



# Safety Alert

From the International Association of Drilling Contractors

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**ALERT 01-16 (Revised)**

## **PERSONNEL HOISTING (MAN-RIDING) FATAL AND NEAR MISS INCIDENTS**

### **WHAT HAPPENED:**

Recently the industry has had two fatal incidents and one near miss incident that have occurred during personnel hoisting operations. Due to these incidents, the IADC Health Safety and Environment Committee and the HSE Safety Engineering By Design Subcommittee have conducted a number of pilot projects on personnel hoisting and also have done research into available equipment and procedures for personnel hoisting (man-riding). The following document provides guidelines and information on personnel hoisting (man-riding) operations and equipment.

### **SECTION 19 – Personnel Lifting Operations (Revised)**

#### **19.0 General**

This document discusses operations where personnel are lifted by a lifting device (winch) more than six feet and / or are suspended at the work location six feet above the deck or ground. This includes personnel suspended in the derrick, below the rig floor, over the side of a vessel (over water) and anywhere the employee is suspended from a single line device in order to perform work. It is not the intention of this document to address devices used to transfer employees to and from other vessels in an offshore environment or lifting of personnel by cranes.

Working environments include both land and offshore operations. Differences in the working environments, personnel manning, equipment design and layout between the smallest land rig and the largest offshore rig are immense. Given these substantial differences, it is difficult to set specific guidelines that would apply to all types of rigs. Each company should assess their specific requirements and develop their own procedures. This document is intended to provide information on possible procedures and available equipment so companies can make informed decisions with regard to hoisting and / or suspending personnel in an elevated situation.

#### **19.1 Alternative Methods**

While it is necessary to utilize personnel lifting devices in some operations, employers should first assess the risk involved against the availability of alternative methods of accomplishing the same task. Examples might be waiting until the derrick can be laid down (in a land situation), or lowering equipment to the rig floor for servicing, etc.

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### 19.2 Job Safety Analysis / Pre-Job Checklist

A Job Safety Analysis (JSA) specific to Personnel Lifting should be established (rather than including the personnel lift as part of a larger task JSA or checklist). The Personnel Lifting JSA should be reviewed prior to each personnel lift and analyzed in comparison to the task JSA for which the specific personnel lift is required. See Section 1.4 and 1.9 for additional information on creating JSAs.

### 19.3 Pre-Job Safety Meeting

A brief safety meeting should be held to discuss possible alternatives to complete the task, Personnel Hoisting safety procedures, as well as review of the JSA / Pre-Job Checklist and inspection of lifting equipment.

### 19.4 Harnesses and Associated Equipment

- A. Personnel Hoisting Harness (Full body harness along with a board or sling type seat integrated with a leg, torso and shoulder suspension arrangement.) should be considered.
- B. Personnel Hoisting Harnesses are also available that have three point connection arrangements that can assist in maintaining an upright position.
- C. Personnel lifting gear/harness used for personnel hoisting should be rated by the manufacturer for fall protection systems.

### 19.5 Connecting Devices

The connection device between the boatswains chair full harness and the lifting line should be a triple action carabineer, a bolt type shackle with a retaining device such as a split pin or equivalent, or some other attachment that is rated by the manufacturer for personnel lifting equipment.

### 19.6 Winches and Lifting System

- A. Some jurisdictions in the world require dedicated personnel lifting winches. Local regulatory authorities should be contacted to determine their requirements regarding Personnel Lifting.
- B. Some winches are designed to include load-limiting mechanisms, line speed-limiting mechanisms, automatic secondary brake systems along with the normal braking systems, and controlled descent features.
- C. Winches should have a spring-back throttle device that automatically returns to neutral when it is released. The winch should have a manually operated brake. Some manufacturers provide winches with automatic secondary braking systems.
- D. The winch should be equipped with an emergency shut-off valve within easy reach of the winch operator.

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- E. Winches that could allow the hoist drum to free wheel, and thus free fall a load, should not be used for personnel lifting.
- F. The winch should be equipped with a drum guard and a mechanism that ensures that the line is properly wound on the drum.
- G. The recommended load capacity of the winch, wire rope, and associated connection devices should not exceed the manufacturer's recommendation. This information should be posted and personnel operating winches should be informed of the capacity of the winch and associated attachments.
- H. Companies should establish inspection procedures as part of their Preventative Maintenance System. This inspection system can include but is not limited to the following:
  - 1. Lifting lines should be inspected for wear or damage.
  - 2. The path of the lifting line to ensure that the line does not come in contact with any derrick member or can be caught by moving equipment.
  - 3. The winch drum brakes should be inspected for wear and proper action.
  - 4. The line guiding mechanism and drum guard should be inspected.
  - 5. The hoist line sheave should be inspected for wear.
  - 6. The sheave attachment to the derrick or rig structure should be inspected to ensure that it has a secure connection to the derrick or rig structure.
  - 7. The winch controls should be inspected for proper operation and to ensure that they automatically return to neutral when released.
  - 8. The winch base connections should be inspected for damage, rusting or wear.
  - 9. The hoisting line anchor to the drum should be inspected for proper attachment or wear.
  - 10. The secondary brake of winches so equipped should be tested periodically for proper operation.

## 19.7 Secondary Independent - Connection Fall Protection

- A. Devices are available for independent anchor point connections for secondary fall protection. These include self-retracting lifelines (SRL's) and static lines used in conjunction with wire rope fall arrest sleeves.

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- B. Derrick design and the type of drilling equipment used, may affect both styles of secondary independent connection fall protection. Employers must determine for themselves if it is appropriate in their specific situations.
- C. Secondary fall protection that can be used without creating additional hazards should be considered.

## 19.8 Personnel Lifting Operations

### A. Pre-Lift Procedures:

1. Determine if an alternative method is available to complete the task.
2. Visually Inspect fall protection equipment, full-body harness that includes a board or sling type seat, lifting equipment including wire rope, connections, harnesses, winches, and other system components prior to use.
3. The status of the well should be considered to ensure that it is safe to conduct the personnel lift.
4. Evaluate concurrent activities for hazards that may affect or be affected by the Personnel Lifting task. Equipment such as the rotary, swivel, top-drive should be shutdown during the personnel lifting operation.
5. Other personnel who may be working on the rig floor or otherwise below the task that will be performed overhead should be instructed to stay out of the area below the lifting operation. Warning signs or barrier tape should be posted.
6. Weather conditions (lifting personnel in adverse weather conditions should be avoided).
7. Communications must be established prior to beginning the lift. It must be continuous throughout the lifting operation. **Should the communications system fail, all movement of the person being hoisted, must be stopped immediately**, the situation evaluated, if adequate communication can not be established, and it is safe to do so, the person being hoisted should be returned to the work surface immediately.
  - Personnel being hoisted should remain in continuous sight of and in direct communication with the winch operator or signal person. If the winch operator cannot see the person being hoisted, flagging person(s), should be stationed so that line of sight is maintained from the winch operator to the person being hoisted through the assigned person(s).
  - In those situations where direct visual contact with the winch operator is not possible, and the use of a signal person would create a greater hazard for the person being hoisted or signal person, direct communication alone by two-way radio may be used, however line of sight should be maintained if possible.

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9. Where personnel lifting operations are carried out below the rig floor (deck), consideration should be given to utilizing hoists that are located below the rig floor. If this is not possible, line of sight communications should be established and maintained throughout the lift.
10. If it is anticipated that the task will take some time, plans for a relief person should be considered.

### B. Lifting Procedures

1. The winch operator should operate the winch at a slow, steady rate and stay alert to the situation and flagman at all times.
2. The employee being lifted should avoid dragging his feet on the beams or kicking out to swing from the derrick.
3. The winch operator should set the manual brake anytime a load is in suspension.
4. The winch operator must not leave the winch controls unattended while personnel are suspended. Should the operator need to leave the controls, the person being lifted should be lowered to the rig floor or other safe landing area prior to the operator leaving the controls.
4. To control the side-to-side movement of the person being hoisted a tagline should be attached to the lifting cable eye, not the person being lifted. Care should be taken to ensure that the tagline does not catch while the person is being hoisted or lowered. The tag line should be made of a light material that will break easily should it snag during the personnel hoisting operation. If "Static Line" type of secondary fall protection is being used, the static line may be used for controlling the movement of the person being hoisted.

## 9.9 Winch Operators

Supervisors should ensure that any employee who is to operate a winch to hoist personnel is trained in the proper use, operation, inspection and maintenance of winches. This training should include but not limited to the information in this section. At a minimum, the assigned winch operator should be able to demonstrate that he can do the following:

- A. Be able to carry out a Pre-Personnel Lifting Task visual and operational inspection that should include:

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- Proper brake and throttle movement and operation;
  - Wire rope inspection for wear and proper design for fall protection requirements;
  - Proper wire wrapping on the drum;
  - Inspecting the total rigging package for wear;
  - Proper fall protection and connecting devices;
  - Check for items on the wire and rigging that might catch on obstacles during the lift.
- B. Understands that he must stay at the winch controls from the beginning to the end of the lift.
- C. Understands basic flagging procedures and line-of-sight and communications requirements.
- D. Understands that should the communications system fail, lifting or lowering of the person must be stopped until communications are reestablished and it is determined that it is safe to continue.
- E. Understands that other operations related to the rig floor (area of the Personnel lifting operation) must be shutdown during the lift. This includes the rotary, kelly, top-drive, blocks and other lifting equipment.
- F. Understands that personnel lifting should not be carried out in adverse weather conditions. Also understands that, should the weather conditions change, he is to evaluate the situation to determine the safety of continuing the personnel lifting operation.
- G. Understands his role in assuming responsibility for supervising the lift.

## 19.10 Additional Information

For additional information, refer to the IADC Accident Prevention Reference Guide Section 3.7 Airhoists, Section 1.4 & 1.9 Job Safety Analysis and Job Safety Analysis Form, and Section 4.2 Fall Protection.

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