

# Industry meets the challenge of lifting incidents

**THE DRILLING AND** production industries have faced numerous challenges in recent years when it came to safety in the lifting and mechanical handling aspect of E&P operations. Whether it is transporting cargo from a supply vessel to a platform or mobile rig, or moving cargo and supplies from one area of a platform to another, or drilling operations, manriding or climbing ladders, the industry faces potential life threatening incidents every day.

In recent years, however, the industry, contractors and operators as well as various safety authorities, has made an effort to reduce if not eliminate incidents related to all kinds of lifting and handling operations. These include new guidelines, standards and regulations as well as training and assessment by operators and drilling contractors.

## **BP'S IMMERSIONS PROGRAM**

BP recently studied its safety data and came to the revelation that, over the years, lifting and rigging activities constituted the highest number of its most severe incidents around the world. Seven people died in lifting operations in 2001 and 2002, according to the company.

According to the company's data, during 2001 and 2002, 51 of the serious lifting incidents occurred on the rig floor, 13 on the rig deck, 12 at construction sites, 10 at production facilities and 10 on boat decks. Of these incidents, the most commonly involved mechanisms were hoisting systems (21), cranes (21) and rig tigger (14).

"When you think about where the issues are and where the effort needs to be, it is actually in building the competency in people and the integrity of procedures and the equipment to be able to perform safe lifts," said **Brad Smolen**, E&P HSE Director for BP. Mr Smolen will present the keynote address at the 2004 IADC International Lifting and Mechanical Handling Conference & Exhibition 20-21 April in Amsterdam.

"You can talk about the issues in terms of competency in people to conduct the lifts and you can talk about the condition of the equipment," Mr Smolen said, "but it is people who design, maintain

and operate the equipment so it is still about people."

BP categorizes lifting incidents to include every activity that utilizes a lifting operation, including virtually every activity on the drill floor such as the drawworks, rig tuggers, tripping in and out of the hole, lifting pipe, etc.

Mr Smolen said it shouldn't be surprising that the rig floor can be one of the most hazardous areas on a rig if it is not maintained safely. Lifting is obviously one of its main activities.

BP works closely with its contractors when it comes to safe lifting operations.

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The company has its own procedures that its employees are required to follow and they train their own crane operators, flagmen, etc., on these procedures. BP's contractors have their own procedures as well but the company will verify that they align with BP's policies and check that the operations are being performed in a safe manner.

"The next step once alignment is achieved," Mr Smolen said, "is to let the contractors work to their standards and procedures, and we would expect their employees to be fully trained and competent to conduct safe lifting operation."

Mr Smolen also notes that the contractors that BP uses generally have good quality procedures and maintenance programs.

The question, he said, will always be about the implementation of those programs and procedures and then the verification that the people have been

trained and are competent to do the work. However, he said, its not always an easy thing to audit against.

"You can audit the procedure and policies to see that they are all in place, but it is more difficult to audit if those things are embedded in people's competencies and are actually implemented all the time."

BP's initiative and program that has been developed to build awareness of lifting incidents throughout its organization as well as across the companies that work for it is dubbed Immersions.

"This program transfers lessons learned from past fatal incidents," Mr Smolen explained. "There are also other incidents that did not result in fatalities, high severity incidents that had the potential to become a fatality that add to the lessons learned."

Immersions is about immersing the entire organization to build awareness. It is not a comprehensive training program but rather designed to build awareness about what lifting operations are, the potential hazards and what the individual or group can do to make lifting a safer operation.

The program consists of three phases. Phase I is about learning from previous accidents and incidents. Phase II is about practicing the correct way to perform lifts and Phase III is testing to see if the individual has learned and built competencies. The program utilizes posters and a CD about each of the phases, including check lists and guidance tools incorporated on the CD.

BP expects its contractors to review the Immersion program and it is available for the contractors to use in their own programs. It is not something that BP dictates that its contractors must use since they have their own programs and employees.

"We want to make sure that we touch everyone with these programs so they understand what we learned from the incidents," Mr Smolen said.

The program appears to be working. In 2003 there was one lift fatality and that occurred in January, before the program was implemented in June. For the entire

year, the company has experienced a 27% reduction in the number of serious lift incidents that had the potential to become fatalities. So far in 2004 there has been one lifting incident in January, compared with five incidents in January 2003.

The plan now is to keep the program fresh make it an integral part of orientation programs for new employees and new contractors. "Even with a 27% reduction in incidents, lifting operations still continue to be one of our highest risk areas of personal safety," Mr Smolen noted.

## **MMS INITIATIVES**

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As BP discovered, "rigs are a material and personnel handling incident hot spot," according to **Russell Hoshman** with the **US Minerals Management Service (MMS)**. He notes that there are approximately 1,100 manned production facilities with cranes in the Gulf of Mexico. On average during the past five years there have been about 160 mobile

rigs in the Gulf. The 160 average rigs, during drilling and workover operations, account for 55% of the lifting accidents.

Four crane-related fatalities in 1998 resulted in the MMS forming a Crane Work Group to review accident trends and make recommendation in crane policies.

Since 1998, actions taken by the MMS, **American Petroleum Institute (API)** and the industry resulted in a downward trend in material and personnel handling incidents, injuries and fatalities, according to Mr Hoshman.

However, even with the recent changes, the MMS believes that additional actions are necessary to ensure safe material and personnel handling operations in the Gulf.

One of the initiatives the MMS examined previously was rigger training, which was not previously addressed in any standards or regulations. Crane operator training was also included in that

initiative, which was written into an API recommended practice.

Another recent initiative was use of an anti-two block device, which was incorporated into API Spec 2c and which was incorporated into MMS regulations in February 2003. It went into effect in March 2003 and companies operating cranes on fixed structures must equip cranes with the device by March 2005.

One issue the MMS is working on presently is that of load testing rental cranes. "If you install a rental crane on a facility and it is not braced properly," said **Wilbon Rhome**, Regulatory Specialist for the MMS, "and it is load tested in a direction where the bracing is strong, then you may be under the false assumption that it is strong in all directions."

Because a rental crane is not permanently attached to a pedestal, then it is imperative that some procedure be written regarding load testing, Mr Rhome explained, perhaps testing the crane in

four different directions to make certain it is properly braced in all directions.

"One of the problems we are having with rental cranes," Mr Rhome said, "is how they are attached to the foundation of the platform, so that is something we are looking at."

Mr Rhome said the MMS is of the opinion that the load testing information is too general for the use of a rental crane and it may need to be modified through either a regulatory requirement or an amendment to the standards.

Another initiative the MMS is investigating deals with material handling. "The only thing we have on material handling is that equipment must be handled and effaced in a workmanlike way and to avoid pollution," Mr Rhome said. "I am paraphrasing but that is it."

MMS has a task group assembled to look into material handling standards and regulations.

Mr Rhome notes that API may touch on job safety analysis as it relates to material handling or ASME standards for engineers may touch only on air hoists and chain falls, for example and the US Coast Guard may address something else.

"There is a collage of standards that don't address everything we are trying to address in a standard or requirement," Mr Rhome explained. "We realize that we have to look at personnel handling as well."

"Material handling is a broad range and I have to admit that it is going to be difficult for us to regulate it because the equipment is so diverse," he said. "We may look at writing regulations to address only personnel handling equipment because that is already addressed in OSHA requirements."

MMS has been debating this topic for about five years, Mr Rhome, who is team leader of that particular taskforce, noted. He added that the group was hoping to develop some rule either on material or personnel handling or both, however, he estimates it could take another two years.

One of MMS' primary initiatives is to ensure that older model cranes, essentially pre-1983 cranes, have dynamic load charts included along with static

load charts. "API RP2d states that cranes must have at least one static and one dynamic load chart," Mr Rhome said, "so MMS and API formed an ad hoc group to look at the situation and see what procedures need to be developed to ensure that load charts or procedures are included."

The ad hoc group is examining ways to load test the cranes with a revised standard and develop a procedure to ensure the older cranes are covered. Load testing an older crane with present procedures could mean they would not meet the present criteria.

## NEW NORWEGIAN STANDARDS

Since 2000 there have been three fatalities with respect to mechanical handling and lifting in the Norwegian North Sea. One of the fatalities was related to lifting with a winch on the drill floor and the other two were related to crane operations on the pipe deck. By the summer of 2000 the **Petroleum Safety Authority Norway (PSA)**, previously a part of the Norwegian Petroleum Directorate, completed a study and analysis of more than 4,000 incidents and accidents in the Norwegian sector.

PSA conducted the study on all lifting incidents reported by the oil companies and drilling contractors from 1994 to 1999, analyzing 4,672 reports. The PSA presented the findings to the oil companies and contractors, asking them what they should do to improve the situation.

"The work focused on problem areas that we found from our study," said **Sigurd Forsund**, Principle Engineer, Mechanical and Lifting for PSA. "They are trying to deal with a lack of competence that was revealed, insufficient maintenance of lifting equipment, not following procedures and lack of supervision."

"For a couple of years it was quite hard work for all of the companies," said **Stein Tonning**, Principle Engineer, Drilling, for PSA.

"It was serious work with regard to trying to improve lifting, but during 2003 the committee started working on revised operational standards."

Those revised standards, R-003, cover all lifting on platforms and drill floors, pipe handling, handling cranes, winch-

es, etc. The major part of the revisions cover lifting by offshore cranes but it also covers items such as chain hoists, shackles, manriders, winches, essentially all equipment that is involved in lifting operations.

"It is an industry standard," Mr Forsund said. "From our point of view the industry itself is the expert so they are coming up with the standards and trying to meet the problem areas."

"In the meantime," he continued, "we have a heavy focus on a campaign of supervisory activities with regard to lifting offshore."

Having already dealt with more than 100 pages of comments the revised guidelines were set to be confirmed on 5 March 2004. The industry will have one year to implement any changes outlined in the guidelines, at which time they will become regulations.

The companies participating in the revision met for a total of 43 complete days during 2003 as well as working separately as individual companies.

Among the participants were PSA, a group of Norwegian drilling contractors, **Statoil, Norsk Hydro, ExxonMobil, BP, ConocoPhillips, Det norske Veritas** and a representative from the supply vessel owners union.

The first part of the standards is directed toward the users of lifting equipment and is aimed at presenting a standard for lifting operations.

"The idea is that all oil companies and drilling contractors should use the same standards and procedures," Mr Forsund said. "That is one thing that we think will improve safety."

The standards will be continuously reviewed with an eye toward further improvements. "The companies should gather their comments and proposals to further improve the standards and to make annual improvements or changes," Mr Forsund said, "so the standards are a continuous process."

One of the major revisions to the guidelines deals with training. The content and scope of training is defined in the document, and it calls for additional training on equipment and safety training in regards to lifting operations. ■