JOINT INDUSTRY GUIDANCE

HELIDECK PERIMETER SAFETY NETS

1. PURPOSE

This guidance has been published by UKOOA in response to a helideck perimeter safety net failure on a UK offshore installation resulting in serious injury to personnel. The document was prepared by a joint industry working group comprising aviation, safety and materials specialists from UKOOA member companies, Health & Safety Executive and the Helideck Certification Agency (formerly BHAB Helidecks).

2. OBJECTIVES

- To provide guidance that reflects best industry practice for design, fabrication and testing of helideck perimeter safety nets to assure that they remain fit for purpose.
- To provide guidance to industry when undertaking perimeter safety net replacement, inspection and maintenance.
- To provide an alternative means of compliance to eliminate the need for in–situ testing of helideck perimeter safety nets on offshore installations.

3. GUIDANCE FOR HELIDECK PERIMETER SAFETY NET DESIGN, FABRICATION AND TESTING

a. Introduction

The design of helideck perimeter safety nets on offshore installations covers a wide range of different supporting structures, net support frame arrangements, netting materials and fixing methods.

To achieve best industry practice this guidance should be applied during the repair and / or modification of existing helideck perimeter safety net arrangements and to all new offshore helideck designs. Information given in the following references should be considered in conjunction with, and supplemented by, this additional guidance.

b. References

- CAA / ICAO requirements for offshore helideck perimeter safety net systems are set out in Chapter 3, Section 9 of the 5th Edition of CAP 437, dated August 2005.
- Section 9.10.3 of the HSE Offshore Helideck Design Guidelines, Issue 1 June 2004 provides greater detail and supplements CAP 437 requirements.
- HSE Safety Notice 7 / 2005 (issue date: September 2005) sets out the testing of perimeter safety nets and relevant legal requirements.
- Section 12 and Addendum 12, Section 9 of UKOOA Guidelines for the Management of Offshore Helideck Operations, Issue 5 February 2005 sets out inspection and maintenance considerations.
- UKOOA Safety Alert No: HSSE/HSE/SA/2005-0001 provides information about immediate controls and further actions to prevent a recurrence of the accident resulting from a helideck perimeter safety net failure.

c. Support Structures

A safety net support assembly and its fixings to the helideck primary structure should be designed to withstand the static load of the whole support structure, the netting system and any attached appendages (e.g. NDB antenna) plus a 125 kg load imposed on any section of the netting system (equivalent to a body falling onto the net from helideck level).

d. Netting System

Once installed, current perimeter safety net designs are often difficult to maintain and may be inaccessible for testing. Ideally, a perimeter safety net system should be designed so that it is divided into manageable sections that can be easily retracted or lifted inboard (hinged or removable) to permit maintenance and panel replacement from the helideck surface, without requiring external access (e.g. scaffolding or abseilers).

Experience has clearly shown that any netting system employed in the offshore marine environment should have a finite life applied to ensure that it retains its capability to arrest and restrain a falling person without breaking and without causing injury.

Designers should therefore place an operational life on a netting assembly that is consistent with the materials used. The recommended component 'life' should be validated using manufacturers and other test data, subject to specified periodic (e.g. weekly) visual condition inspection for deterioration due to physical or other damage (e.g. corrosion).

In the case of infrequently visited Normally Unattended Installations (NUI's) periodic inspections may be impractical. In this case duty holders should arrange to visually inspect condition at the start of each visit and, if manned for an extended period, weekly thereafter.

For existing netting systems on offshore installations, at the first opportunity duty holders should consider the above criteria and apply an "interim" component life having carried out a thorough physical condition inspection and obtained suitable data (e.g. representative net sample testing) to verify the findings. The age and specification of existing netting systems should be taken fully into account when concluding that an "interim" life can safely be applied.

New netting materials should be purchased against a recognised industry standard (e.g. BS, EN, ISO, Mil Spec standards, etc) and such that it's anticipated rate of deterioration can be assessed and predicted against a minimum allowable residual strength.

At the end of its life a netting system should provide a minimum pull - through energy criterion of 2.3 kJ as per BS EN 1263 and for metal netting, an equivalent mesh tensile / ageing coefficient; plus any additional allowance made to cover replacement timescale (say one year). The manufacturer should certify the "expected life" of the netting product and recommend the interim inspection periods and methodology.

Note: The above figure of 2.3 kJ equates to 125 kg dropped 1 metre with a Safety Factor of 2. As a comparison, if a net is purchased new with, say, a 6 kJ energy value this is approximately 125 kg x Safety Factor of 5. As netting deteriorates its performance will naturally decline. This guidance gives the minimum level to which net performance should be allowed to fall.

e. Materials Selection

Support Structures and Fixings

Selection of material type and the sections used for supporting structures and fixings remains the choice of the designer but should be compatible with the netting and framing systems employed.

Netting, Framing Systems and fixings

Any netting or mesh material (e.g. nylon or polypropylene fibre, steel cable or plastic coated steel mesh) may be considered suitable providing it retains sufficient strength and elasticity to withstand the imposed loads.

Netting systems should also be selected for their suitability for extended operations in a marine environment and should take full account of chemical compositions that may cause deterioration when exposed to ultra violet (UV) light and other factors such as fire fighting foam compounds (e.g. AFFF).

Methods of net construction should include a proven system (e.g. mesh crossings, edge attachments, restraining ferrules, etc.) which ensures that localised damage does not render the whole panel unserviceable.

Methods of net attachment to the framing system should ensure continued security of the netting and, in the event of damage to a portion of the attachment system, the net panel remains fit for purpose.

f. Testing

Offshore Testing

Dynamic testing of perimeter safety nets should not be undertaken offshore.

Duty Holders may wish to consider installing sacrificial panels of selected netting material into the perimeter net system that can easily be removed periodically (say, annually) to permit onshore testing. When removed, sacrificial panels should not alter effectiveness of the main panel restraint system.

Onshore Testing

The perimeter netting, while in service, should be capable of meeting a minimum standard of performance. A test is therefore required to show the net initially meets (or exceeds) that standard, and, a method by which periodic testing is able to show that the net continues to meet (or exceed) the desired standard of performance

Testing the netting materials (e.g. pull test for polypropylene rope and other fibres or other appropriate test methods for wire mesh systems) and representative panels of safety netting (e.g. tests to include the netting fixing systems) should be conducted by an approved testing facility (e.g. UKAS or equivalent accredited test facility) using an approved test method for the specified material (e.g. BS, EN, ISO, Mil Spec standards, etc). A description of the material specification, testing protocol and qualification should accompany the results of each series of tests that have been performed.

4. INSPECTION & MAINTENANCE

A programme of offshore inspection, maintenance and replacement (at end of service life) should be established for helideck perimeter safety nets.

The programme should include routine visual examinations and reporting of deterioration and damage prior to helideck operations. Also, practical and clear parameters should be laid down for determining when a section of perimeter net is deemed to be unserviceable and no longer fit for purpose.

Duty Holders may wish to consider using a panel “tagging” and register system to assist with traceability of each section of the perimeter safety net system.

5. VERIFICATION

On behalf of Air Operator Certificate Holders (helicopter operators) the Helideck Certification Agency (HCA), formerly BHAB Helidecks, is responsible for ensuring that helidecks comply with the requirements set out in the Air Navigation Order (CAP 393).

Offshore Duty Holders are therefore required to satisfy the HCA and their installation Verification Bodies (e.g. DNv, Lloyds Register) that compliance with this guidance can be demonstrated.

Irrespective of the previous drop testing results achieved on existing polypropylene perimeter safety nets that have been in service for more than one year, if the condition of the net materials and net fixing systems cannot be properly verified in accordance with this guidance then arrangements should immediately be put in place to replace the helideck perimeter netting system.

Similarly, existing perimeter safety nets constructed from materials other than polypropylene (e.g. wire meshes) and the net fixing systems should be subject to close visual examination appropriate to the materials of construction. If the condition of net materials cannot be properly verified in accordance with this guidance then arrangements should immediately be put in place to replace the helideck perimeter netting system.