







# North Sea Offshore Authorities Forum

## Multi-National Theme Audit *'Lifting equipment and lifting operations'*

			
State Supervision of Mines	Petroleum Safety Authority Norway	Landesamte für Bergbau, Energie und Geologie	Danish Energy Authority

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 1
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

## Content

<b>1. INTRODUCTION.....</b>	<b>3</b>
<b>2. MANAGEMENT SUMMARY .....</b>	<b>3</b>
<b>3. PROJECT OVERVIEW .....</b>	<b>4</b>
<b>4. THEME AUDIT PROCEEDINGS.....</b>	<b>5</b>
<b>4.1. Inspection templates</b>	<b>5</b>
<b>4.2. Inspection report format</b>	<b>6</b>
<b>4.3. Traffic lights</b>	<b>7</b>
<b>5. COMMON FINDINGS .....</b>	<b>7</b>
<b>6. RECOMMENDATIONS .....</b>	<b>10</b>
<b>7. CONCLUSIONS .....</b>	<b>14</b>
<b>Appendix 1 .....</b>	<b>15</b>

I

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 2
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

## 1. INTRODUCTION

Appendix 1 outlines the terms of reference for the multinational theme audits, which were conducted by four of the regulatory bodies of NSOAF for the years 2005 to 2007. The key themes selected for these audits were lifting equipment and lifting operations. The scope of work was to perform systematic theme audits on duty holders/operators and drilling contractors, which are active in two or more NSOAF member sectors.

Each national team conducted individual audits and submitted a separate report for consolidation into this composite report. The common standard and methodology for the audits were inspection templates based on the HSE KP2 program and modified for NSOAF and the IRF lifting project inspection templates and inspector's guidance documents.

## 2. MANAGEMENT SUMMARY

The terms of reference for the theme audit on lifting operations and lifting equipment was submitted to NSOAF for approval in July 2005 and subsequently approved. PSA conducted a pilot audit on ConocoPhillips in November 2005. The formal kick-off meeting for the multinational theme audits was arranged in June 2006.

Theme audits were carried out throughout 2006 until March 2007. During the project the national audit teams executed 11 audits on operators / duty holder and drilling contractors (16 if HSE's KP2 audits are included), all with operations in at least two sectors of the North Sea. There were no audits carried out in the German sector due to limited offshore crane operations, hence the audit on Wintershall was carried out on the Dutch sector as a combined effort between SSM and LBEG.

Based on the findings and observations made by the national audit teams, it is recommended that all regulators should continue to carry out supervisory activities related to lifting operations and lifting equipment in the five areas of concern listed below. Results from the audits will be communicated to the IRF lifting project members. It should also be communicated at national safety forums with E&P Industry Trade Associations and employee organisations and at national and at international conferences and workshops.

It is furthermore recommended that OMHEC be commissioned by NSOAF to develop guidance documents and/or update existing documents, which will be regarded as adequate compliance with regulations, covering the following areas of concern and in this priority:

1. Planning, selection and control of lifting equipment;
2. Management of lifting operations;
3. Risk assessment;
4. Supervision;
5. Training and competence.

An IRF project on lifting is anticipated to be fully rolled out during spring 2007. The results obtained during the NSOAF lifting audits is believed to be of high value to the IRF lifting project by transfer of experience from the use of common inspection methodology, inspection templates, assignment and interpretation of traffic lights.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 3
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

The objectives for the NSOAF multinational theme audit were achieved.

### 3. PROJECT OVERVIEW

The key themes for the multinational audits was selected based on the results from a recent PSA study on the most significant underlying causes for incidents and accidents with offshore cranes (Scandpower 2005) and the priority list prepared by the IRF in their ‘Generic report on offshore lifting and mechanical handling issues’. Where practicable, special focus has been made on training and competence, planning, supervision and maintenance during the theme audits.

The audits were conducted by four of the regulatory bodies of NSOAF (SSM, PSA, LBEG and DEA) in the period November 2005 to March 2007. The main cause for the time lag between the pilot audit in 2005 and the kick-off meeting in 2006 was due to a project decision not to start the theme audits prior to the completion of IRF templates and guidance documents, in order to take full advantage of the high quality of these, thus also avoiding duplication of work.

The core team for the multinational theme audit was made up of the following members:

Name	Regulator	Role
Svein Anders Eriksson	PSA	Theme audit coordinator
Oddvar Øvestad	PSA	Spreadsheet administrator and auditor
Mohamed El Halimi	DEA	Auditor
Arnold de Groot	SSM	Auditor
Markus Nospickel	LBEG	Auditor

Table 1: National focal points

A national team from each of the regulatory authorities performed the audits in its own sector, but teams were also established as a mix of regulators. Such collaboration was done between SSM and LBEG during the audit on Wintershall on the Dutch sector.

HSE gave the audit team members a very good brief on the application of the KP2 inspection templates and use of the traffic lights. Prior to the audit kick-off meeting, a separate meeting was arranged between PSA and HSE for the purpose of ‘buying-in’ to the KP2 methodology and inspection and reporting principles developed for the KP2 program.

It was unfortunate that HSE, due to other priorities, was not able to participate actively in the NSOAF multinational audit. However, HSE’s positive and proactive input by provision of KP2 templates and guidance as a responsible regulator for management of the IRF lifting project, was much appreciated by the NSOAF audit team.

HSE has in addition provided five inspection results from audits carried out in 2006 under the KP2 program. Due to legal restrictions and UK law, HSE was not able to pass identification of duty holders and installations to the NSOAF project. The anonymised HSE inspections were included in the project database (spreadsheet) to get a better statistical basis for recommendations given in section 6 ‘Recommendations’ and 7 ‘Conclusions’.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit ‘Lifting equipment and lifting operations’	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 4
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

The following audits were carried out during the lifting project:

No.	Installation type
1.	Fixed
2.	Fixed
3.	Fixed
4.	Jack-up
5.	MODU
6.	Fixed
7.	Fixed
8.	Fixed
9.	Fixed
10.	Fixed
11.	Fixed
12.	Fixed
13.	MSV
14.	NUI
15.	MODU
16.	Jack-up

Table 2: Overview of theme audits

During the audit sessions, the national teams gave the operators/duty holders and drilling contractors feedback on both the positive and negative evidence of compliance with their lifting operation and lifting equipment management system. Company personnel at all levels were cooperative and contributed positively to the audit process. Each national team submitted separate inspection reports to PSA for consolidation in a composite report.

#### 4. THEME AUDIT PROCEEDINGS

##### 4.1. Inspection templates

The purpose of the inspection templates is to target the resources to the key areas of concern and to provide a consistent means of entering the findings into a central database (spreadsheet) using a simple traffic light system. The common standard and selected methodology for the audits was originally based on the HSE KP2 program. For each of the selected topic areas, a series of inspection templates were modified to suit the NSOAF project needs.

After the pilot audit carried out by PSA (which was based on modified KP2 templates), improved templates developed for the IRF lifting project were introduced in agreement with IRF. It was seen as beneficial for both projects to let the NSOAF lifting audits serve as pilots for the IRF lifting project, with the possibility to gain experience, improve the quality of the audits and avoid double work in the future.

Each of the regulatory bodies of NSOAF had an individual task to modify references in the selected templates, where this was deemed necessary. The purpose of the modifications were to incorporate each regulator's national regulations, and in some cases national, industrial safety initiatives (i.e. 'Step Change' in the UK, 'Working together for Safety' in Norway, etc.).

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 5
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

The KP2 template covers 11 topics, whereas the IRF template is specifically targeted towards four main areas with a corresponding set of detailed inspection templates covering relevant topics of enquiry. This distinct difference in template structure created some challenges when merging the inspection results from two set different sets of templates into one spreadsheet.

The KP2 spreadsheet format for reporting of traffic lights was selected, as it was proven much easier to transfer and correlate data from the IRF templates into the KP2 spreadsheet rather than the other way around. Due to the noted differences in the template structure and level of details data transfer the opposite direction would have been difficult and time consuming.

Maintenance is not covered in the KP2 templates as this is a separate HSE initiative (KP3). Hence, dedicated templates were prepared for the IRF lifting project for inspection of maintenance. As there is a very wide range of lifting equipment used offshore, the scope of the IRF maintenance templates was limited to the maintenance of pedestal cranes and lifting accessories used to secure a load to the crane hook. However, the principles described in these templates can be used to assess the maintenance of other lifting equipment.

The structure of the IRF maintenance templates introduced some difficulties for the reporting of observations on maintenance. This challenge was overcome by transferring maintenance related observations in the IRF template to the column for ‘Planning, selection and control of lifting equipment’ on the KP2 spreadsheet. This is possible since the maintenance strategy for the lifting equipment should embrace items like examinations and pre-use checks under ‘control’.

The audit teams found the IRF templates technically very good, but overly comprehensive and time consuming in use. Because of this, some teams selected to use the KP2 template when reporting the result of the inspections (PSA’s pilot and DEA), whilst other regulators made use of the IRF template (PSA, SSM/LBEG). As PSA also participated in the planning/developing stage of the IRF project, they decided to test both template options.

The inspection templates were designed for audits both onshore and offshore. The onshore templates are targeted to the persons responsible for setting technical standards and those responsible for controlling resources required to implement safe lifting operations. Offshore templates are aimed at crane operators, riggers, supervisors and maintenance staff, etc.

Each series of templates were accompanied by supplementary guidance giving pointers on the benchmarks expected. Some of the template questions are highlighted in bold. These questions should be asked; the others may be asked at the inspector’s discretion.

Every template includes a Template Response Box to summarise the findings. This is described in section 4.3 below.

#### 4.2. Inspection report format

Each regulator has their own house style and reporting procedures, which have remained unchanged, i.e., each regulator has completed their inspection reports in their normal way. For the purpose of the NSOAF lifting project (and the IRF lifting initiative when launched), the minimum additional work for inspectors was to complete the template response boxes and then e-mail them to a central focal point for inclusion in the project spreadsheet. All regulators have provided more information than was required as a minimum (i.e. filling in the

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit ‘Lifting equipment and lifting operations’	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 6
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

template response box), and have taken time to provide sufficient details on findings and observations on the templates, all which has made analysing the inspection results less difficult.

PSA acted as central focal point and processed the results into the theme audit spreadsheet.

#### 4.3. Traffic lights

To simplify the presentation of the inspection findings, the template response forms adopted traffic light scoring to summarise the result of inspections.

The traffic light colours are defined as follows:

Non-compliance / Major failing enforcement action	A degree of non-compliance with legislation that warrants enforcement action; e.g. an enforcement notice or prosecution.
Isolated failure / Incomplete system needs improvement	Where duty holder is considered to be not fully compliant with legislation. As a minimum, issues in this category should be raised in the letter to the duty holder, but may also include the use of notices.
In compliance / OK meets expectations	Inspected but with no significant issues found Complies with regulations, etc.
Not evaluated	The topic was not inspected or the responses were unclear and should be re-inspected at later date. Issues in this category should include an explanatory note

Table 3: Traffic light definitions

Following the inspection, evidence was assessed and professional judgment applied to decide, in the normal way, what, if any, enforcement action should be taken. Where enforcement action was taken, the corresponding traffic light was amber or red. No changes were made to any of the regulators' enforcement strategy.

An item for lateral learning and reflection is the national differences in assignment of traffic lights. Although national regulations are based on the same EU directives (fixed installation) and IMO/LSA codes and ILO conventions, etc. (floating installations), all NSOAF members have in their own regulatory regime elements of national expectations, legal systems and individual national cultures, which had a certain impact on the assignment of traffic lights.

Active use and promotion of OMHEC guidance documents on maintenance (and other subjects) is believed to bridge the gap between national regulations and different practices in interpretation and enforcement action.

## 5. COMMON FINDINGS

Traffic lights are very powerful indicators of operator/duty holder performance, allowing comparison of one installation to another, and identification of generic issues.

In figure 1 below, each row represents an individual installation, and each column an inspection topic (yellow header). As can be seen, the two installations represented in rows three and seven were labelled with more than two red traffic lights. Although one company is

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 7
--	---	---------------------------	-----------------------	--------------------------------------	-------------------

a drilling contractor and the other an operator, they both belong to the same group of companies and both have cross-border operations, i.e. the same non-compliance or major failing may be found in all NSOAF sectors and the responsible party should be followed up in a coordinated way by the involved regulators.

Duty holder	Management of lifting operations	Risk assesment	Training and competence	Planning, selection and control of lifting equipment (including maintenance)	Supervision	Communications	Violations and procedures ignored	Monitoring of lifting operations e.g. in the drilling area	Material handling in the drilling area	Man riding	Learning from incidents and near misses
1								NA	NA	NA	
2							NA	NA	NA	NA	
3								NA	NA	NA	
4							NA				
5								NA	NA		NA
6							NA	NA	NA	NA	NA
7						NA	NA	NA	NA	NA	NA
8							NA				NA
9								NA	NA	NA	NA
10								NA	NA	NA	
11								NA	NA	NA	
12											
13								NA	NA		
14								NA	NA	NA	
15											
16											

Figure 1: Traffic light overview

The audit topic represented by the first and fourth column shows three and four red lights, which indicates cross-border industrial generic challenges, which have to be addressed by all regulators.

Column two (risk assessment) has only two red lights, which are sporadic in a field where green lights are the dominating traffic light. However, if the risk elements are not identified and assessed, there will be no possibility of systematically eliminating or reducing them, hence further actions on risk assessment will be recommended in section 6 below.

There are also a considerable number of amber traffic lights, indicating isolated failures and areas where improvement is needed for the responsible party’s fully compliance with regulations.

Maintenance was assessed by inspecting both the condition and functionality of lifting equipment, and by inspecting the maintenance strategy and system. The purpose of assessing the maintenance system was to determine whether the condition of the lifting equipment arises through good management or by accident. It will also help identify areas of poor performance and areas of better practice for promulgation to industry.

The yellow traffic lights provided by SSM and PSA on maintenance have been incorporated in column four on figure 1.

For detailed maintenance inspection results, see figure 2 below.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit ‘Lifting equipment and lifting operations’	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 8
---	--	---------------------------	-----------------------	-----------------------------------	-------------------

	Maint 1	Maint 2	Maint 3	Maint 4	Maint 5
	Crane maintenance				
Country	Strategy for crane maintenance	Pre-use checks & in-service inspections	Maintenance activities	Thorough examination & expert verification	Maintenance of lifting accessories
Norway	Orange	Green	Green	Green	Green
Norway	Green	Green	Orange	Green	Green
Netherlands	Orange	Orange	Green	Green	Orange
Netherlands	Green	Orange	Green	Green	Green
Netherlands	Green	Green	Green	Green	Orange

Figure 2: Maintenance traffic lights (based on reports from PSA and SSM)

As seen from figure 2, there are three columns with two isolated failures. Suggested focus areas for improvement within maintenance are:

- Strategy for crane maintenance;
- Pre-use checks & in-service inspections;
- Maintenance of lifting accessories.

SSM has reported that maintenance in general is rather good on the Dutch Continental Shelf due to the TCVT inspection scheme and the improved commitment from the duty holders.

In the UK, HSE focused on maintenance through the KP3 program.

PSA documented in the incident /accident analysis report that poor maintenance or lack of maintenance is the dominating root cause. Hence, PSA will have a strong focus on maintenance in 2007 through an industry project targeted to increasing crane safety through improved maintenance and sharing of best maintenance practice.

PSA carried out a series of audits on maintenance management systems outside the theme audit and identified many cases of poor criticality classification and prioritising of maintenance for safety critical equipment; observations which are also valid for lifting equipment. Maintenance is a key element in the IRF lifting audit program and the areas of concern noted by NSOAF on maintenance should be further explored through the IRF lifting project and during national audits.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 9
---	--	---------------------------	-----------------------	-----------------------------------	-------------------

There are also a high number of white traffic lights. This is particularly relevant for lifting in the drilling and pipe storage areas and man riding, but most probably because the drilling related areas were not available during the time of the audit or because no relevant lifting or man-riding operation took place at the time of the audits. Anyhow, audits on lifting in the drilling area were not core topics for this multinational theme audit, see ToR in Appendix 1.

## 6. RECOMMENDATIONS

Where there are red and amber traffic lights in the same row, national enforcement actions have been or will be taken towards the operator(s)/duty holder/contractor. For responsible parties having equivalent traffic light patterns on cross-boarder operations, cooperation between involved regulators should take place, e.g. DEA and PSA on Mærsk, etc.

Where there are two or more red traffic lights and/or six or more amber traffic lights in the same column, it most possibly indicates a generic challenge in the industry, involving all NSOAF members. In these instances, it is recommended that OMHEC be given the task to develop new guidance documents and/or update existing ones, which will be regarded as adequate compliance with national legislation.

Based on the occurrence of red and amber traffic lights as shown in figure 1, it is recommended that OMHEC be commissioned by NSOAF to develop guidelines or update existing ones in the following areas of concern and in the following priority:

### 1. Planning, selection and control of equipment

Control, etc. is partly covered by an existing OMHEC guidance document on enterprise of competence. Maintenance is well covered by the existing OMHEC maintenance guidance document.

The essential elements required for planning could include (see also HSG 221 ‘Technical guidance on the safe use of lifting equipment offshore – General considerations – Planning the use of lifting equipment’):

- Addressing of design and implementation of findings;
- Consideration of safer job options e.g. doing the job a different way;
- Work instructions for the activities. (Do they clearly identify each individual’s responsibilities, work activities, and identify which equipment is required for the activity?);
- Addressing of normal operations, possible upset conditions and work interruptions;
- Feeding of the outcomes of the risk assessment into the lifting plan:
  - How often are lifting plans reviewed?
  - Is there a feedback system to inject the findings from previous lifting operations?
  - Do the operators adopt systems to identify routine lifts from non-routine lifts?
  - Do operators classify non-routine lifts (simple, complicated, complex)?
  - With non-routine lifts how do operators identify when to seek assistance?
  - Who do operators seek assistance from?

Planning is closely coupled with an understanding of whether the intended lifting equipment is suitable for the job in hand. Essential elements required for selection and control of lifting equipment could include:

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 10
--	---	---------------------------	-----------------------	--------------------------------------	--------------------

- Reporting of defects;
- Inspection of the platform and drilling rigging lofts;
- Registration of equipment in place and being used;
- Control of access to the loft and its equipment;
- Provisions to segregate and store equipment that is quarantined (not to be used until re-inspected) or to be destroyed;
- Isolation of transit slings.

Maintenance encompasses activities such as monitoring, inspection, testing and repair together with ensuring that a good housekeeping regime is being practised. The party responsible should ensure that equipment or parts thereof are maintained, so that they are capable of carrying out their intended functions in all phases of their lifetime.

The maintenance and control of the technical condition of lifting equipment shall also be monitored through the enterprise of competence carrying out the following activities:

- Control upon start-up of new lifting appliance;
- Periodic control;
- Control after the lifting appliance has been used for significant periods;
- Control following damage or important modifications;
- Control in connection with extension of lifespan.

## 2. Management of lifting operations

Management of lifting operations is not covered by an existing OMHEC guidance document.

The safe management system should establish a safe system of work for all lifting operations, both on deck and the drill floor. The majority of accidents occur during routine lifts due to their increased frequency and the assumed familiarity with the risks.

The essential elements required for a safe system of work include:

- Planning the lifting operation with the development and implementation of a documented lift plan;
- Assessing the risks associated with the lifting operation;
- Selecting appropriate equipment;
- Using the selected equipment correctly;
- Providing equipment that is maintained in good condition;
- Communicating the lifting plan to those involved;
- Clarifying everyone's role and responsibilities, identifying who is in control of the lifting operation;
- Involving suitably trained and experienced personnel who have been assessed as competent;
- Preventing unauthorised use;
- Providing adequate supervision.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 11
--	---	---------------------------	-----------------------	--------------------------------------	--------------------

### 3. Risk assessment

Risk assessment is not covered by an existing OMHEC guidance document.

Harm or danger of harm to people, the environment or to financial assets shall be prevented or limited in accordance with the national legislation relating to health, the environment and safety. Over and above this level the risk shall be further reduced to the extent possible.

The PSA analysis report on incidents and accidents regarding use of offshore cranes and the STEP Change Fatality report identified that the credibility and use of risk assessment is not at the required level. The character of risk assessment must be challenged – in particular the written form. The starting point must be the question – what is usable, meaningful and useful to the workforce? Risk assessment should be up to date, should stimulate thinking, be an integral part of planning and should be useful and useable i.e. well laid out – rather than driven by regulatory concern.

In order to achieve safe lifting operations, it is necessary that all parties involved are aware of and can reduce the hazards inherent to the operation. In this respect, different types of risk mapping can be used, depending on the complexity of the operations to be performed.

The purpose of risk mapping is to try to identify all potential hazards under all imaginable conditions and initiate measures to reduce or eliminate these.

Essential elements required for risk mapping include (See also NORSOK R003 annex B):

- To ascertain if available procedures and work descriptions are inadequate;
- To ascertain if the operation involves new and unpredictable risk elements;
- To ascertain if it is proposed to alter lifting equipment, develop new equipment, or assess the interaction between new solutions and the lifting equipment already in operation;
- To ascertain if lifting equipment used is suitable for the purpose, and that the equipment is used correctly;
- To ascertain when there is an increasing fault frequency or increased risk during certain operations.

Where possible inspectors should seek to assess the quality of the risk assessment first hand by, for example, attending shift change tool-box talks or comparing written risk assessments against actual activity and thereby the adequacy and comprehensiveness of the assessment.

### 4. Training and competence

Training and competence is partly covered by the existing OMHEC training standard.

All persons involved in lifting and mechanical handling operations must be trained, have the required experience for the type of lift to be undertaken and be formally assessed as competent.

The OMHEC guidance document on training of crane operator and banks man (see also NORSOK R003 annex B and HSG 211, items 83 to 91) identifies what an individual has to pass through to reach full competency in safe use of some lifting equipment (in particular of offshore cranes). It is important to ensure that following completion of initial training and

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 12
--	---	---------------------------	-----------------------	--------------------------------------	--------------------

assessment normally undertaken onshore that persons progressing on do not undertake lifting operations on their own. They should be considered as ‘apprentices’ and be supervised by a colleague.

The essential elements regarding training and competence include:

- Identification and organisation of job training;
- Preference between on-the-job and off-the-job training;
- Handling of training for leadership and supervision;
- Ensuring that persons receive the relevant training for the procedures that they are using;
- Handling of training of ‘green hats’.

## 5. Supervision

Supervision is not covered by an existing OMHEC guidance document.

Planned monitoring activities should be incorporated into line managers’ job descriptions. The purpose of active monitoring is to minimise the likelihood of incidents by ensuring an effective safety management system is being applied. What training in supervision and monitoring have these individuals been given? Has it been subject to any follow-up checking/auditing/monitoring? Do supervisors, for example, feel diverted from an effective supervisory role of correcting mistakes, teaching and training, identifying hazards and taking effective remedial action by the burden of paper driven risk and competence assessments?

The essential elements regarding supervision of lifting operations include:

- Ensuring the crew are only asked to undertake work activities that they have been deemed competent to undertake;
- Ensuring the crew fully understand work activities at the start of each shift and have clear work instructions based on current procedures for all anticipated activities including: normal operations, abnormal operations and breaks;
- Ensuring crew members are fully conversant with the limits of their responsibilities and of the risks and consequences associated with anticipated work activities. Monitor work activities to ensure crew are following work procedures, etc.

### Furthermore:

Most audit teams had not covered lifting safety challenges in the drilling area. Some topics, like monitoring of lifting operations and lifting equipment, material handling and man riding had been assigned white traffic lights as explained in section 5. Considering the high numbers of serious incidents and accidents resulting from lifting in drilling areas, it is recommended that NSOAF should further focus on these items through the IRF lifting project. The same applies to maintenance management of lifting equipment. Another option is to continue the NSOAF lifting project for another year (2007-2008) with a special focus on maintenance and lifting in the drilling and pipe handling areas. This will eventually cause duplication of inspections already planned by the IRF lifting project and is not recommended.

In order to obtain further evidence of consistency of approach by individual regulators in the North Sea area and promote further targeted international collaboration, it is recommended that all NSOAF member countries participate actively in the upcoming IRF lifting project.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit ‘Lifting equipment and lifting operations’	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 13
--	---	---------------------------	-----------------------	--------------------------------------	--------------------

The aim for the multinational theme audit has been to achieve a sustained reduction in injuries related to lifting operations and lifting equipment. Hence, NSOAF must continue to raise awareness of the offshore workforce to the risks and control measures associated with lifting equipment and lifting operations by:

- Communicating the results of the multinational audit with the industry at relevant national and international conferences and workshops;
- Sharing the results with members of the IRF lifting project;
- Sharing the results at safety forums with national E&P Industry Trade Associations (OLF, NOGEP, UKOOA, etc.) and employee organisations;
- Promulgating new OMHEC guidance documents on individual regulators’ homepages as adequate compliance with regulations.

## 7. CONCLUSIONS

The objectives for the NSOAF multinational theme audit were achieved.

The national audit teams were able to effect common theme audits in each of their continental shelves. These will provide valuable information to each regulator and feedback to the operators / duty holder and drilling contractors involved for areas that require improvement.

A considerable degree of consistency in the findings was found by the respective national teams. It is suggested that major international companies with cross-border operations in the North Sea have similar strengths and weaknesses in their crane safety management systems.

Crane safety management systems were generally found to be in place, though not necessarily adhered to. None of the companies audited had all the relevant controls fully in place, and they could improve their management systems.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 14
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## **Appendix 1**

Terms of reference for the NSOAF international theme audit program on lifting operations and lifting equipment

### **1. Introduction**

Ensuring the health and safety of personnel working with lifting operations and equipment is vitally important and must be a common objective in the whole North Sea area and a particularly challenging objective for the industry and national Regulators alike.

Lifting operations are critical operations characterised by the high frequency of lifts, and potential high risk involved (people are close to the danger, i.e. the load). In the Norwegian sector there is an average of two lifts per minute carried out by offshore cranes alone. In addition there are other related as assistance to drilling, production and maintenance. Injuries and dangerous occurrences arising from lifting operations account for a significant proportion of the total of those occurring offshore. For example, lifting and mechanical handling accounts for 47 % of all fatalities in offshore North Sea, omitting Piper Alpha and Alexander Kielland from the statistics.

High intensities of utilisation, different technology, different safety culture, different training and competency verification schemes together with a wide age range of offshore cranes and other lifting equipment provides a variety of technical and operational challenge solutions. This could result in the application of differing standards and safety levels on lifting operations across national sectors in the absence of a careful comparison of the approaches by the regulatory regimes of the different North Sea Offshore Authorities Forum (NSOAF) members. Current economic and operational pressures could and probably is exacerbating the situation.

All NSOAF members have their own regulatory regimes based on national expectations, legal systems and individual national cultures, but they have common objectives. Indeed, we are increasingly confident that the various regulatory regimes are somewhat similar in practice and we all wish to express concerns with respect to the safety aspects of lifting operations and lifting equipment offshore.

Working together for increased crane safety in addition to holding regular liaison meetings will not only strengthen ties and understanding across borders, but will also bring greater consistency to regulatory practice and standard-setting across the whole of the North Sea area. This should bring both challenge and benefit to the industry.

This document sets out the framework for conducting a theme audit program by NSOAF members on lifting operations and lifting equipment, with the purpose of harmonising standards and good practice, and clarifying the common expectations to safe lifting operations of the separate regulators responsible for the whole North Sea area.

### **2. Objectives**

Each of the five individual regulators (UK, DK, NL, D and N) are to conduct a theme audit on a nominated operator in their sector of the North Sea and to:

- Evaluate the outcomes of the individual theme audit and prepare a composite report on the overall audit program;

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 15
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- Obtain further evidence of consistency of approach by individual regulators in the North Sea;
- Evaluate the benefits of further targeted international collaboration.

### 3. Scope of work

The scope of work will be to perform a systematic theme audit on duty holders operating offshore cranes and lifting equipment, who are active in two or more NSOAF member national sectors.

Key themes which have been selected for this program will be lifting operations and lifting equipment. Specific focus shall be put on training and competence of operators of lifting equipment, planning and supervision of lifting operations and maintenance management of lifting equipment. Key themes have been selected based on the results from a recent PSA study on the most significant underlying causes for incidents and accidents with offshore cranes and the priority list prepared by the IRF in their 'Generic report on offshore lifting and mechanical handling issues' (both documents can be found on the PSA website).

A national team from the regulatory authority will perform an audit in its own sector. If possible, teams could be established as a mix of regulatory authorities. (PSA have for example been together with HSE on a lifting audit in the UK sector).

Companies selected to be auditees and regulatory bodies to conduct audits are:

- A (the Netherlands & Germany)
- B (Denmark)
- C (UK)
- D (Norway)

The NSOAF Lifting Operations / Lifting Equipment (LOLE) Working Group will nominate an audit team coordinator and assistant (Norway and UK respectively). They will coordinate the activities of the various national audit teams and provide a composite overview report of the total activity. Individual national audit teams will provide the coordinator and assistant with a summary report of the findings and recommendations of their individual activities.

National audit teams will have their own specific responsibilities and structure, consisting of team leaders and members. National audit teams will be expected to perform planned activities at defined locations onshore and offshore in an efficient manner to reduce the need for repetitive visits at these locations.

Audit teams shall base their pre-planning, execution and reporting on recognised audit standards and on experience fed back from previous audits undertaken for the NSOAF LOLE Working Group. Wherever possible, meetings and discussions to determine the audit strategy, etc. shall be co-coordinated to ensure efficient use of both human and economic resources.

The audit co-coordinator will be responsible for ensuring the following milestones are met: -

1. Submission of terms of reference for information to the main NSOAF meeting on the 7<sup>th</sup> of July 2005.
2. National teams to complete theme audits in their own sectors by the 31<sup>st</sup> of October 2005 and submit findings to the audit coordinator by the 30<sup>th</sup> of November 2005.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 16
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3. Audit coordinator and assistant to prepare a draft composite report for the NSOAF LOLE Working Group by the 15<sup>th</sup> of February 2006.
4. Final evaluation report to be presented to the main NSOAF meeting during May 2006.

The NSOAF member countries responsible for national and or international duties will be expected to provide the necessary personnel and resources to fulfil these requirements.

#### **4. International Team Assignments and Responsibilities**

Co-coordinator: Country: N

Responsibilities: –

- To develop an overall audit strategy and plan;
- To identify the tasks required for achieving the audit objectives ;
- To assign defined requirements and time required for each task;
- To assist and facilitate discussions with nominated companies;
- To advise the NSOAF LOLE Working Group of any significant obstacles encountered and advise of any impact on the audit objectives and program;
- To issue the final audit report to the NSOAF LOLE Working Group and the audited duty owner (or equivalent);
- To issue a written evaluation report to NSOAF LOLE Working Group .

Assistant Co-coordinator: Country: DK

Responsibilities: –

- To assist the team co-coordinator;
- To identify and prepare a list of all required documentation and reference material;
- To correlate audit tasks and facilitate transmission of completed audit reports to team co-coordinator;
- To coordinate the preparation of the draft audit report for audit team and audited companies review and discussions.

Audit Team Members: Countries: Denmark, the Netherlands, Germany, Norway (& UK)

Responsibilities: –

- To cooperate with and support the team co-coordinator and assistant co-coordinator;
- To organise and lead the theme audits in their sectors;
- To nominate appropriate personnel from their own authorities to conduct the audits;
- To prepare audit task questionnaires as appropriate;
- To collate audit findings, conclusions and recommendations as requested by the assistant co-coordinator;
- To provide contributions to the draft audit report as requested by the assistant coordinator.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 17
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## **5. References & Standards**

The common standard for all the national audits shall be HSG (65) – Successful Health and Safety Management.

To ensure consistency the international audit team shall prepare and issue a list of reference documents and any other relevant standards for use by the national audit teams. In particular OMHEC guidance document should be used as regulatory benchmarks, see appendix for details on OMHEC.

<b>Responsible:</b> NSOAF HS&E Working Group	<b>Title:</b> NSOAF Multi-National Theme Audit 'Lifting equipment and lifting operations'	<b>Date:</b> 17.4.2007	<b>Revision:</b> 1	<b>Doc.no.:</b> NSOF WG report	<b>Page:</b> 18
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