

## HSE Information Sheet

### Guidance on regulations and testing applicable to drawworks equipment

#### Offshore Information Sheet No. 14/2007

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## **Introduction**

1 This information sheet provides guidance on the application of UK regulations to drawworks assemblies that incorporate either disc or band brakes as part of a drilling equipment package. It also covers details relating to the nomination and basic role of the competent person together with some advice on thorough examinations and testing of drawworks. Also featured in this sheet are some aspects of the knowledge and understanding with which all operators of drawworks equipment should be thoroughly familiar. The training section includes the response of personnel to emergency situations that might occur such as that associated with an uncontrolled load descent condition.

## **Background**

2 HSE is aware that a number of incidents have occurred which have involved uncontrolled lowering where the drawworks brakes have failed to arrest the load, with consequential dropped loads with the potential to cause injury to personnel in and around the drill floor area. On considering these incidents and, together with other issues, HSE is emphasising that drawworks and its associated accessories are covered by the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) and operators of such equipment are expected to comply with the applicable sections of this legislation.

3 While it is recognised that a large amount of industry standards, guidance and procedures exist which relates to drawworks and associated brake units, HSE expects operators to comply with the relevant sections of the Provision and Use of Work Equipment Regulations 1998 (PUWER) which covers areas such as maintenance and testing, including the need to keep detailed records of these activities.

## **Scope**

4 This sheet covers all designs of drawwork assemblies, whether they incorporate drum or disc brakes, which are either part of the original equipment design or have been retrofitted as part of an approved engineering change and includes:

- Nomination and recommended roles/responsibilities of the Nominated Competent Person (NCP).
- Thorough examination of drawworks and brake assemblies.
- Completion of the appropriate sections of Schedule 1 of LOLER.
- Where appropriate and, where safe to do so, testing of drawworks brakes to verify their integrity.
- Training, knowledge and competency requirements for persons involved with operating drawworks including the function and proper use of all aspects of braking systems.
- Training requirements for persons operating drawworks on the procedure to adopt when addressing any emergency that might arise such as the uncontrolled descent condition of the travelling block assembly with or without the drillstring attached.

This guidance specifically does NOT cover the following:

- Any part of the drilling assembly which is not directly involved with lifting or lowering of loads or similar type of operation.

- Actions and procedures to follow immediately after any overload i.e. the maximum safe working load for the drawworks in any given configuration is exceeded beyond the manufacturer's recommendation.
- Advantages and disadvantages on converting from band to disc brakes or the reasons for such conversions.
- Drawworks wire rope change out, inspection and discard policy.

## Action

5 The following action is required:

(a) Drilling contractors should nominate an independent competent person to carry out duties as specified in LOLER together with the appropriate sections of PUWER. The nominated competent person (NCP) can be an employee within the drilling contractors own organisation however, in this instance, they should be sufficiently independent from the drilling operations in order that they can take objective and unbiased views on a range of issues. Some examples are given in para 5(b) below.

(b) Examples of some of the suggested appointed NCP duties are listed below. However this list is not exhaustive and contractors should specify a workscope for the NCP which reflects their own particular type of equipment and management procedures.

- Drawing up a scheme of thorough examination for the drawworks assembly and its component parts including associated control systems. Arranging for this examination to be carried out every 12 months or at intervals specified by the NCP. Note that this examination is NOT an inspection or a substitute for an inspection but is additional to any routine inspection programme that is normally in use.
- Completing the relevant sections of Schedule 1 of LOLER after each thorough examination has been carried out.
- Checking that all scheduled maintenance and inspection is carried out and recorded and that no excessive maintenance "backlogs" are allowed to occur in relation to safety critical components. NOTE: A risk assessment which identifies the safety critical elements in which maintenance backlogs can be tolerated without compromising any safety aspects of the drawworks assembly is required. Techniques such as failure mode effects and criticality analysis (FMECA) can help identify safety critical parts.
- Ensuring that all manuals, instructions, drawings and information relating to drawworks are kept current and truly reflect any changes, modifications and retrofits that may have been carried out on the drawworks or its components.
- Confirm that all functional and proof load tests required by the scheme of examination are carried out on the drawworks, (see para 5(c) for examples), and keep a record of both the test procedure and the test results.

(c) It may be beneficial to consider carrying out static simulated load tests on the drawworks assembly in order to verify the integrity of the drawworks assembly as well as proving the static holding capacity of the braking system. If such tests are to be carried out then the procedure and technique employed should be discussed and agreed with the equipment supplier/manufacturer. Examples of when static load tests may be required are:

- After any brake system component has been repaired, replaced or refurbished. This could involve a function test if considered more appropriate by the NCP.

- After the completion of any retrofit such as converting band brakes to disc brakes or vice versa.
- After any accident or incident involving the draw works including any uncontrolled descent.
- Prior to running heavy loads such as production casing strings.

(d) Operators of draw works equipment must be adequately trained in the use, functions and characteristics of the particular type of brake units, which are fitted (or have been retrofitted) to the draw works. In particular operator competency should be attained, and regularly assessed, in the following areas:

- Knowledge of the differences in performance and possible failure modes of both band and disc type brakes.
- Understanding of the operation and function of all aspects of the brake systems that are used to monitor, control and retard draw works loads. Some examples of braking systems of this nature are “Elmagco”, “Electronic Drilling Management (EDM)” and Kinetic Energy Monitoring Systems (KEMS) types.

(e) A standing procedure, which should be understood by all drilling personnel, should exist which covers the actions to be taken in emergency situations such as that when an uncontrolled descent of the drawworks load occurs. Adequate training should be given to operators on the course of action to take when this emergency situation arises.

## **Relevant legal requirements**

6 The main legal requirements are:

- The Health and Safety at Work etc Act 1974 (HSWA)
- The Lifting Operations and Lifting Equipment Regulations 1998 SI 1998/2307 (LOLER)
- The Provision and Use of Work equipment Regulations 1998 SI 1998/2306 (PUWER)
- The Management of Health and Safety at work Regulations 1999SI 1999/3242 (MHSWR)

## **References**

7 Further information can be found in the following publications:

- Technical guidance on the safe use of lifting equipment offshore HSG 221 Second edition HSE Books 2007 ISBN 07176 6299 6
- Safe use of lifting equipment: Lifting Operations and Lifting Equipment Regulations 1998: Approved code of practice and guidance L113 Second edition HSE Books 1998 ISBN 07176 1628 2
- Safe use of work equipment: Provision and Use of Work Equipment Regulations 1998: Approved code of practice and guidance L22 Second edition HSE Books 1998 ISBN 0 7176 1626 6
- Management of health and safety at work: Management of Health and Safety at Work Regulations 1999: Approved code of practice and guidance L21 Second edition HSE books 2000 ISBN 0 7176 2488 9

- Disc brakes on drawworks UKOOA Joint Industry Guidance 1996

### **Further information**

8 Any queries relating to this information sheet should be addressed to:

Health and Safety Executive  
Hazardous Installations Directorate  
Offshore Division  
Lord Cullen House  
Fraser Place  
Aberdeen  
AB25 3UB

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<p>This information sheet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do</p>
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