



THE LATEST NEWS IN OFFSHORE SAFETY

Using a dropped object protection net made specifically for oil and gas rigs can play a big part in protecting the work area and utility systems.

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Technological advances are always exciting, especially when they protect human life, either directly or indirectly. Their cost, however, is huge in terms of the protective equipment needed and the time used to remove workers from their workplace if potential hazards occur.

The need for protection

Heavy suspended loads, swung by cranes across work areas and critical utility systems, are hazardous operations as people and equipment are at risk from falling objects. The need for lightweight synthetic-based protection nets on the Elgin-Franklin jack-up rig was brought to the attention of Selantic Fibre A/S by McDermott, in partnership with TPG.

Dropped object protection nets (DOPN) prevent falling objects damaging oil-carrying risers transporting oil from the seabed. These have been mounted inside the legs of the Elgin-Franklin rig. Both a metallic net and integrated steel covers had previously been considered, but due to problems and restrictions, synthetic fibre nets were finally chosen. Nets were finally produced and installed during early 2001. They have six sides varying in length from 8 to 11m, terminating in each of the six corners at adjustable steel fastenings. Each of these accommodates five rope attachments and a connection to the supporting structure. It is important to note that the rig operators themselves installed them.

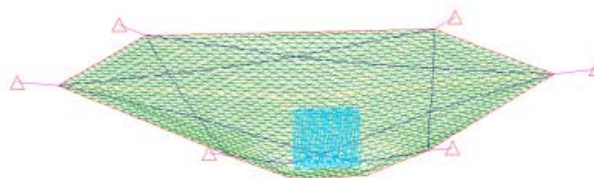
The nets had to be:

- * Strong with extreme absorption capability (to absorb the energy from a five-tonne container falling from 12m above the net with a maximum deflection restricted to 2.5m)
- * Light, reducing little or none of the rig's available deck payload
- * Easy to install without compromising the existing design of the rig, presenting no obstacles to the building and completion process of the rig
- * Easy to dismantle and assemble, providing direct access to the utility systems during rig revisions

Optimising the structure

A synthetic-based net structure complying with this list of considerations requires a great deal of design and engineering work. Each rope element had to be extensively conditioned and tested prior to assembling the elements into one

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A typical dropped object protection net (DOPN).

integrated protection unit for optimum stiffness. Net ropes are made of high-performance fibres several times stronger than steel of equal weight. In order to ease installation and maintain optimum net stiffness for a lifetime over ten years, the termination points at the net corners are adjustable.

Using a computer simulation or NDT of the net was a reliable way to improve the safety of it. Those on the Elgin-Franklin rig were analysed for a wide range of drop scenarios and this avoided the need for expensive physical full-scale prototype testing. An additional safety aspect of the net is the venting of explosion forces. A transparent net construction provides good ventilation and reduces the conditions for explosive 'gas traps'. Should an explosion occur, the open net construction would vent away any pressure created by an explosion. The alternative would be heavy steel covers with an expensive relief panel.

The offshore industry is seen as a constantly evolving technologies industry. As in synthetic fibres confidence grows, so will their usage. It is important that the suppliers of these materials and equipment keep the technology and its applications advancing. *

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