

HSE information sheet

Big persons in lifeboats

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Introduction

The average weight and size of persons has increased during the last two decades, so that there is a potential to exceed the design loads and seating space for lifeboats on UK oil and gas installations. This information sheet provides guidance on how duty holders may take account of this.

Background

Lifeboats which meet the SOLAS requirements are normally based on an average weight per person of 75 kg. However, a survey¹ conducted by the Civil Aviation Authority (CAA) in 2005 has shown that the average weight of persons travelling to UK oil and gas installations has increased substantially since a previous survey in 1984.

For compliance with the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 (PFEER), in particular Regulations 5, 15 and 19, duty holders need to take adequate account of the current average weight and size of persons when determining the suitability of the lifeboats provided on offshore installations.

Guidance on assessing impact of big persons on lifeboat load

The duty holder should determine the maximum loaded weight of the lifeboat and compare it with the lifeboat design load. The weight of persons should be determined as described in the next section. It will also be necessary to determine the weight of the empty lifeboat. There can be a variation of several hundred kilograms between the weights of nominally identical lifeboats. Thus it may be necessary to weigh the empty lifeboat, particularly if the margin between the apparent maximum loaded weight of the lifeboat and the lifeboat design load is small. In any event, weighing of empty lifeboats is important for checking that delaminating of glass reinforced plastic (GRP) construction or deteriorating buoyancy foam is not retaining water.

If the lifeboat design load is exceeded, the duty holder has a number of options, including:

- (a) Limit the maximum number of persons permitted to use the lifeboat, to bring the maximum lifeboat weight to within the design load. It may also be possible to remove some non-essential items of equipment from the lifeboat, to reduce the lifeboat weight. Any such removal will need to be justified by an appropriate assessment. For example, it may be possible to reduce the potable water and fuel onboard the lifeboat, but only provided an assessment demonstrates that there will still be sufficient water and fuel for the circumstances which apply. Also, see note below about flag-State acceptance.
- (b) Replace the lifeboat and launch system with one which is designed to withstand the increased load.
- (c) For some installations, there may be the possibility of revalidating the existing or modified lifeboat and launch system for a higher design load. Such work will need to be carried out by a competent organisation and with reference to Original

Equipment Manufacturer (OEM) calculations and drawings, inspection of the equipment, further testing, etc., as necessary. Revalidation is likely to consume considerable resource, although this may depend on the size of increase in design load which is required. In addition to structural aspects, a change in lifeboat loading could impact on the ability of the lifeboat to self right, and in the case of freefall boats on the ability of the lifeboat to follow a suitable trajectory during launch.

Note that for installations subject to marine regulations it will be necessary to obtain flag-State acceptance of any modifications to the lifeboats, including changes to the standard provisions onboard.

The duty holder should discuss the lifeboat load with the Independent Competent Person (ICP), and should take account of the views of the ICP as to the suitability of the lifeboat for that load. It will also be necessary to ensure that the maximum loaded weight of the lifeboat is adequately taken into account in the verification scheme and associated testing.

Weights of persons on UK oil and gas installations

The CAA has issued guidance¹ on the average weights to be assumed for persons travelling by helicopter to UK offshore installations. They include an allowance (about 7 kg) for the statistical variation in the average weight of a group of 15 persons, based on a 95% level of probability that the group average weight will not be exceeded. They also include an allowance for the weight of an immersion suit (3 kg). The resultant average weights to be assumed are as follows: adult males 98 kg; adult females 77 kg.

The number of persons in an offshore lifeboat will normally exceed 15. For example, 50 persons is more typical – based on information from a research project carried out for MCA², this number reduces the necessary allowance for the statistical variation in the average weight of the group from 7 kg to around 4 kg. On the other hand, the survival PPE (eg. suit + lifejacket) used in a lifeboat typically weighs about 5 kg. Consequently, in assessing the lifeboat fully loaded weight, duty holders should use the above CAA weights (taking account of the proportion of males/females onboard the installation), unless the duty holder's assessment demonstrates that some other average weight is appropriate.

A duty holder has the option of basing the average weight of persons used in their assessment on their own survey of persons onboard the installation.

Guidance on assessing the ability of persons to fit into the lifeboat

It is recommended that duty holders select a small group of the largest members of the offshore workforce on the installation, and ask them to strap themselves in position on adjacent seats within the lifeboat, to confirm the ability of the seats and seat belt/harness to accommodate them. The seats selected should include those which are the most cramped. These persons should be wearing the survival PPE they would normally be wearing for abandonment by lifeboat. In line with existing guidance on

lifeboat drills³, it is recommended that the size of the group used for this trial be limited to 5 persons.

If there are problems with the above seating pattern, it may be possible to make adjustments to the arrangements. For example, it may be possible to establish a revised seating pattern which will be applied in an emergency so that the bigger members of the workforce will be separated by smaller persons.

If the seat belt/harness is shown to be too small, it will be necessary to replace it with a new seat belt/harness which can accommodate the range of persons who may need to use the lifeboat.

If the above trial identifies there are significant problems with the seating of persons, it may be necessary to reduce the maximum number of persons using the lifeboat, and/or to provide revised seating arrangements, or to replace the lifeboat. Under SOLAS requirements, lifeboats are required to maintain positive stability when in an upright position in calm water and loaded with their full complement of persons. If seat configuration is changed, this may affect this aspect. Consequently, the duty holder should consult the ICP on the acceptability of any configuration changes.

Interim solutions

It will take time for duty holders to fully assess the situation, and to implement remedial measures, if any are found to be necessary. PFEER Regulation 15 may allow some interim arrangements to be applied, since safe evacuation is required so far as is reasonably practicable. For example, in the shorter term, it may be possible for the duty holder to re-allocate lifeboat places to include use of lifeboats which would not normally be first choice, provided the risks associated with relying on these lifeboats are sufficiently low and are justified in the assessment required by PFEER Regulation 5.

Action required

Duty holders are reminded that as part of ongoing compliance with PFEER they need to take adequate account of the current average weight and size of persons when determining the suitability of the lifeboats provided on offshore installations. Assessments covering this issue should form part of the PFEER assessment records.

Some of the other documents which should also include this issue are:

- The safety case for a new installation
- A safety case revision for an increase in the maximum persons on board (POB)
- A Thorough Review Summary.

References

1. CAA Flight Operations Department Communication 27/2005 "Standard weights for passengers carried on flights in connection with oil and gas exploitation."
2. Report of MCA Research Project 555 "Development of Lifeboat Design". Prepared by Burness Corlett – Three Quays. March 2006.

3. Step Change in Safety Guidance “Loading of Lifeboats during drills”.

Further information

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

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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
