials are segmented such that on an annual basis all required field arrival tests are completed.
There is a bridge procedures guide which has been developed onboard. This serves as an uncontrolled DP Operation Manual. Based on the midlife upgrade to the DP system this procedures guide will require update to include the current equipment fitted. Watch standing practices are detailed which include responsibilities.
Job descriptions for DP Operators (DPO) and Senior DP Operators (SDPO) are copied and placed in the bridge procedures guide. These controlled corporate job descriptions can be found on Rig Central. Levels of authority for each position are detailed within these job descriptions.
Customer Acceptance Tests (CAT) and black out tests were witnessed during the audit

period. A number of observations were made:

- The Redundancy and Criticality System (RCA) system as fitted on this rig appears not to be fully documented as to operation and implications. The screen shots for the RCA PS and RCA SS modules are not fully populated. This tool should be fully investigated particularly with regards to the control modes and operational inputs it has exhibited. Changing modes indicates that the thrusters are deselected from the DP which is considered a risk area when using this system.
- Cabling management within the cabinets was found to be clustered with cabling relating to the fibre optic converters poorly managed. Cable tidying within the cabinets containing the OS processors (MP7900) should be reviewed and improved as necessary.
- As part of these trials the emergency thruster stops are tested at the DP desk. It was requested that the E stops for the thrusters be tested at the ECR and also the bridge thruster control desk. The results noted the following.
  - Thruster T3 E stop from the bridge thruster control panel non functional
  - Thruster T5 E stop from the ECR thruster control panel non functional
  - Thruster T5 E stop from the DP panel is not used as there is a wiring defect which although the button is functional would cause difficulties in resetting the E stop.
  - It is reported that the non-DP console Thruster E stops have not been exercised for at least a year and this routine should be included in the RMS II maintenance system.
- LBL and SSBL testing was undertaken. The LBL array has only four transponders and one transponder requires to be changed or settings reconfigured.
- The printer logic for alarm/event printing requires review as the there are inconsistencies in the print management.
- Screen and keyboard for the APOS in the ECR has not been installed
- Port HIPAP communications issues exist and should be rectified

- Comment if DP equipment not functional, including reference systems, generators and thrusters;
- DP operations manuals to state responsibilities of DP operators, plus the procedures and manning requirements for each type of DP operation;
- Maintenance records to be up to date;
- Software management of change process and disaster recovery process in place;
- Any software changes should have been thoroughly tested, comment if not documented.
- In support of the DP system Failure Modes, Effects & Analyses (FMEA) does the facility have in place a detailed FMEA of the following critical systems?
  - Power Management System

- Main and emergency power generation and power distribution systems (this may be a subset or failure modes within the DP or Power Management System FMEA
- Auxiliary engineering systems which support/interface the DP system (this may be a subset or failure modes within the DP or Power Management System FMEA

Assessor(s) shall verify existence of a trials procedure used to verify the results of the analysis (where possible).

- Comment if proving trials have been performed to demonstrate that the FMEA is valid;
- Give date of last annual DP trials;
- Comment if the MODU has a programme for field arrival trials.

ADDITIONAL QUESTIONS

2.7 DP Operations

Comments:
For specific SIMOPs operations it is required that a specific WSOG be developed where the operational context is such that it impacts on the scenarios considered within the current WSOG. A copy of the WSOG is available on the bridge and has been signed by the appropriate stakeholders. Supply vessels have been the only attendant vessels noted during the audit process

- Assess the impact of close proximity DP operations of other vessels and any SIMOPS activities;
- Is there an agreed Well Specific Operating Guidelines signed by Well Site Leader.

2.8 Is the thruster compartment in good order?

Yes
The thruster compartments were found in satisfactory condition. Only slight shaft seal leakage was noted on shaft seal caps of thrusters T3 and T7.

- Emergency steering gear to have been tested quarterly and tests recorded – last test

- All marine engineers to be familiar with operation of thrusters in normal and emergency modes;
- All thruster hydraulic reservoirs to be charged to normal operating levels;
- Communications with the bridge to be satisfactory;
- The azimuth angle indicator is to be clearly visible at the auxiliary/emergency steering position;
- Access to thrusters is to be unobstructed;
- Suitable gratings and handrails to be fitted in thruster compartment;
- The thruster save-all to be free of excessive spilt oils

2.9 *DP Manning*

Comments:
There are two SDPO's carried onboard and these keep 0000-1200/1200-000 watches. They are both experienced in position and have up to two years on this rig. The two DPO's do not have DP Certificates but have attended the Induction Simulator courses. There is also a DPO trainee carried onboard. The DPO watches are based on 06.00/18.00 shift change over and hence the watch continuity is maintained.
The general trend of experience levels with the DP operation onboard has been reduced in the last twenty four months. This has been caused by normal wastage, Transocean new build programme and internal promotions. The level of rig specific experience can only be countered by rigorous implementation of detailed familiarisation programmes. There is a DPO OJT onboard; this covers the general operations on this rig. There is also a DP simulator onboard which can be used for familiarisation training. The DPO OJT has two non compliant students, (Camacho, Davey)
DP lessons learnt DWH compliance matrix indicates three non compliances of which two persons are scheduled for training. DP lessons learnt power simulator has three staff non compliant with one person scheduled for this training
Two non compliances also exist for the NI DP Simulator course (Davey, Fleytas). There are no non-compliances for the NI DP induction course.
Rig specific DPO training has one member who is non compliant (Camacho). This programme is considered of a reasonable quality

- Comment on number of qualified DP operators;
- Appropriate log books to be available;
- DP operators to have read and understood the FMEA and results of audits;
- DP operators to be familiar with the MODU and equipment;
- Comment on details of onboard DP training.

2.10 DP Record Keeping

Comments:

DP status check list is used on this rig and is completed on watch hand over. The field arrival checklists are used as the arrival in field check list to commence DP operations. DP incidents are recorded in the GRS system in the form of Dynamic Positioning event reports.

In the past year there have been three DP events of which two resulted in lost time.

25 July 2008: Oil mist detector on main engine #5 caused engine shut down. Only two generators on line, Yellow alert as HV bus tie breakers opened causing dead bus and loss of thrusters T7 and T8. Four thrusters being used and after event rig left with just two thrusters T4 and T5. Main engine #3 failed to start but main engine #4 started and connected. This allowed thrusters T3, T7 and T8 to be brought on line and hence normal operations resumed. Start logic being checked with Kongsberg and Operators to have awareness of power and thruster configuration

7 August 2009: Loss of position of 35 feet. Rig has total black out. PMS identifies that main engine #3 and #6 had over speed. One minute to restore T3 on line. It took a further 4 minutes and 56 seconds to restore the next thruster. All available thrusters on line over 17 minutes after the initial event. Awaiting results of investigation

16 August 2009: When changing over from engine #5 to #6 for maintenance engine #5 had an oil mist detector alarm and shut down. Black out prevention initiated bus tie to open. During process drilling load was shut down and circuit breakers to T1, T3, T4 and T6 were opened. Thrusters T4 and T5 had unexpected stop leaving only T2 and T7 on line. It is reported that new oil mist detectors are on order.

Focus system is used to track these actions.

- MODU to have a checklist for going into DP;
- Regular status checklist to be completed whilst in DP;
- DP log to be kept;
- DP incident log to be kept;
- Check for recorded incidents, subsequent required actions and note of closed-out actions.

Chapter 3 CERTIFICATION

AMENDED QUESTION

3.2 Have the certificates and documentation listed in the Index of Certificates (Section 4) been checked and verified as in date?

Yes
Certificates as detailed in section 4. Work is in progress to meet the requirements of IAPP Annex and hence the issuance of an IAPP Certificate, the deck crane engines remain outstanding.

- The certificates and documentation listed in Section 4 should be checked and verified as in date. Note any certificates due to expire during the period of contract, or close to expiry date.
- Auditor should note any expired certificates or recertification ongoing at the time of inspection.

ADDITIONAL QUESTIONS

3.6 Does the MODU carry an Approved Marine Operations Manual?

Yes
No changes since last audit

- A Class approved Marine Operation Manual containing guidance for the safe operation of the MODU for both normal and emergency conditions should be provided;

3.7 Is the MODU a Self Elevating Unit?

Not Applicable
N/A

- Establish how many rig moves have been performed since in the last intermediate survey

- Review spud can and leg inspection reports – note deficiencies;
- Record last underwater inspection in lieu of dry dock (UWILD);
- Review maintenance system to verify wear on leg guides and climbing pinions;
- Is rack phase differential monitored?
- Is the inspection and maintenance regime considered adequate;
- Conduct close inspection of jacking gear and legs;
- Inspect jacking towers for potential dropped objects;
- Note condition of jacking control panel;
- Is redundancy provided so that a single failure of any component does not cause an uncontrolled de-scent;
- Procedures in place in the event of punch through;
- How is watertight integrity managed in the afloat condition?
- Describe level of inspection of dump valves that was possible.

Chapter 4 INDEX OF CERTIFICATES

AMENDED QUESTION

Certificate	Applicable to MODU	Date of expiry
MODU Construction Certificate	N/A	N/A
MODU Safety Certificate,		28/02/11
Safety Equipment Certificate	N/A	
International Tonnage Certificate (1969)		Issued 04/01/05
International Load Line Certificate		28/02/11
International Load Line Certificate Exemption		N/A
Intact stability booklet		N/A
Ship Safety Radio Certificate		30/06/13
Cargo Ship Safety Radio Exemption Certificate		N/A
Damage control booklets		N/A
Minimum Safe Manning Document		Issued 29/12/04
International Oil Pollution Prevention Certificate		28/02/11
Garbage management plan and garbage record book		N/A
Oil Record Book		N/A
Shipboard Oil Pollution Emergency Plan		No expiry
International Air Pollution Prevention Certificate	Statutory Requirment WIP	Not issued
Safety Management Certificate		05/06/12
Document of Compliance (copy)		25/01/12
Noise Survey Report		N/A
International Ship Security Certificate (copy)		16/05/12
Ship Security Plan (not for examination – content secure to vessel)	Declaration of Approval DNV	05/05/08 (No expiry)
MARPOL IV/V/VI – if applicable		N/A
Ballast Water Management Plan		N/A
Locally applicable additional certificates		N/A

Chapter 5 ISM

AMENDED QUESTIONS

5.1 Does the MODU have an ISM Safety Management Certificate?

Yes
The ISM certificate is valid until 2012 with the intermediate audit due in May 2010. The last external ISM audit was conducted in May 2007. The last internal ISM audit was conducted in July 2009. This was completed in conjunction with the ISPS audit and Performance Monitoring and Assessment Audit (PMAA) combined findings were entered into the FOCUS tracking system. All related actions had been closed out. The Transocean Health and Safety Policies and Procedures Manual describe the safety management system and adequately address the elements set out below.

- What programme is in place to ensure regulatory compliance?. Add details in comments section on progress being made towards implementation;
- Review internal audits. Check to see if corrective action has been effective.
- Auditor shall assess the adequacy of safety management system applicable to marine activities where no ISM Safety Management Certificate is in place. Does the onboard safety management system adequately address the following areas?
  - General description and approved usage
  - Safety and environmental protection policy
  - Company responsibility and authority
  - OIM's Master's or Barge Master's responsibility and authority
  - Personnel resources including roles and responsibilities of key personnel
  - Plans for all shipboard operations
  - Permit to Work (PTW) system encompassing entry into enclosed spaces, hot work; and electrical /mechanical isolations.
  - Emergency preparedness
  - Report and analysis of non-conformities, accidents and near misses.
  - Maintenance of the ship and equipment
  - Control of Documentation
  - Company review, verification and evaluation
  - Certification, verification and control
  - Certificate of Employers Liability available for third parties working on the facility.

5.10 Is there evidence that the workforce/marine crew is fully involved in safety management?

Yes
The marine crew is integrated with the safety management system processes onboard the rig. A weekly marine safety meeting was being conducted and attendees names were recorded in the minutes which were maintained and accessible on the rig's networked computer system. The marine crew participate in the use of the various risk management tools and are required to complete the Safety OJT Module which includes PTW training. All personnel arriving onboard undergo a safety orientation, including sub-contractors.

- Look for evidence demonstrating active marine crew involvement. Comment on the degree of participation in addressing the issues and the management responses:
  - Is the marine crew involved in the closing out of issues?
  - Identify who actually attends the safety meetings and note how often they are held.
  - Do the notice boards identify the safety representatives?
  - Is safety a high priority item?
- Are adequate arrangements in place for briefing/managing the safety of visitors?
- Have personnel received formal training in the PTW system?
- Are safety rules prominently displayed? Have you been advised of any emergency procedures or onboard key processes? Have any senior personnel briefed you?
- Is risk assessment training provided?
- Verify that sub-contractors are inducted in safety, permits to work and other onboard systems.

Chapter 6 HSE

AMENDED QUESTIONS

6.7 Do MODU specific emergency procedures exist covering, for example, fire, explosion, grounding, pollution?

Yes
Emergency Procedures are maintained within the Emergency Procedures Manual kept in the Captain's office and on the Bridge. The procedures are comprehensive and cover the listed scenarios. In addition, well control procedures are maintained in the Well Site Leaders office.

Additional guidance notes below

The Emergency Response Plan should include the following:

- Effective management structure in the event of an Emergency
- Identification of onshore facilities
- Linking arrangements with contractor plans, national authorities, local administration, local emergency and support services
- Identification of key personnel and their contact details
- Resource information
- Detailed and comprehensive evacuation plans including facility shutdown and securing procedures (This will include hurricane evacuation if appropriate.)
- An exercise programme

Where applicable, the Emergency Response Plan should address the following emergency scenarios:

- Fire and explosion on a MODU or facility
- Major escape of flammable and/or toxic vapours, gases, oil or chemicals
- Grounding, collisions and unintended contacts
- Enclosed space rescues
- Casualty evacuation and treatment
- Loss of stability, watertight integrity
- Loss of moorings, station keeping
- Emergency disconnect
- Drifting and breaking away from berths, facilities and anchorages
- Major accidents with any vessel or facility involved in the project or operation
- Helicopter incidents including crashing on deck.
- Incident with external vessels or facilities that may impact the project or operation

- Meteorological hazards such as hurricanes, squalls, high winds, electrical storms, wave height
- Security breaches including criminal and terrorist activities, sabotage and threats against vessels or facilities
- External environmental events

6.14 Is a permit to work (PTW) system in use onboard?

Yes
The PTW system is based on a one permit fits all which can be used for the following: hot work, explosive work, critical systems, confined space entry, radioactive work, asbestos, work over open water, diving, web sling usage for certain lifts, supply boats and energy systems. The TSTP, THINK Plan and Prompt cards are completed and to varying degrees tagged onto the permit. An Isolation permit is issued separately and also attached to the permit. Permits are required to be audited on a daily basis and each department is involved in the process. A START card is used to record the audit if an action is required then this is recorded on the START card and if not closed out immediately then logged on FOCUS. The effectiveness of the PTW audit process was mixed and some issues were identified which suggested that more rigour is required. A number of issues were noted with regard to tightening of mechanical isolation controls. A breaking of containment permit and isolation job was verified. (Permit 174526) – The job related to changing a valve and installation of pipework in the port forward ballast pump room. Two permits (hot work and critical systems) and an isolation certificate were raised for this job. The lines which had been blanked were identified and noted on the permit, however the mechanical isolation (padlocked chain) was in place but the details had not been entered into the appropriate box on the isolation certificate. A TSTP, THINK Plan and Prompt card were also attached to the permit.

- Describe the various areas covered by permits. An effective PTW covers the hazards and mitigating measures/precautions;
- How is risk assessments linked to the permit system?
- Are isolations identified on a separate permit or certificate?
- Are permits audited?
- Have personnel received formal training in the PTW system?
- Does the permit system appear to be effective? Is it used and understood?
- All personnel entering enclosed space named on PTW?
- Verify the PTW system is utilised when breaking containment of systems that can result in compartment flooding?

6.23 Does the SMS specifically address hazards associated with slips trips and falls?

Yes
Section 4, sub-section 5.5 of Transocean Health and Safety Procedures manual addresses The various fall protection in some detail. Some fall hazards were noted e.g. in the port forward and starboard forward pontoons where valve change out in the ballast pump rooms had resulted in gaps with no handrail protection. Deck plating and gratings were generally seen to be in reasonable condition and no obvious hazards sighted. Lighting was generally of a satisfactory standard however the lighting inside the starboard aft stairwell from the main deck leading to the lower deck area was poor.

- All loose gear and equipment should be secured;
- Note if a programme to detect and minimise hazards is in force;
- Note if hazards that cannot be eliminated are clearly marked;
- Note if hazards are apparent but ignored;
- Note if personnel are wearing PPE appropriate to their location;
- Check for the following hazards:
  - unsecured, buckled or missing gratings or plates;
  - missing handrails or unguarded drops;
  - worn treads on ladders;
  - spillages of liquid left untreated;
  - non-slip deck surfaces.
  - Shower without grab rails or non-slip deck surfaces
- Note significant damage to deck sheathing;
- Areas should not be obstructed by pipelines, hatches, etc.;
- Securing points should be provided and in good condition;
- Lighting should be adequate for working areas;
- Visually inspect pipe work and confirm pipelines free of soft patches or other temporary repairs;

6.24 Is there evidence that safe working practices are being consistently applied to machinery spaces?

Yes
All required machinery guards were installed on marine equipment. Required safety and warning signage was in place. The floor plates in the thruster rooms and ballast pump rooms were in good order. E stops were well marked to indicate function. Emergency escape routes were clearly marked and adequately illuminated

- Grating or deck plates to be in place;
- Pump room emergency stops/shut-offs to be clearly marked and regularly tested with tests recorded;

- Valve positions and tags should be clearly marked on drawings posted on pump room bulkheads
- Are safety areas inspections conducted that include machinery spaces?
- Are warning signs in place indicating where hearing protection is required?
- Comment on whether machinery space PPE requirements are specified and complied with;
- Engine room machine tools should have eye protection measures in place;
- Guards should be in place on exposed shafts/gears;
- Are emergency escape routes clearly marked, unobstructed and well lit?
- Engine room emergency stops/shut-offs should be clearly marked and regularly tested with tests recorded;
- Is an engineer's call alarm fitted and is it in good order and tested regularly and the results recorded?
- Gauge glass closing devices on oil tanks should be of self-closing, fail-safe type;
- Self-closing devices on double bottom sounding pipes should be operational;
- Is there a set of chief engineer's standing orders posted and countersigned?
- Does the chief engineer maintain a night order book? If so, this should be checked as providing instruction for situations likely to be encountered;
- Has the chief engineer written his own standing orders and are night orders being completed? Have the watch engineers countersigned the chief engineer's standing and night orders as read and understood?
- Watertight doors should be in full working order and operating/warning notices posted

Chapter 8 CREW MANAGEMENT

AMENDED QUESTION

8.8 Are the crew appropriately qualified for the operations and equipment on board?

Yes
The marine crew OJT covers onboard training. See details on table below for specific jobs

Note specialist qualifications, e.g. DP operator, ballast control operator, crane driver, FRC coxswain, rigging slinging and banksmen or other MODU specific requirements.

Chapter 9 CREW QUALIFICATIONS

AMENDED QUESTION

Position	Name	Certificate Details	Years with drilling contractor	Years in position	Years on MODU	DP Cert No.	GMDSS	FRC/ Coxswain	HLO
OIM/Master	Marcel Muise	Master/OIM	8	0.5	6	3282	Yes	Yes	
Chief Officer	Mike Don	Chief Mate/Barge Supervisor	8	0.5	7	3554	Yes	Yes	
Senior DP operator	Mike Mayfield	BS/Senior DPO	15	0.5	4	4081	Yes	Yes	
DP operator	Darin Rupinski	3rd Mate/DPO/O Med	1	0.25	0.75	None	Yes	Yes	
DP operator	Audeliz Camacho	BCO/DPO/AB Limited	2.5	0.25	4	None		Yes	
DP operator	Nick Lupo	BS/BCO/DP/2nd Mate	4	[illegible]	0.75	None	Yes	Yes	
DP operator	Nathaniel Roche	BCO/DP/LB	4	0.76	1.75	7590	Yes		
Chief Engineer	Steve Bertone	Chief Engineer	11	0.75	0.5	N/A			
Engineer	Brent Mansefield	1st A/E	1	1	1	N/A			
Engineer	Jarod Oldham	3rd A/E	0.5	0.5	6.5				

Chapter 10 LIFE SAVING APPLIANCES

AMENDED QUESTIONS

10.3 Are the life rafts available for immediate use?

Yes
No change in configuration was noted since the last audit. Two spare liferafts are maintained to ensure that service periods are managed. The manual cocking of release mechanism was satisfactorily tested. Additionally the remote brake release was tested to ensure the brake can be released during embarkation, this was carried out on deck with manual intervention. Sheaves turned and the locking cam engaged. The forward bowsing line cleats have some minor damage and require straightening. Certificates for liferafts were found all in order.

- Casings should be in good condition.
- Are life rafts stowed as per the LSA plans?
- Boarding ladders should be in good condition (check for missing steps, rope deterioration and lashings where required).
- Hydrostatic releases, if fitted, should be correctly attached, in good condition and in date.
- Life raft operating instructions should be prominently displayed.
- Are life rafts stowed in a position that they can be easily and successfully launched?
- Painter lengths should be appropriate for the height of stowage

ADDITIONAL QUESTIONS

10.10 Are all other lifesaving appliances in good order?

Yes
EPIRB's and SART's were found in date along with the pyrotechnics. The SART's are located in each control station and also in each lifeboat. Random checks of lifebuoy lights were conducted and these functioned satisfactorily. Life jacket donning instructions are displayed along with launching instructions at each muster area.

- Radar transponders to be fitted one to each side of the MODU and stowed to permit rapid use in survival craft. Check they are in date;
- EPIRB should be stowed such that it will float free on release. Battery should be in date;

- Life buoys, life buoy lights, self activating smoke floats and quick release mechanisms to be in good order, in date and functional;
- Life jacket donning instruction notices to be posted on each deck.
- Life jackets and survival suits to be in good condition. Conduct checks on random sample to ensure associated equipment is functional. Confirm life jackets and survival suits are stowed in the locations detailed on LSA plan.
- Pyrotechnics, including line-throwing apparatus should be in date and in good condition;

10.11 Are emergency drills held in accordance with SOLAS requirements?

No

Emergency drills are held on a weekly basis and include boat and fire drills. These are scheduled to meet Transocean Corporate and SOLAS requirements. The MOB drill has not been conducted since April 2009 and hence is a non compliance with this system

- Drills to be held at intervals according to the MODU's SMS. Comment if not held at least every other week;
- Last abandon ship drill, last fire drill.

10.12 Are the LSA/fire plans up to date and reflect any changes/additions to equipment?

No

The fire fighting and LSA plan is displayed on the bridge and in the accommodation. It was last updated on the 31 March 2008 and is approved by ABS. The fire control plan contained within the Solas fire tube adjacent to the bridge is dated 19 July 2002 and marked unapproved. This should be reviewed and the updated approved plan should be substituted.

- Note last updating of plans.

Chapter 11 FIRE FIGHTING APPLIANCES

AMENDED QUESTIONS

11.6 Are measures in place to effectively isolate ventilation to enclosed spaces, i.e. machinery spaces, accommodation/quarters, galley, storerooms, etc.?

No
Of the twenty six remotely activated ventilation dampers spot checked and tested, six were failed to operate. A monthly maintenance routine for inspection and activation was in place but had not been carried out since July 2009.

- Vent fan stops should be operational (spot check) and clearly marked
- Ensure that closing devices are easily accessible for inspection/ maintenance and local operation.
- Function test a representative sample of fire dampers and verify correct operation and position indication.

ADDITIONAL QUESTIONS

11.8 Is fire integrity of bulkheads and decks satisfactory?

No
The rig was built to MODU Code 89 rules, with A & B class fire bulkheads and fire doors. There were a number of A60 classed doors, particularly between switchboard rooms and engine rooms, whose door latch mechanisms did not always energise and hence would be easily blown open in the event of fire or explosion. During inspection of the machinery spaces it was found that fire doors were being left open between engine rooms and switchboard rooms, this will compromise the fire integrity of each compartment and the efficiency of the fixed fire fighting equipment.

- The minimum fire integrity of bulkheads and decks should comply with the criteria tabulated in the applicable MODU Code;
- The fire resistance of doors should be equivalent to the division they are fitted.

Chapter 13 GENERAL APPEARANCE

AMENDED QUESTIONS

13.3 Are all deck openings, including watertight doors and portholes, in good condition and capable of being properly secured?

No

Due to being constantly energised the water tight damper solenoids are running hot and the previous CMID discussion on this issue is applicable. No significant design changes have been undertaken since the last marine audit.

Watertight dampers HV172338, HV172337, HV172377 and HV172348 located in the port aft quadrant were tested and found non functional. At this time the test was suspended.

The rig has reviewed the sounding pipe self closing devices and has retrofitted several more to satisfy class requirements.

The vessel management system was checked to see that weather tight doors with door close indicators were functional. A large number had the audible alarm function after 100 seconds disabled. A number of weather tight doors limit switches indicate that the door is closed when it is actually open. There also appears to be limit switches that are frozen and require fault finding or replacement. Typical examples include; main deck elevator access port aft, port forward and starboard aft. The port aft access door to the 3rd deck, transit room door on 2nd deck and the starboard forward lifeboat deck.

Watertight door testing was conducted with the close all command operated in the port aft quadrant, this test failed. Four doors (P20, C204, C106 and P23) could only be operated using the local emergency hand pump. It is reported that spares are on order.

The dead man lever springs on many of the watertight doors appear to be stressed/fatigued. On visual inspection of a random sample some were bellied and some distorted. The spring return function is so poor that the operating lever can pass through the neutral position on release effectively causing the door to move unintentionally in the opposite direction, i.e. change from open to close without operator intervention other than to release the control lever, this is a serious safety concern. The watertight door control system is unusually configured and allows the control lever to be placed in the open or closed position and once function is initiated the lever can be released. This operating mode is clearly not the safest design as industry standard is that on release of the operating lever the door movement should stop. The posted procedures require the crew to operate the door by holding the operating lever in the direction of travel until the audible and visual alarm stops, i.e. the door has reached its full open or closed position. These procedures are not being followed onboard and there is potential for serious incident or injury.

All staff both existing and new should undertake a reinforcement training exercise in which the following are addressed:

- Procedure when passing through power operated watertight doors.
- Procedures when carrying loads through power operated watertight doors.

Future training should also cover

- Initial and continuation training in the safe use of power operated watertight doors
- A number of doors with fatigued door springs include P08, P07, P18, P19 and C306. It should be made a priority that these release springs are replaced

A number of the operating levers for the watertight doors are set such that they obstruct the access through the doors themselves. These should be adjusted Typical examples include C109 and P19. In addition the emergency hand pump handle between T7/T8 thruster drive room restricts the opening of the A class fire door and this requires addressing.

Accumulator testing on a random sample of doors was undertaken. Two doors (P13 and T8 WTD) were identified and operating incorrectly in this test and fault finding/rectification should take place.

While onboard a leak was noted to have occurred via the dirty bilge water line. A pin type leak had slowly increased the water accumulation in the void space utility trunking starboard aft. An MCT installed in this void space failed allowing water to weep past. It would not be expected that the MCTs would fail at this rated head pressure and they would be expected to remain intact at the worst case head pressure that would be expected to be exerted. For the pumproom areas this head would be up to 43m. It is also reported that during the ballast flooding incident of last year that an MCT in the starboard forward pumproom failed allowing cross flooding to occur. It is noted that these two events indicate that there may be installation/degradation issues with the current MCT arrangements. An inventory of MCTs and locations should be made as well as checks to verify correct installation.

The emergency column escape ladders were noted as being damaged with typical examples found at the forward columns

- Verify vents and air pipes on freeboard deck are in good condition and fitted with closing devices to prevent ingress of water
- Closing devices, packing material and locking arrangements including mooring wire and chain should be in satisfactory condition.
- Watertight doors to be in full working order and operating/warning notices posted
- Verify that the rig owner has procedures/policy in place for the operation of watertight doors for access and egress from spaces and ensure that these are being adhered to.
- Inspect each watertight door, ensure seals are in good condition and verify date of last chalk/spray test. For hinged type doors ensure dogs are fully energised on the wedges when closed and that closing mechanisms are correctly adjusted and secure - collars should be locked with grub screws. For sliding type doors ensure that door operation is smooth and timely. Door action should not be jerky or unduly slow. Verify that the doors can be closed on loss of power to the HPU.
- Verify door status (open/closed) indication is correct. Confirm that door status is not misleading, that is door status shall only indicate closed when the door is closed and dogged shut.
- Verify that watertight doors are included in the maintenance management system. Ensure that the maintenance schedules and procedures are adequate for the

type(s) of door installed on the unit. Verify that maintenance is being conducted in accordance with the maintenance routines

- Test closure of pontoon spaces ventilation dampers to ensure remote position indication is working. The status (open/closed) of each damper should be clearly indicated locally at the damper. If possible verify remote status is correct by comparison to actual (local) damper position.
- Inspect each watertight compartment for potential means of water ingress from adjacent watertight compartments. For example look at integrity of door seals, cable transits or other penetrations.
- Verify rig owner has a procedure in place for regular testing of the column and pontoon ventilation dampers. Verify ventilation dampers are included in the maintenance management system. Ensure maintenance is being conducted in accordance with the maintenance routines.
- Cable transits (MCT) should be correctly assembled as per manufacturer instructions;
- Different manufacturer cable transit blocks should not be installed in another manufacturer's transit frame

13.5 Are food storerooms, handling and refrigerated spaces, galleys, mess rooms and pantries clean and tidy?

Yes
Generally clean and tidy. Hygiene around galley and food storerooms was satisfactory.

- Test personnel alarms for refrigerated spaces;
- Gratings or duckboards, if fitted in storerooms and refrigerated spaces, to be in good condition;
- Food storerooms and refrigerated spaces to be in a hygienic condition. Carry out random check of food stocks to ensure stock is being rotated and is not out of date;
- Galley extraction grills to be clean and free from grease;
- Galley fire extinguishing systems to be in good order and catering workforce aware of locations and means of operation;
- Crockery to be free from defects which may contain contamination;
- Food preparation areas to be tidy and clean.
- Check and record temperatures in storerooms and refrigerated spaces:
- Colour coded chopping/food preparation boards available;

- Chain mail glove for craving meat, etc available
- Are galley personnel trained in food hygiene practices?

13.9 Is the hospital clean and tidy?

Yes
The hospital was clean but needed some improvement in housekeeping as a few loose items were lying around. One of the four hospital alarms was tested and although a signal was received in the bridge, no call back was made to the hospital. Direct access to onshore medical support was available and the management of controlled drugs was satisfactory.

- Medical stores to be regularly checked;
- Hospital to be ready for immediate use;
- First aid kits to be readily available;
- Hospital alarm in working order.
- Treatment table available
- Access via telephone to onshore medical support (doctors, etc)
- Storage and management of controlled drugs

Chapter 14 BRIDGE, NAVIGATION AND COMMUNICATIONS EQUIPMENT

AMENDED QUESTION

14.11 Is a comprehensive passage plan available for the next voyage and does it cover the full voyage from location to location?

Yes
The last towage plan was reviewed. The navigational passage plan was found to meet Transocean standards and had sufficient controls and mitigations based on an inter block move in the GOM. The rig did not require pilotage and acted under standard navigational practices.

- Passage plan should be prepared by an appropriate officer and verified by Master;
- Passage plan information should be readily available for watch keepers' use.
- If applicable, passage plan to include details of pilotage and embarking/disembarking of pilot;
- Courses to be laid on to charts by an appropriate officer;
- Pre-arrival and pre-departure checklists should be completed;
- Actual position fixing to be in accordance with passage plan;

ADDITIONAL QUESTION

14.17 Are navigation lights, other lights and sound signals operational?

Yes
Navigation lights were tested. Stern and range lights alarm conditions exist on the secondary system. The obstruction lights were initially non functional but this was later found to be related to a delay in charging the capacitor and hence the lights do not immediately come on when powered up. The ship's horn is tested on a weekly basis and was heard to be fully functional.

- Navigation lights alarm system functional
- Offshore marking signalling lights and sound signals functional
- Back up batteries clean, and maintained

Chapter 15 MACHINERY SPACES (including Ballast Systems)

AMENDED QUESTIONS

15.7 Is the bilge system operational?

No
There was no significant oil in the thruster and ballast pump room bilges. Both oily water separator units were tested and found operational. All four pump room electric bilge pumps were tested. The port forward, port aft and starboard forward electric bilge pumps were operational in as much as they could rotate but could not pull suction to pump the bilges. The priming systems on these pumps were found inoperative. The starboard aft electric bilge pump and associated quadrant bilge valves could not be operated due to the failure of PCU 18 in the process station. Several bilge alarms were function tested in the ballast pump rooms and thruster rooms and were found to operate satisfactorily. Several of the float sensor activated pump room and thruster room air operated bilge pumps were tested. Air operated bilge pump #10 failed to start on float switch activation but could be activated manually to prove pump operation. The ballast pump room emergency bilge suctions were subject to flow back tests. Two of the valves, starboard aft and port forward, leaked back into the bilges indicating that the check valves were passing. The emergency bilge suction valves are clearly marked with red paint on the deck plate. With the introduction of RMS II the previous routines for performing flow back checks on the emergency bilge suctions are no longer in place.

- Bilges should contain no more than traces of oil;
- Pumps to be operational;
- Bilge system normal discharge to be via oily water separator without bypass;
- Records to be kept of routine bilge pumping (oil record book).
- The ability to pump bilges with the main ballast pumps requires a cross connection between ballast pump and bilge suction, therefore a high degree of protection is necessary to protect against flooding of the pump room through the bilge connection when open to the sea, or ballast tank. The emergency bilge suction pipeline should comprise of a remotely operated suction valve and a non return valve to secure against this possibility.
- In the pump room test bilge level alarms;
- The emergency bilge suction shall be clearly identified, easily accessible and its status (open/closed) indicated locally at the valve.

The following tests shall be performed.

- Open the necessary valves to line up the emergency bilge suction valve to the ballast system.

- Exert a head of pressure, using either the ballast pumps or head of water against the emergency bilge suction check valve. There should be no leakage evident from the emergency bilge suction.
- Leakage indicates:
  - Emergency bilge suction check valve is leaking
  - Emergency bilge suction check valve is incorrectly installed – orientation is wrong
- It would also be prudent, when practicable, to test the emergency bilge pumping arrangements by lining up the system and using the ballast pumps to evacuate the bilges. As the bilge will be pumped directly overboard the cleanliness of the bilges (oil content) should be considered.
- Verify that bilges can be pumped from each pontoon space using bilge/ballast pumps supplied from the emergency switchboard.
- Through maintenance records should be able to demonstrate that the emergency bilge suction is routinely tested to verify integrity. If this is not evident then it should be included as a finding of the audit.

ADDITIONAL QUESTIONS

15.11 Is the necessary technical information available for safe and efficient handling of cargo and ballast?

Yes
Since the last audit no design changes have been reported. During testing it was noted that there was a minor leak on port forward ballast pump and a significant leak on the starboard aft ballast pump. Due to a processor station fault (PCU 18) condition the remote operation in the starboard aft quadrant for bilge and ballast valves and tank level monitoring were non functional. Due to the flooding incident on this rig emergency ballast drills frequency has been increased to a target of every two weeks as opposed to the corporate standard of a 180 day cycle. Records of the last ballast drill were provided. This was carried out on the 6 September 2009 and related to simulated flooding of the starboard forward pumproom. Additionally the HIPAP compartment flooding situation was considered and damage stability calculations carried out. Response actions were identified to counter this water ingress. A ballast incident occurred in May of last year when the rig suffered a flooding incident. In this incident one of the MCTs was found to have blown out leading to cross communication between the pump room and adjacent compartment. This along with another leaking MCT identified during the audit period has raised a concern with regards to the reliability/integrity of the MCT installation for this rig.

Is the necessary technical information available for safe and efficient handling of bilge and ballast in normal and emergency situations?

- Are transfer systems for cargo and ballast (including bulk cargo where appropriate), and associated monitoring and control systems pumps fully operational?
- Are operational procedures available and are operators familiar with these?
- Up to date pipeline diagrams, mimic diagrams etc., to be available in control room.
- Ballast operations are to be monitored and controlled to prevent loss of stability, excessive facility movement, tank overflow or over-pressurisation.
- Engineering drawings for facility to be readily available onboard, legible and up to date.
- Ballast and bilge valves and lines to be clearly identified and accessible for inspection/ maintenance and local operation
- Are regular manual soundings taken to verify correct calibration of tank gauges
- Review system valve segregation for adequacy to industry best practice
- Review type and placement of non-return valves including those providing isolation between different systems
- Verify that emergency ballast drills are conducted on a regular basis and emergency operating procedures verified during drills.

It is BP's aspiration that all new MODUs have in place detailed Failure Modes, Effects & Criticality Analyses (FMECA) of the following safety critical systems – have any of these analysis been performed?

- Ballast system
- Bilge system
- Remote valve hydraulic system (This may be a subset or failure mode within the Ballast and Bilge System FMECA)

Auditor shall verify existence of a trials procedure used to verify the results of the analysis (where possible).

Is there a Damage Stability Plan?

- All marine / ballast crew shall be adequately trained and should understand the survivability criteria, taking into account down flooding angles (watertight and weathertight).
- Use of 'part-time' ballast control operators does not constitute a safe practice
- Ballast and bilge valves and lines to be clearly identified and accessible for inspection/ maintenance and local operation
- Have regular drills taken place using the emergency ballast and bilge control system.

- Are ballast and bilge valves including non-return valves proved on a regular basis to verify functionality and records maintained? (Auditor to review on board testing procedures and frequency)
- Are purpose built shell penetration (e.g. Sea Chest) covers available (state location)
- Describe the emergency pumping equipment held onboard, including portable pumps where available.

Is there information which gives detailed operational guidance to ballast control staff in the following areas?

- Segregation of firewater, utility and ballast water systems
- Loss of stability and buoyancy, catastrophic loss of anchor lines.
- Calculation of residual buoyancy and stability in damaged condition.
- Calculation of load distribution in damaged condition.
- Response calculations.
- Identification of system redundancy and alternative valve operating modes

Prior to operations / sailout, the completed results of the analysis should be available in the shore operations office.

15.12 Ballast system design and operation

The ballast system should comply with the BP Rig Audit Standards. The goal is for a semi-submersibles coming on contract to comply as a minimum with Section 4.9 of the MODU code Consolidated Edition 2001. Any deviation from this standard should be clearly identified and fully risk assessed. The ballast system should be designed with an operating philosophy, which recognizes the importance of the security of the system against accidental failure, or mishandling, which could endanger the unit. The auditor should verify routine planned maintenance procedures for bilge and ballast systems and its associated equipment. All equipment should be maintained in accordance with the manufacturer's recommendations, international regulations and the rig owner's directives.

Comments:
Since the last audit no design changes have been reported. During the audit a process station (PCU 18) developed a fault condition due to a defective PLC. This has impacted on the I/O status monitoring and functionality of the systems controlled and monitored through this process station. Both bilge and ballast valves in the starboard aft quadrant such as AI 400; 1, 2, 17 and 18 and DI 400 21 and 22 have been affected which has manifested itself in the inability to use ballast pump #4 unless the suction is opened locally with the emergency hand pump or from the solenoid rack. In addition to the non-operation of the bilge and ballast valves the tank level gauges in the

starboard aft quadrant have also been rendered non functional.

The ballast system HPU in port aft quadrant has the four pumps running continuously. This could be indicative of worn pumps and or a leaking system and requires investigation.

Ballast pump #3 was tested and it was found that the electric current was fluctuating between 80 and120 amps. When taking suction from an adjacent tank the efficiency of the pump appeared poor. Pump efficiency test should be conducted and the reason for the amp fluctuation should be resolved.

Ballast cross over between pontoons is not secured but is not used in routine operations. The rig always floods in and pumps out. Tests were carried out on the port aft column top secondary ballast panel. Command was taken from the vessel management system and the ballast pump was tested sea to sea.

The hydraulic pressure gauge situated in the port aft solenoid cabinet is showing 0 psi hydraulic pressure. This pressure should be checked and gauge repaired if required

The bilge system valves in some instances such as the pontoon forward and aft isolation valve have nitrogen accumulator bottles as a back up for emergency valve operation. Rig crew were not familiar with this system and checks for accumulator pressure appear not to be carried out under the RMS II.

- The ballast control console should be at a focal point in the unit, constantly attended by a control room operator who is trained to operate the ballast system. The console should be secure in that no unauthorised person can touch the controls.
- The amount of pipe work should be minimal and the layout simple. Valves should be located in a manner to allow easy access for quick isolation should pipe work fail. The most important area of design is the integrity of the sea chest inlet, overboard discharge and section isolation valves. These valves should fail closed in the event of loss of power, but have capability to be controlled by a source of stored energy i.e. accumulators. There should also be a manual valve at the ship's side connection for local control.
- There is no ballast cross connection between the Port and Starboard pontoons. If any such connection does exist it should be isolated with the valves locked closed.
- All tanks will have a vent pipe which terminates above the worst damaged waterline. The vent should have an automatic means of preventing ingress of seawater were it terminates such as a ball check valve.
- It is necessary to be able to immediately activate manual control of all valves, by simple and clearly defined actions including access and identification.
- The status of any remotely operated valve during a total main power failure should be clearly indicated at all locations from which the valve can be operated. All remotely operated valves should fail safe closed on loss of control power. Valves that fail shut should remain shut until actuated by a command from the ballast console.
- In the event of loss or failure of the main ballast console the ability to operate valves in a flooded pump room from a position outside the pump room i.e., a

secondary ballast console, preferably located above the worst damaged waterline is the most desirable situation.

- When running on emergency power, valves should be able to be operated normally. In the event of loss of main power, the switching to emergency power, and the resumption of main power, should make no difference to the valve status as indicated, with an interruptible power supply source being available.

If the bilge and ballast system is controlled using hydraulic actuators the unit will be provided with a hydraulic power unit (HPU).

- Verify that the rig owner has procedures for isolating the HPU during maintenance and evacuation for hurricane etc. The isolation procedures should clearly state that the return line (T-line) isolation valve (if fitted) is to remain open at all times. Closure of the T-line isolation valves can have a detrimental effect on a valve position.
- Look in the valve actuator solenoid cubicle. Observe obvious signs of damage or overheating. Permanently energised valves can suffer overheating and sticking, and thus fail to operate when required.
- Verify emergency operating procedures are posted at the solenoid valve cubicle. The procedures should be clear and concise with components in the cubicle clearly labelled and identified. Emergency operating procedures should be available for:
  - Loss of remote control system
  - Total power loss
- Verify that the bilge and ballast HPU is included in the maintenance management system. Ensure that the maintenance schedules and procedures are adequate for the equipment installed on the unit. Verify that maintenance is being conducted in accordance with the maintenance routines

15.13 Ballast and pre-load tanks

Comments:
No tank entry was conducted during the audit period. ABS has inspected random selection of Drill water tanks during September 2009. A survey programme by Class is undertaken in conjunction with Survey requirements. No tank defects were reported.

- Describe level of inspection of tanks that was possible during the audit

15.14 Bulk Hose Connections

Complete this table only if the MODU is not on contract to BP

Potable Water	
Connection type and size	
Hose size	
Drill Water	
Connection type and size	
Hose size	
Fuel Oil	
Connection type and size	
Hose size	
Base Oil	
Connection type and size	
Hose size	
Cement	
Connection type and size	
Hose size	
Bulk Chemicals: (Barite and Bentonite)	
Connection type and size	
Hose size	
Comments Environmentally sensitive hoses were provided with insufficient floatation collars The potable water hose was not provided with a protective cap, it was consequently exposed to the environment.	

- Check suitability of bulk hose connections
- Check deck crane access and visibility for the follow:
- Supply vessel operations
- Bulk hose change out;
- Bulk connections to be clearly marked/colour coded;
- Do hydrocarbon carrying hoses have floatation collars fitted? Only one buoyancy aid fitted to fuel hose. Insufficient floatation is fitted. The pot water hose is exposed and has no end connect fitted.

Chapter 16 MOORING and LIFTING EQUIPMENT

AMENDED QUESTIONS

16.1 Are mooring practices appropriate for the size of MODU?

Only applicable if the MODU is moored alongside in a dock or shipyards

Not Applicable
Non Applicable

- Sufficient mooring ropes deployed;
- Mooring lines correctly spooled on drums
- Spare mooring ropes available;
- MODU securely moored at location with appropriate moorings for anticipated conditions;
- Moorings to be tended regularly.

16.2 Is all mooring equipment available for use and defect free?

Not Applicable
The anchor system is no longer utilised

- The auditors should assess the conditions of all mooring equipment, brakes, wires and lines. Note the date when brake bands were last renewed and whether a policy is in place for testing brakes;
- Mooring lines to be in good condition;
- Fairleads, rollers, bitts and chocks to be in satisfactory condition;
- Deadmen and roller fairleads should be well greased and free to turn with little evidence of grooving;
- Brake linings and pins should appear to be in good condition;
- Winch seatings and connections to deck should be sound:
- Check winch certification and maintenance records;
- Verify all winches are operational;
- Check winch guards fitted;
- Remote operation winch controls fitted and operational;
- Winch emergency stops fitted and operational;
- Spooling gear fitted and in good order;

- Verify the accuracy and calibration of the line pay out meter;
- Confirm tension and scope meters fitted and working;
- Emergency release system date of last test;
- Adequate lighting should be provided to cover entire work area.

16.3 Are anchors, cables and securing arrangements available for use and defect free?

Not Applicable
Chains and anchors have been removed

- Anchor chain stoppers to be in good condition and effective.
- Mooring chain, wire and jewellery certification to be available for each leg;
- Except while alongside (when the locking bar should be in place), anchors should be cleared and ready for immediate use during port entry.

ADDITIONAL QUESTIONS

16.7 Mooring operations

Comments:
Rig is DP positioned drilling rig, mooring equipment is not used.

- Note experience of marine crew in mooring operations;
- Confirm manning levels allow for safe mooring operations;
- Confirm provision and operation of communications equipment between deck and bridge (a back-up system should be provided);
- Confirm PPE is available to crew for all anticipated working conditions;

16.8 Towing bridle

Comments:
The towing bridle has been removed. There is no facility at this time for carrying out an emergency tow connection. An onboard change proposal MA 033 has been submitted to the Transocean office with regards to emergency towing facility but was rejected on the grounds of ABS MOC. Good marine practice would indicate that a means is available for emergency towing particularly when the rig is exposed to environmental events such as

loop currents or hurricanes etc.

- Check test certification;
- Wires to be adequately lubricated;
- Carry out visual audit of top two layers of wire to gauge general condition of wire. Look for flattened areas, broken strands, heavy external corrosion, kinks and core/strand protrusion;
- If inspection of top two layers provides evidence that wire condition is unsatisfactory, continue with examination until satisfied that overall condition has been established.

16.9 Supply Vessel Moorings

Comments:
Supply vessel moorings are fitted but have been taken out of service.

- System in operation
- Type
- Number
- Location
- Condition

Chapter 17 CONSTRUCTION and STABILITY

AMENDED QUESTIONS

17.1 Is a survey report file maintained onboard?

Yes
The previous UWILD was carried out at the last SPS in June 2006. Recently in August/September 2009 an Intermediate ABS UWILD inspection was carried out where a total of twelve skin valves were replaced and others overhauled. The main report from ABS had not been received at the time of the audit. Since the last SPS in 2008; Thirty of the forty four ballast tanks have been internally inspected as part of the special continuous survey for the hull (due date February 2011) undertaken by ABS, with results indicating fair to good conditions for the paint work. The void space inspections are well in hand with past inspections indicating mostly excellent to good condition of void space coatings. There is an up to date database of both the ballast tank and void space inspections. There were no reported anomalies or hull damage indentations to the rig. The ABS survey report indicated that there were no outstanding conditions of class relating to the hull.

- Is the following documentation available onboard? Information contained should include:
  - previous repair history;
  - inspections by MODU personnel of structural deterioration and leakages detected in bulkheads and pipes;
  - condition of coatings and/or corrosion prevention systems;
  - a summary of the results of the tank coating surveys, including date conducted and tanks inspected. Any deficiencies or areas of substantial corrosion should be recorded;
- Describe level of most recent inspections by certifying authority of tanks.
- Note any areas identified in the survey reports as causing concern.
- If the MODU is over 25 years old and contract period is less than six months then establish there are no outstanding structural issues by checking:
  - Documented conditions of Class
  - Current Class survey status, including reports for latest special survey and intermediate survey.
  - Class survey report for the last dry-docking or UWILD.

Should the review of the above raise concerns a more extended review should include:

- Latest thickness gauging/UT reports as required during Class special surveys or enhanced survey periodical.
- Structural damage and repair Class survey reports from the past 5 years.
- Upon review of the above, records may also be requested from the last 10 years.
- Any other information deemed necessary.

- If the MODU is over 25 years old, the contract period is greater than six months and there are reasons to suspect the structural integrity of the MODU. In addition to the documents listed above a further structural review should include:

  - The latest executive summary and condition evaluation report if applicable/available.
  - The latest thickness gauging/UT report as required during class special surveys or enhanced survey periodical.
  - Recent fatigue analysis or dynamic load analysis if applicable.
  - Structural damage and repair Class survey reports from the past 5 years.
  - Any other information deemed necessary.
  - Once this review has been completed and if the MODU has been found acceptable for use, the review will remain valid until the next relevant class structural survey.

17.2 Is there an approved stability book?

Yes
The stability book is contained within the Marine Operations Manual. This contains the hydrostatic, KG limit and sounding tables. Sample loading conditions and relevant drawings such as watertight and weathertight integrity. A further detailed stability analysis manual is also available on the bridge. Daily stability calculations are undertaken with hard copy summary sheets available. The night SDPO carries out the stability calculations. A manual stability calculation can also be conducted.

- Is the MODU free of any inherent intact stability problems?
- Approved stability book should be available;
- The ballast control operator should understand the number of tanks that may be slack for MODU to remain stable;
- Determine if the ballast control operator can establish stability conditions without extensive calculations;
- Records to be kept of previous stability calculations.
- State the frequency of the stability calculation
- Method of recording lightweight additions
- Means of incorporation into the stability calculations

- Approved load computer software (if fitted)
- The ballast control operator should demonstrate adequate knowledge of the ballast system and the consequences of inadvertent ballast shift and free surface effects.
- Determine if the person in charge can establish stability conditions without extensive calculations.
- Verify calibration of tank gauging systems and level alarms. Records to be kept of any defects
- Confirm if any manual tank inputs are used in the stability program and how these are recorded
- Ballast system alarms should not be overridden

MODU Name: Deepwater Horizon

Date of Audit: 13 to 17 September 2009

Items do not comply with BP Practices or Standards

REF	CMID REF	RECOMMENDATION	AUDIT TEAM ADVISED COMPLETION	ASSET ACCEPTANCE OR CHANGE	ACTUAL COMPLETION DATE	SIGNED OFF BY
1.4.1	13.3	Port aft quadrant watertight dampers to be made operational. None closed when tested. BP Marine Standard	Before start of drilling			
1.4.2	15.1	Out of 8 seawater service pumps just 1 was defect free. Others could be operated but had motor or pump casing or shaft sealing problems while 4 could not be operated at all. Undertake necessary repairs such that at least 1 defect free seawater pump is available in each quadrant. BP Marine Standard	Before start of drilling			
1.4.3	15.7	Port forward, port aft and starboard forward electric bilge pumps to be made operational. The priming systems are defective and pumps could not reduce the bilges. BP Marine Standard	Before start of drilling			
1.4.4	15.7	Rectify defective emergency bilge suction check valves in the port forward ballast pump room and starboard aft ballast pumproom which leaked during flow back tests. BP Marine Standard	Before start of drilling			

Audit Report Action Sheet (ARAS)

MODU Name: Deepwater Horizon

Date of Audit: 13 to 17 September 2009

Items do not comply with BP Practices or Standards						
REF	CMID REF	RECOMMENDATION	AUDIT TEAM ADVISED COMPLETION	ASSET ACCEPTANCE OR CHANGE	ACTUAL COMPLETION DATE	SIGNED OFF BY
1.4.5	15.11	Defective process station I/O card PCU 18 to be replaced thus restoring starboard aft bilge and ballast valves, ballast pump and tank level functionality to the vessel management system. BP Marine Standard	Before start of drilling			
1.4.6	15.12	The port aft HPU pumps for the ballast valve/watertight damper solenoid cabinet are running continuously. Defects to be investigated and rectified. BP Marine Standard	Before start of drilling			

Audit Report Action Sheet (ARAS)

MODU Name: Deepwater Horizon

Date of Audit: 13 to 17 September 2009

Items are outside API, Class, legislation, Rig Owner policies, have high safety or environmental impact potential						
REF	CMID REF	RECOMMENDATION	AUDIT TEAM ADVISED COMPLETION	ASSET ACCEPTANCE OR CHANGE	ACTUAL COMPLETION DATE	SIGNED OFF BY
2.4.1	2.4	The remote thruster emergency stops were tested and several deficiencies were identified. All non functional emergency thruster stops to be investigated and rectified.	Within one month			
2.4.2	2.4	The communication error in the Port HIPAP to be rectified.		Completed	13 September 09	R. Cox
2.4.3	2.4	Inverter current imbalance on thruster T2 to be investigated rectified such that it is available for DP service.	Within two weeks			
2.4.4	2.9	As a result of a DP incident the main engine oil mist detectors were to be replaced. Confirmation of the status of this replacement programme to be provided to BP	Within one month			
2.4.5	10.11	MOB drill to be conducted in line with Transocean policy of 90 days.	Within two weeks			
2.4.6	11.2	Fire pump #1 located in the starboard engine room to be repaired and made available for use. The mechanical seal has failed.	Within one month			