LIFEBOAT TESTING, LOADING AND TRAINING ALTERNATIVES

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Disclaimer

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1 Executive Summary

Incidents resulting in equipment damage, personnel injury, and loss of life continue to occur with lifeboats during testing and training events across the global maritime industry as well as offshore oil and gas facilities. The lifeboat testing related fatalities in the Gulf of Mexico (GOM) in 2019 highlight the need to reevaluate the increased risks and challenges associated with launching and recovering lifeboats from offshore facilities for testing purposes. These activities have normally been conducted to comply with perceived regulatory requirements, manufacturer maintenance and testing guidelines, and as a method to confirm lifeboat operator competency.

While not specific to oil and gas operations, information related to lifeboat testing casualties has been compiled by InterManager[1]. This data indicates over 450 fatalities from 1980-present caused by a variety of factors related to lifeboat testing in the maritime industry. Due to the risks involved with this activity being conducted on offshore platforms, Operators are strongly encouraged to perform their own risk assessments to understand how these risks can be mitigated or eliminated.

[1] Safety Statistic - InterManager InterManager

2 Hierarchy of Controls

The alternatives presented in this Guidance Document follow the principles outlined in the Hierarchy of Controls which is a framework to prioritize the selection of effective safeguards. In this model, Elimination and Substitution are preferred approaches. Engineered solutions versus those dependent upon human action are also preferred. This guidance document will primarily follow the concept of substitution by presenting alternatives that more appropriately consider the risk involved with testing lifeboats installed on offshore platforms.

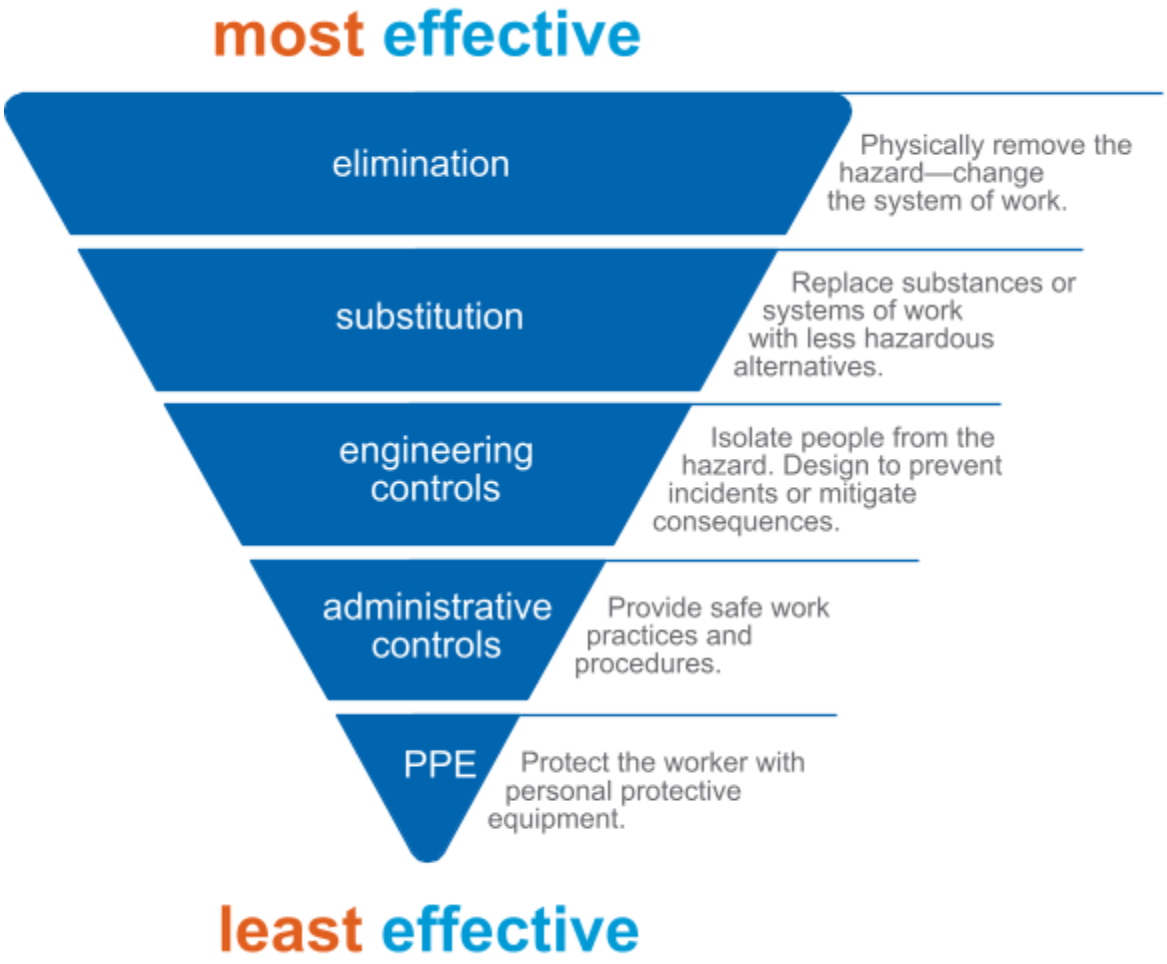

Figure 1 Standard Hierarchy of Controls

3 Alternatives to Launching Launch/Recovery of Lifeboats from Offshore Facilities for the Purpose of Conducting Periodic Equipment Testing

3.1 Overview

Lifeboat launching and, in particular, lifeboat recovery poses risks on any asset with a lifeboat (ship or offshore facility); however, the risks and challenges for offshore facilities are generally greater compared to a conventional ship-based lifeboat system. The enduring challenge for fixed and floating offshore facilities operating in an exposed open ocean environment is that they cannot conduct the lifeboat function testing normally accomplished via launching and recovering in the same manner as a ship. For example, a ship can satisfy this regulatory duty by launching their lifeboats while at the dock, in a protected harbor, or in some other benign and sheltered location where environmental conditions are better controlled. A ship's hull and painter (tag) lines can help to stabilize the craft during launch and recovery and a ship can also maneuver to protect the lifeboat launching area from environmental effects such as wind, seas, and current. Offshore facilities do not have these attributes which can make the entire operation significantly more challenging.

Another factor that increases the risks and challenges of lifeboat operations from offshore facilities is the launching heights and the size/capacity of the lifeboats can be much greater than are present on conventional merchant ships. As offshore facilities have developed in deeper water, their size and complexity has increased as well. This can translate into a greater need for increased crew size. To reduce the footprint required for lifeboats and their associated mustering areas and launching systems, some operators design and outfit their facilities with fewer boats of higher capacity. Lifeboats rated for over 100 persons are currently installed at heights exceeding 160 feet in the GOM.

Lifeboat types on GOM offshore facilities vary and consist of either a single or dual-fall davit launch system. Currently, there are no free-fall type lifeboats installed on offshore facilities in U.S. waters, however an operator could elect to install these if they wanted to. The type of davit used to launch and recover lifeboats on offshore facilities is usually the cantilever style davit which suspends the lifeboat directly over and provides a direct path to the water. Davit systems vary in complexity with dual-fall type lifeboat davits being more complex than single-fall type davits due to arrangement and more moving parts.

While both single or dual-fall lifeboats are suitable for their designed purpose of evacuating personnel from an offshore facility in an emergency, the challenge with reconnecting and recovering dual-fall boats after in-water testing is usually greater as the hooks need to be reconnected simultaneously. Due to height and period of the sea state as well as surface and eddy currents that prevail around the platform structure, it takes careful maneuvering of a dual-fall lifeboat to be able to perform a simultaneous reconnection of the lifeboat hooks to the fall D-rings. When this does not occur, the operation must be aborted, and the lifeboat operator must make another approach. The personnel stationed at the bow and stern hook stations are fully exposed to the swinging D-rings on the end of the lifeboat falls and are further encumbered by the limited range of movement available in the release gear access hatches. Even in the most favorable environmental conditions, it has not been uncommon for it to take an hour or

more to reconnect a dual-fall lifeboat. Damage to the lifeboats from dynamic loading of the releasing hooks and from swinging D-rings can occur and the risk of personnel injury during this evolution is increased.

It has been common practice for GOM operators to have crews in the boat during lifeboat operations involving the lowering and recovering phases while performing routine maintenance and USCG required drills. This has been done primarily because it is logistically easier to have the lifeboat crew embark and disembark at the stowed position. This has also been due to the USCG (historically) requiring demonstration of crew competency to successfully lower, release, and operate the lifeboat. This practice contrasts with lifeboat operations from facilities in other offshore areas as well as from traditional ship-based applications. In the latter example, company policy often prohibits having crew in the lifeboats during lowering and recovery. Further, it is a misconception that maritime legislation requires persons to be in the lifeboats during launch and recovery. (Seafarer lives don't need to be risked during lifeboat drills - InterManager)

Further, OSHA requirement 29 CFR 1915.86 specifically prohibits personnel from being in the boats during lowering and recovery. Granted, this cite is applicable to vessels doing dockside work at OSHA regulated facilities; however, it serves to highlight the risks to personnel are greater during these phases of the operation and there is sufficient regulatory guidance available to examine alternative practices that accomplish the same objectives.

The transfer of offshore facility personnel to a waterborne lifeboat for the purposes of executing release, operation, and reconnection to the falls prior to recovery (i.e., personnel not in the lifeboat during the actual lowering and recovery operation) is another alternative.. However, this practice is merely adding different and/or transferring existing risk to the current launching and recovery operation, so operators are encouraged to fully risk-assess this process as well.

In order to better capture and assess the risks associated with OCS facility lifeboat operations, the OOC conducted an Operational Risk Assessment, included as Appendix 1 of this document. The Risk Assessment outlines comparative risks for the following scenarios:

1. Launching/Retrieving Lifeboats with Personnel Onboard
2. Launching/Retrieving Lifeboats without Personnel and Using Vessel-to-Vessel Transfers
3. Alternate Methods of Assuring Seaworthiness and Competence (no launch alternative)

3.2 Relevant Requirements

The USCG's regulatory framework for fixed and floating facilities in the U.S. is disparate where it concerns minimum requirements for primary lifesaving equipment. For example, operators of fixed (bottom bearing) platforms *may* elect to install lifeboats on their facility but are not required by regulation to do so. If they do, they have not been held to the same regulatory standards or level of oversight the USCG provides to floating facilities which must follow more vessel-based requirements.

Regardless of platform type, if lifeboats are installed, they must be USCG approved lifeboats and bear the appropriate USCG type approval series number. Installation of USCG type-approved equipment requires the operator to maintain it in accordance with the relevant

manufacturer (OEM) guidelines. Traditional methods of verifying OEM guidelines are met, and personnel competency is maintained have historically been accomplished via periodic launching of lifeboats and operating them in the water. It should be noted that a Lifeboat OEM's guidance is normally written from the perspective of a conventional vessel-based application as that is the majority of their market. OEM guidance rarely, if ever, takes into consideration the unique and additional risk of operating a lifeboat from an offshore facility.

The requirements in 33 CFR Subchapter N apply to both fixed and floating platforms on the U.S. Outer Continental Shelf (OCS). There are several requirements within this Subchapter that suggest the need to ensure operational readiness of the equipment and basic competency of personnel. However, these regulations are sufficiently ambiguous regarding an explicit launch requirement to prove operational readiness and personnel competency.

The regulatory cites listed below are the only relevant requirements specific to lifeboat operational readiness and personnel competency. Only the applicable sections of the sites are provided. Emphasis is provided where instructive in this area:

33 CFR §146.15 Maintenance of emergency equipment

*(a) The emergency equipment provided, regardless of whether or not required by this subchapter, **shall be maintained in good condition at all times** (emphasis added). Good operating practices require replacement of expended equipment, as well as periodic renewal of those items which have a limited period of effectiveness. (Note: "good condition" is not defined elsewhere in USCG regulations or policy. For the purposes of this Guidance Document, the OOC believes "good condition" means the equipment is in serviceable condition and maintained in accordance with the OEM guidance even if that includes the installation of additional equipment needed to test certain lifeboat systems "in-situ" vs in-water operational testing. This should also include OEM certification of every annual and 5-year service.)*

33 CFR §146.115 Duties of personnel during an emergency

(b) The duties shall be assigned as necessary for the proper handling of any emergency, and shall include the following:

*(4) **The preparation and launching of life floats, lifeboats, or life rafts** (emphasis added).*

33 CFR §146.120 Manning of survival craft

*The owner, the owner's agent, or the person in charge shall assign a person to each life float, lifeboat, life raft, or survival capsule who shall be **responsible** for launching it **in event of an emergency** (emphasis added).*

33 CFR §146.125 Emergency drills

*(a) Emergency drills shall be conducted at least once each month by the person in charge of the manned facility. **The drill shall be conducted as if an actual emergency existed** (emphasis added). All personnel should report to their respective stations **and be prepared to perform the duties assigned to them** (emphasis added).*

(b) The person in charge and conducting the emergency drill shall instruct the

> *personnel as necessary* ***to ensure that all persons are familiar with their duties and stations*** *(emphasis added).*
> *(c) Emergency evacuation drills. The following emergency evacuation drills must be conducted:*
> *(1) At least once a year, all the elements of the Emergency Evacuation Plan (EEP) under §146.140 relating to the evacuation of personnel from the facility must be exercised through a drill or a series of drills. The drill(s) must exercise all of the means and procedures listed in the EEP for each circumstance and condition described in the EEP under §146.140(d)(9).*

The only applicable Coast Guard requirement governing the frequency of emergency drills is 33 CFR §146.125. It requires emergency drills to be conducted once per month ***"…as if an actual emergency existed"*** and that ***"All personnel should report to their respective stations and be prepared to perform the duties assigned to them"***. The Coast Guard has variously interpreted this cite to include loading, lowering, releasing/launching, and operating the lifeboats in the water even though the wording of the regulation clearly indicates there is no explicit expectation to load, lower, and launch lifeboats at every emergency drill. The OOC believes the intent behind this verbiage is for personnel to be prepared to respond, to understand their duties, and to take the drill seriously. It does not mean equipment must be deployed.

Despite the fact the Coast Guard regulations for fixed and floating platforms are not explicit regarding a periodic lifeboat launching frequency, the fact remains that the lifeboat equipment should be tested to ensure its operational readiness and personnel need to be familiar with its operation so that competency is assured.

3.3 US Coast Guard Policy

In February 2024, the USCG Outer Continental Shelf Officer in charge of Marine Inspection (OCS OCMI) cancelled previous policy guidance contained in the District Eight (OCS) Policy Letter 01-2020. That cancellation memo can be found here: Cancellation of D8(ocs) PL 01-2020, 26Feb2024. The cancelled policy contained an unsupported interpretation that USCG regulations required lifeboats on floating offshore facilities to be launched and operated in the water at least annually. Recognizing this, the USCG cancelled the policy and instead referenced their Policy Letter 01-2022 (Rev. 1). This is now the sole guidance document from the OCS OCMI related to the verification of training and drills for personnel assigned to emergency duties on FOFs. This policy can be found here: D8 OCS Policy Letter 01-2022, Rev. 1, 26Feb2024

3.4 Alternatives to Lifeboat Launching

The periodic launching and recovery of lifeboats from offshore facilities is an issue lacking a common approach in the GOM; however, a review of best practices in other well-regulated offshore areas has shown that it is possible to confirm equipment operational readiness and personnel competency via alternative protocols. Irrespective of the regulatory ambiguity on this issue in the GOM, , operators ultimately have the responsibility to verify their lifeboats are maintained in a continuous state of operational readiness and assigned operating personnel are trained and competent in their use.

Despite the fact IMO guidance is not directly applicable to GOM offshore facilities, it may be considered as having some value to the extent it can provide alternatives to show the reliability of equipment while reducing the risk to personnel. The IMO has produced more current and relevant guidance on lifeboat operations over the past few decades than the USCG has, although the USCG usually incorporates IMO guidance through other means (e.g., via a NVIC, etc.). Regardless, the unique challenges and risks present during lifeboat launching and recovery operations on offshore facilities has never been specifically addressed by either the IMO or the USCG.

The OOC feels the adoption of alternative testing and competency assurance protocols in lieu of periodic lifeboat launching is an effective means to mitigate the risks associated with open water launch and recovery operations. Although not applicable to offshore platforms, the guidance found in the International Maritime Organization (IMO) MSC.1/Circ. 1486 (commonly known as "MSC Circular 1486") is instructive. This guidance was written for MODU operators to address the challenges they had with periodic lifeboat testing in "remote locations". The same logic behind this guidance can easily be applied to offshore platform operations. This guidance recommends that any, *"alternatives employed achieve a level of assurance of capability and readiness at least equivalent to that achieved through periodic launching and maneuvering."*

The adoption of these alternatives in this area will most assuredly provide a "greater degree of safety" as they will result in:

- Less risk to personnel.
- Less potential for damage to the primary lifesaving equipment.

Further, the implementation of these alternative protocols will also result in:

- Enhanced awareness and knowledge of boat systems and operations via more structured and explicit OEM guidelines for equipment testing.
- More comprehensive, structured, consistent, and frequent opportunities for competency assurance. To put this in context; even during the historical quarterly launching of lifeboats on the OCS, it only allowed certain crew members to gain practical experience based on launching opportunities (usually due to weather) aligned with crew rotations. This led to situations where certain crew members could easily go a year or longer without operating a lifeboat.

Accordingly, the OOC recommends the guidance contained in *IMO MSC.1/Circ.1486 (12Jan2015) Guidelines on Alternative Methods for Lifeboat Drills on MODUs* as an alternative for periodically launching and recovering lifeboats on USCG regulated facilities to verify equipment operational readiness and personnel competency. This Circular provides operators of MODUs with guidance on how to develop alternatives to launching lifeboats by requiring the implementation of two other IMO instruments:

- *IMO MSC.1/Circ.1206/Rev.1 (11June2009) Measures to Prevent Accidents with Lifeboats* (this has since become IMO Resolution MSC.402(96)
- *IMO Resolution A.1079(28) (27Mar2014) Recommendations for the Training and Certification of Personnel on Mobile Offshore Units (MOUs)*

Also, as detailed by IMO MSC.1/Circ.1486, the utilization of simulators can form a useful part of a competency assurance program. Operators are encouraged to implement the use of simulators and other training methodologies (e.g., the use of mock equipment provided by the OEM, as available) to enhance competency assurance; however, these should not be viewed as a replacement of the periodic refresher training which will be discussed below.

3.4.1 Implementation of MSC.1/Circ.1206/Rev.1 (11June2009) *Measures to Prevent Accidents with Lifeboats*

This guidance details procedures that should be followed by any operator who is adhering to their respective OEM guidelines and having authorized service providers (ASP) perform the annual and 5-year service.

Discussions with lifeboat OEMs who provide lifeboats for both fixed and floating offshore facilities in the GOM have indicated they have developed, or can develop, alternative equipment testing protocols that allow all the tests normally done in the water to be performed in the davit (in-situ). For some lifeboat OEMs this may require the fitment of additional equipment to facilitate this testing. It should be noted that some OEMs with lifeboats operating in the GOM also have boats in other offshore areas that permit the use of established alternatives in lieu of periodic launching and recovery.

Successful implementation of this guidance to verify equipment operational readiness should be guided by the framework of IMO Resolution MSC.402(96) and include (at a minimum):

- Development and implementation of OEM approved alternative guidelines that allow in-situ testing of the lifeboat versus periodic in-water testing as would normally be accomplished via launching and recovery. Where this requires the fitment of specialized equipment to facilitate this testing, that equipment should be installed by an ASP.

Weekly and monthly testing per the OEM approved alternative guidelines can be performed by facility personnel under the direction of senior facility personnel and in accordance with the annual and 5-year servicing of the lifeboat shall be performed by an ASP. Records of this service should also be recorded in the facility's maintenance system.

3.5 Recommendations for Training and Certification of Personnel

Historically, the USCG addressed lifeboat operator training (on floating platforms only) via District Eight Policy Letter 03-2000, CH-1 "Policy on Manning of Non-Self Propelled Floating Outer Continental Shelf (OCS) Facilities". This policy letter was cancelled by D8 Policy Letter 01-22 "Verification of Training and Drills for Personnel Assigned Special or Emergency Duties on Floating Outer Continental Shelf (OCS) Facilities (FOFs)".

This Policy Letter was cancelled on February 4, 2022, when USCG Headquarters published CG-MMC Policy Letter 01-22 "Merchant Mariner Credential Endorsements for Service on Floating Outer Continental Shelf (OCS) Facilities". This Policy Letter clarified that no personnel positions on FOF are required to obtain and maintain USCG issued Merchant Mariner Credentials as was previously established in USCG District Eight Policy Letter 08-2001 "Licensing Requirements for Personnel on Non-Self Propelled Floating OCS Facilities.

Despite the fact the credential is not required, there is sufficient regulatory basis in 33 CFR Subchapter N and the parts of 46 CFR Subchapter I-A that apply to FOFs to support certain competencies for marine-related positions on FOFs. Among these is to have personnel trained and competent in the testing and operation of primary lifesaving equipment (i.e., lifeboats).

Lifeboat operator competencies can be achieved and maintained using various training methods. OOC recommends initial operator training be accomplished via a USCG or OPITO approved course (e.g., Proficiency in Survival Craft and Rescue Boats – PSCRB, OPITO Offshore Lifeboat Coxswain) or similar. Operators should also consider implementing periodic practical refresher training after the original baseline training is completed (i.e., annual or biennial, etc.). In addition, these practical shore-based training, other considerations for competency assurance and development may include:

- Use of lifeboat training simulators
- Video-based training
- Use of release gear training aids

Operators are encouraged to reinforce lifeboat familiarization, launching, and operational procedures during the periodic lifeboat inspection, testing, and maintenance activities that take place as part of OEM approved procedures. While installed equipment are not training aids, lifeboat operators should make every effort to become thoroughly familiar with their operating, launching, and maintenance procedures.

4 Alternatives to Lifeboat Loading

4.1 Overview

Familiarization with the operational aspects of the lifeboats and how to safely board them is essential to any lifeboat related training. However, the nature of the environment in which fixed and floating platforms operate poses unique challenges not experienced by traditional merchant vessels and must be considered to ensure the safety of this training. The cantilever style davits usually present on offshore applications do not have the types of safeguards found on other types of lifeboat davit systems. The cantilever style davit holds the boat over and provides a direct path to the water surface. The only mechanism preventing the boat from lowering to the water is the winch brake. Lifeboats are often fitted with maintenance pendants (a.k.a. maintenance strops) and while they provide an additional safeguard, they are primarily used to support the weight of the boat and a limited number of persons who may board the lifeboat to perform routine inspection and/or maintenance activities. They are not rated to support the entire weight of the boat and its maximum rating of personnel.

Occasionally, when witnessing abandon platform drills, a Coast Guard inspector may want to ensure platform personnel are able to properly board the lifeboat and that the boat can safely accommodate the maximum number of persons it is rated to carry. Historically, the Coast Guard has used the cite found in 46 CFR §108.540(d) to have operators prove the boat can be boarded by its full complement of persons:

> *46 CFR §108.540(d) Each lifeboat must be arranged to be boarded by its full complement of persons within 3 minutes from the time the instruction to board is given.*

It should be noted the time stated is more appropriate for the smaller lifeboats of lesser capacity that were common when this cite was last amended in 1998 and not for the much larger boats commonly in use today. Regardless, the ability for a platform crew to be able to board and secure themselves in a lifeboat in an orderly and efficient manner is a competency required for any lifeboat application, whether on a floating or fixed facility. The loading of any personnel on a lifeboat should be undertaken with extreme caution and safeguards should be employed to minimize the risk that accidental lowering or component failure could have to the occupants.

Despite the regulatory ambiguity on this issue and the different ways the Coast Guard has historically viewed fixed platforms and FOIs, operators ultimately have the responsibility to ensure their lifeboats are operational and their personnel know how to use them. This includes ensuring the boat can be safely loaded with persons to its rated capacity in an orderly and efficient manner. The purpose of this section of the Guidance Document is to provide operators with accepted alternatives relative to loading their lifeboats in the stowed position.

4.2 The Case Against Full Loading of Lifeboats

It should be recognized that a lifeboat and its launching apparatus is a mechanical system. Even the most well-maintained boat operated by the best trained crew can still pose risks. The **full** loading of a lifeboat in the stowed position (i.e., in the davit) to facilitate training, satisfy a timed requirement, or prove a design capacity is not a practice that should ever be considered.

The issue of loading boats in the stowed position was the subject of a risk assessment performed by Step Change in Safety (UK) in late 2001 This document can be found on the Coast Guard's Homeport site here.

The issue of loading boats during drills was also the subject of a National Offshore Safety Advisory Committee (NOSAC) Task Statement in 2015. That report also references the Step Change in Safety Guidance document. The NOSAC report can be found here.

It is also discussed in the "Lifeboat and Rescue Craft Safety on the OCS" Report issued to NOSAC in September 2020. This report is linked here.

The workgroup that analyzed this issue for the Step Change in Safety risk assessment made the following conclusions:

- Lifeboat loading drills provide a significant reduction in evacuation risk
- Training exercises conducted offshore on installation survival craft expose crewmembers to risk
- The evacuation risk reduction achieved by offshore drills is greater than the risk experienced due to offshore drills
- Alternative methods for achieving crew training are preferred to the offshore drills option
- Further risk reduction can be achieved by optimizing crew training methods

The report also includes the safety alert it prompted (SADIE Alert 436, Issued April 24, 2003). That alert contained several recommendations but key among them was recommendation #5 which states:

"Fully loaded drills are only to be carried out when a lifeboat cannot fall, e.g., with the lifeboat in an unsuspended state, not over water and with the boat solidly supported either on the deck or in other suitable hard landing area (or onshore)."

The OOC agrees with this analysis and strongly recommends alternatives to loading lifeboats in the stowed position be implemented by its member companies.

The OOC believes any USCG direction to fully load active lifeboats in the stowed position (with or without safeguards) with personnel to prove boat capacity and the competency of the boat complement to load the boat is in direct conflict with long-held and well-established sound marine practices that specifically prohibit this activity. It also appears to run counter to the Coast Guard's own policy in their Marine Safety Manual (Volume II), Section B, Chapter 1 which states: *"personnel should not be permitted to be used in the tests that load the boat to or beyond rated capacity, except as is absolutely necessary to load or unload the boat, or perform some part of the test once the boat has reached the water."*. While it is recognized this policy is presented in the context of conducting lifeboat weight tests (e.g., the 110% overload test), the concept is the same and it is clear the Coast Guard should be aware of the risks involved with loading boats with personnel. The OOC believes this is an activity and competency that is best developed using shore-based training in lifeboat models specially designed for this purpose. The OOC recommends that operators exercise their "Stop Work" authority if they encounter a

situation where a USCG Offshore Inspector is compelling them to perform an activity the operator has a policy against conducting or feels has not been adequately risk assessed.

The OOC also recognizes that this capability is limited amongst shore-based training providers in the GOM. Further, this type of training is not specifically mandated or uniform in application. This type of training is best suited as a component of the water survival portion of HUET which is generally required (by company policy) of just about everyone who works offshore in the GOM.

4.3 Recommended Alternatives to Lifeboat Loading

The OOC recommends the implementation of the following alternative procedures and practices:

4.3.1 Use of Maintenance Pendants

Maintenance pendants are recommended to be used for an identified minimum number of persons necessary to board the lifeboat for inspection, maintenance and training purposes. Operators should ensure maintenance pendants can be affixed to each boat and are properly rated and certified for the application.

Operators should also evaluate the rated capacity of these pendants, associated attaching gear (e.g., shackles, pins, etc.), and the attachment points on the boat releasing gear and the davit structure and apply a prudent Safety Factor (an SF of 6 is normally used for lifesaving apparatus). Operators should confirm the pendants, gear, and attaching points are adequate to hold the weight of the empty boat and its equipment. Any excess capacity provided should be enough to establish how many persons can safely load the boat with these safeguards in place. Maintenance pendants should be installed whenever any personnel need to enter a lifeboat for inspection, maintenance, training, or orientation purposes. The pendants should be removed once personnel are no longer required to be in the lifeboat, thus putting the lifeboat in the "ready" position for emergency launch.

4.3.2 Weight Tracking

The muster list for each boat should be continuously updated with each person's weight from the flight manifest (or other source). The total POB (persons on board) weights for each boat should be constantly monitored to ensure they do not exceed the "B" weight of the boat. The "B" weight is the approved weight of the boat, its equipment, supplies, and the weight capacity of persons it is rated to carry. Many GOM operators have voluntarily de-rated their boats to comply with a "GOM Standard" weight of 210 lbs (95 kg) per person. Operators will need to verify the standard to which their boats are rated. The other approved standard is 181.5 lbs (82.5 kg); however, this is obviously not representative of the weight of the average offshore worker on the U.S. OCS. The 210 lb "GOM Standard" also equates to a 21-inch seat width whereas the 181.5 lb standard is a 17-inch seat width.

4.3.3 Weight Management

The impact larger average person weights are having to a given lifeboat muster list should be carefully evaluated. If weight tracking shows the "B" weight is being exceeded, steps should be taken to move personnel to other boats or to reduce POB altogether. Persons much larger than the rated average person weight of the boat should be carefully assessed to ensure they can

safely strap into the provided harnesses. If a seat belt/harness is too small, it will be necessary to replace it with a belt which can accommodate the range of persons who may need to use the lifeboat, and this may reduce the overall seating capacity of the boat. Seating location should also be considered so as not to group larger average weight persons together but instead try to disperse them amongst persons of lower average weight so that the seating capacity of the boat can be used to maximum potential. It is understood this can be a sensitive issue, but if not properly addressed, it may pose serious consequences to the lifesaving capacity and compromise the design and function of the lifeboat.

4.3.4 Platform Orientation

Every person who is new to a platform should already receive a company mandated orientation. Part of this orientation should also include an overview of the lifeboats to include putting that person into the boat and providing training on the proper methods of loading the boat during a full evacuation. Each platform should take that into consideration and allow as many persons as necessary for training and familiarization to board the boat as allowed by the maintenance pendants installed for that boat (see Use of Maintenance Pendants above).

4.3.5 Seating Charts

Seating charts that show boarding patterns for each boat should be mounted at each boat muster station (primary and secondary).

4.3.6 Shore-based Training

To the maximum extent possible, all personnel should attend shore-based training at a facility that has a lifeboat training model installed at their site. These boats can be safely loaded to capacity and are installed for this purpose. Ideally, training of this type would be built into HUET training but that remains to be fully developed.

The development of other alternatives to fully loading the boat in the stowed position is encouraged. The Coast Guard will likely ask questions about what alternatives an operator has in lieu of full boat loading. Platform personnel should be able to easily and competently demonstrate they have these alternatives in place and they are routinely practiced. Of primary importance, however, is that these alternatives are in place for the safety of personnel at all times and not just when the regulator is asking.

The OOC agrees with the findings and recommendations made by the Step Change for Safety Risk Assessment noted above. If an operator chooses to fully load a lifeboat with personnel to prove its rated capacity, support training, or for any other reason(s), this should only be done with the lifeboat removed from the davit and supported in a cradle on deck. The only time a lifeboat should be loaded with its rated capacity of personnel is during an actual abandon platform event where the lifeboats are being launched.

Other related documents and references

Alternatives to Lifeboat Testing:

Operators in Australia fully risk-assessed lifeboat operations on offshore platforms and FPSOs in late 2020 and this resulted in a Guidance Document they published in late 2022:

Safer Together (Australia): Managing Survival Craft Operations at Offshore Facilities Guideline - Products & Programs - Resources | Safer Together - Natural Gas Exploration & Production Industry Safety

The Oil Companies International Marine Forum (OCIMF) developed an Information Paper on the Management of Survival Equipment on Offshore Installations. It was published in late 2023 and can be found at this link: Management of Survival Craft on Fixed/Floating Offshore Installations

The same OCIMF workgroup has reconvened and is currently working on a more detailed publication on best practices for the Management of Survival Craft on Offshore Installations.

Alternatives to Lifeboat Loading/Size of offshore workforce:

Note: much of the information regarding the increasing size of the offshore workforce comes from the UK and North Sea Sector. This issue has not been analyzed in the US offshore although the increasing size of the US offshore workforce should be evaluated by operators as it concerns assumptions around lifeboat POB ratings. Operators are encouraged to de-rated their lifeboats to safely accommodate the average weight of personnel working offshore. In some cases, this may result in an overall decrease in maximum POB allowed on the platform while it is operating.

UK HSE: HSE Information Sheet No 12 2008

Report on the identification of hazards related to the weight, size, and shape of offshore oil and gas workers in the UK | Offshore Energies UK (OEUK)

Anthropometry of Offshore Personnel - Statistical Analysis of the Weight of UK Offshore Workers | Offshore Energies UK (OEUK)

5 Operational Risk Assessment

5.1 Problem Definition

Totally Enclosed Motor Propelled Survival Crafts (TEMPSCs), or lifeboats, are considered safety critical equipment used to evacuate a facility in case of emergency. For this reason, it is important that lifeboats are available and mechanically operational to evacuate the facility, that there are personnel on board a facility who know how to safely operate the equipment, and that the personnel onboard know how to properly enter the lifeboat.

Historically, some maintenance, performance testing and drill tasks required boarding and launching the lifeboat at significant height above water. Under certain situations, if the lifeboat were to fall accidentally, there is a risk of personnel injury and death.

The dilemma being faced is how to maintain lifeboats on facilities to ensure they are available for evacuation and maintaining personnel competency, while mitigating the risks associated with lowering and recovering a boat with personnel inside. Personnel should not be inside the boat during lowering and recovery; however, as detailed in this document, practical alternatives for transferring personnel to an already lowered lifeboat from a platform do not exist.

5.2 Objective

The objective of this risk assessment is to determine what is an As Low As Reasonably Practicable (ALARP) solution to ensure the competence of personnel and the operational readiness of lifeboats at facilities in the GOM. Three options are presented for fulfilling the regulatory requirement of 33 CFR 146.125(a) Emergency Drills:

> *"Emergency drills shall be conducted at least once each month by the person in charge of the manned facility. The drill shall be conducted as if an actual emergency existed. All personnel should report to their respective stations and be prepared to perform the duties assigned to them."*

The following options are considered:

1. Continue to lower lifeboats to the water, disconnect and operate them on the water, then re-connect the lifeboat to the fall cables, and recover them back to the platform – all while manned.
2. Lower and recover the lifeboats without personnel inside and perform vessel-to-vessel transfers of personnel at the water level. The personnel would be lowered to the water on a rescue craft and transfer to/from the lifeboats from the rescue craft.
3. Work with manufacturers, industry partners, and peers to develop alternative protocols that test the operational readiness of the equipment and competencies of the operating personnel via the alternative methods detailed in this document.

5.3 HSSE Issues and Potential Risk of Launching/Recovering Lifeboats

5.3.1 Potential Risks

Three types of risks are involved:

A. Risks of either the lifeboat not being mechanically available or the crew not being able

to operate the lifeboat in case of emergency. This is the risk of the lifeboat barrier failing upon demand. Ways in which this could happen include:

a. Hooks not releasing when in the water
b. Steering malfunction, steering cables breaking
c. Engine Malfunction
d. Hooks releasing prematurely
e. Dynamic brake failure
f. Winch malfunctioning – not releasing cable.
g. Cable break.
h. Winch control cable malfunction (common on dual-fall boats)

B. Risks associated with accidents while performing maintenance tasks, including:
   a. Lifeboat falling due to premature opening of hooks or other failure in the securing system (e.g. D-ring, cable, etc.).
   b. Injury during re-connect due to swinging hooks, sea conditions, and limited ability for hook retrieving personnel to move.
   c. Damage to safety critical equipment due to swinging hooks.
C. Risks of vessel-to-vessel transfer on the water.
   a. Personnel caught between two vessels, striking vessels, falling to water due to losing balance / slipping during transfer.
   b. Damage to lifeboat and/or rescue boat due to contact between the two crafts.
   c. Additional lowering and recovery of the rescue boat to facilitate this operation.

Following is the list of risks as outlined above, and the barriers that are used to mitigate the risks. When listing the barriers, we do so in the hierarchical order of control effectiveness.

5.4 Risk of Lifeboat Barrier Failing

There are recorded incidents of the lifeboat barrier failing. For example, on March of 1980 the Alexander L Kielland semi-sub rig, while supporting drilling on the North Sea, suffered damages to the braces supporting its legs, and it listed heavily to one side. As part of the evacuation, only two of seven lifeboats on the facility were successfully launched. The hooks on three lifeboats failed to release and the waves smashed the lifeboats back to the rig.

RAM risk rating	People: 1 or more fatalities Heard of in Industry	Asset: Loss of Lifeboat Heard of in Industry	Community: Lasting effects in offshore community	Environment: N/A

Table 1 - Risk Assessment - Lifeboat Barrier Failing

The barriers in place to mitigate this risk are:

- Vessels, davit, cables, and release mechanisms are engineered and constructed per industry standards.
- Maintenance of the lifeboats and rescue crafts per OEM specifications. Lifeboat manufacturers partner with operators to design methods by which the integrity of the davit, hook, and lifeboat components and the seaworthiness of the boat can be assured without the need to release the boat to the water.
- Training of personnel to launch and operate the lifeboats. Industry is partnering with training centers and training professionals to develop alternate enhanced solutions to

train lifeboat operators as well as passengers without having to load the boat at heights or lower/recover personnel on a boat at height.

5.5 Risks of Accidents While Performing Maintenance Tasks

5.5.1 Risk of Falling During Maintenance (launching/loading activities)

This is the risk of launching/raising the lifeboat with people onboard the lifeboat and the lifeboat falling from heights. Credible consequences include fatalities of up to 3 people. In 2001 the United Kingdom's Marine Accident Investigation Branch (MAIB) conducted a study of the lifeboat accidents for boats within their scope since 1991, the time that the MAIB started archiving accident data. The study found that 12 people had died during this time, roughly one fatality per year.

RAM risk rating	People: PTD or 1 or more fatalities Heard of in Industry	Asset: Loss of Lifeboat Heard of in Industry	Community: Lasting effect on offshore community	Environment: N/A

Table 2 - Risk Assessment - Accidents While Performing Maintenance Tasks

The risk of falling during maintenance (launching) is mitigated by:

- Reducing exposure by limiting or eliminating the number of times that the lifeboats are mandated to be lowered for testing purposes.
- Maintenance of the fall cable – inspection per OEM as well as replacement every 4-5 years.
- Maintenance of the davit – inspection per OEM.
- Maintenance of the winch, brakes – inspection per OEM and testing of the brakes by periodically lowering the lifeboat with no personnel inside.
- Maintenance of the limit switches – inspection per OEM and testing of the switches by periodically lowering/recovering of the lifeboat with no personnel inside.
- Maintenance of the release hook system – inspection per OEM and testing of release mechanism while the lifeboat is supported with the maintenance pendants.
- Designing and implementing alternative methods of performing the above-mentioned maintenance and testing in lieu of launching to water.
- Use of the Fall Preventor Device "FPD" as a safeguard against hook failure, where feasible.

5.5.2 Risk of Falling During Maintenance (non-launching/loading activities)

This is the risk of performing maintenance activities on the lifeboat while in the stowed position.

RAM risk rating	People: 1 or more Fatalities Heard of in Industry	Asset: Loss of Lifeboat Heard of in Industry	Community: Lasting effect on offshore community	Environment: N/A

Table 3 - Risk Assessment - Falling during Maintenance (Non-launching/loading Activities)

The risk of falling during maintenance (non-launching) is mitigated by:

- Use of maintenance pendants, which provides an independent support to the boat from the davit.
- Maintenance of the fall cable, davit, winch, and brakes (per above)

- Limiting the number of people permitted in the lifeboat during maintenance.

5.6 Risks of Vessel-to-Vessel Transfer

5.6.1 Risk of damage to lifeboat upon descent to water

On a vessel-to-vessel transfer operation, the lifeboat is lowered unmanned with open doors so that it can more easily be boarded on the water.

RAM risk rating	People: N/A	Asset: Damage to Lifeboat Heard of in GOM	Community: N/A	Environment: N/A

Table 4 - Risk Assessment - Damage to Lifeboat Upon Descent to Water (Unmanned Lifeboat)

The risk of damaging the lifeboat during vessel-to-vessel transfers are mitigated by:

- Limiting launching activities to times when the sea states are favorable.

5.6.2 Risk of Injury of Personnel During Launching of Rescue Craft

The personnel from the support vessel need to be lowered on a rescue craft to the water. The risk of the rescue craft falling from the support vessel is lower than from a platform given the relative proximity of the support vessel to water (approx. 10 feet) compared to a typical platform (greater than 100 feet).

RAM risk rating	People: Lost Time Injury Heard of in Industry	Asset: - N/A	Community: - N/A	Environment: - N/A

Table 5 - Risk Assessment - Personnel injury during Lunch of Rescue Craft

This risk is mitigated by:

- Maintenance of cables and hooks on rescue craft.
- Fall protection devices fitted to rescue craft.

5.6.3 Risk of Injury During Personnel Transfer

Transfer of personnel from a rescue craft or another vessel to the lifeboat in open sea has risks of personnel slipping / tripping, potentially hitting hard surfaces, getting caught between vessels, falling in the water leading to personnel injury.

RAM risk rating	People: Lost Time Injury Heard of in GOM	Asset: - N/A	Community: - N/A	Environment: - N/A

Table 6 - Risk Assessment - Injury to Personnel during Vessel-to-Vessel Transfer

The risk of injury during vessel-to-vessel transfers are mitigated by:

- Limiting the number times that lifeboats and rescue crafts are launched.
- Use of trained personnel fit to perform this type of activity. Note that this mitigation means that the platform's personnel in charge of operating the lifeboats are not necessarily the ones performing the vessel-to-vessel transfer, as they may not all be able to achieve the necessary level of fitness.
- Use of PPE – non-slip gloves, personal flotation devices, headgear.

5.6.4 Risk of Injury and Damage to Safety Critical Equipment During Reconnect

During recovery operations after test runs, the potential exists to have failed attempts in reconnecting release hook(s), especially on dual-fall lifeboats. This could result in injury to personnel and/or damage to safety critical equipment while reconnecting from the swinging D-ring. Injuries to the hands, head, body muscle strains and damage to safety critical equipment are credible and have occurred.

RAM risk rating	People: Lost Time Injury Heard of in GOM	Asset: Minor Damage to Lifeboat or other damage which may render it unusable until repaired	Community: N/A	Environment: N/A

Table 7 - Risk Assessment - Injury & Equipment Damage during Re-Connect

The risk of injury and damage to safety critical equipment during reconnect is mitigated by:

- Limiting the number times that lifeboats and rescue crafts are launched.
- Limiting launching activities to times when the sea states are favorable.
- Use of PPE – gloves, head gear.
- Implementing alternatives to test the equipment in the davit (in-situ) and develop personnel competency that do not involve launching the lifeboats to water.

5.7 Assessment

The following criteria is used to assess the options:

5.7.1 Operational Readiness

Impact: High

The effectiveness of lifeboats and rescue crafts as lifesaving devices is as strong as the readiness of the equipment to function, as well as the preparedness of the personnel assigned to operate this equipment in case of emergency.

The lifeboat manufacturers currently certify the operational readiness of the boats by performing annual testing of the equipment. Alternative methods are being developed to perform the periodic testing in ways that do not require manned launching/retrieval of the boats. In addition, there are tests that are performed on a more frequent basis by personnel on the platforms to check for systems that may degrade at a higher frequency, for example – batteries and engine components.

Until recently, the oil and gas producers in the GOM have relied on personnel physically boarding, lowering, launching, and recovering lifeboats in order to maintain the competence of the lifeboat operators and test the operational readiness of the equipment. Industry has partnered with training centers and training solution developers to add capability to verify competence of operators and passengers while lessening or eliminating the need of loading, launching, and retrieving boats.

5.7.2 HSE Exposure to Personnel

Impact: High

As detailed on the risk section, exposure of personnel while launching/retrieving lifeboats and rescue craft include the risk of death by falling from heights as well as the risk of injury during reconnection. This risk is directly proportional to the number of people that are lowered/retrieved on lifeboats every year. To the extent that the frequency of launches/retrieval is reduced (or eliminated) is the extent that the risk of death from falling during maintenance is reduced (or eliminated).

5.7.3 Meeting Codes and Industry Practices

Impact: High

Ensuring regulatory compliance is part of our license to operate. The acceptance of any proposal to administrative agencies that accompanies this hazard assessment would in all likelihood equate to the idea that applicable regulations are met. The Offshore Operator Committee has produced a proposed Guidance Document on alternatives to lifeboat launching which is consistent with keeping risks ALARP.

5.7.4 Cost

Impact: Low

Alternate enhanced methods for maintenance and training involve extra equipment and additional time away from work. This would add cost to maintenance and training compared to current practices.

Option	Criteria 1 Ops Readiness (HIGH)	Criteria 2 HSE Exposure (HIGH)	Criteria 3 Codes and Practices (HIGH)	Criteria 4 Cost (LOW)
1. Launching/Retrieving Lifeboats with Personnel Inside.	Readiness of equipment can be verified with periodic launches	Exposure is proportional to number of launches.	Meets Code. Equivalent to OOC proposed practice.	No further work needed.
2. Launching/Retrieving boat without personnel and using vessel-to-vessel transfers	Readiness of equipment can be verified with periodic launches. Personnel readiness verified via alternate methods.	Exposures are to lower consequence events, also proportional to number of launches	Meets Code Equivalent to stated OOC Proposed practice	Involves using additional vessels and contract personnel fit and trained for boat-to- boat transfer adding cost to launches.
3. Alternate Methods of Assuring Seaworthiness and Competence	Readiness of equipment and personnel can be sufficiently verified with alternate approaches to launching	Lower exposure.	Considered equivalent to, or better than, regulatory intent implied in 33 CFR 146.125	May require boat / davit modifications, additional testing equipment, more training time away from work.

Table 8 - Summary of Options & Associated Risks

5.8 Justification for Chosen Option

Option 3 was selected – Proving lifeboat operational readiness and operator competency via alternative methods to launching. The justification is as follows:

- Operational readiness can still be verified per OEM recommendations. We believe that this meets the intent of the regulations in 33 CFR 146.125.
- The alternative framework in this Guidance Document easily meets the intent of 33 CFR 140.15 and will provide a greater degree of safety than routine launching to water with personnel on board.
- Most importantly, the risk of personnel injury and damage to safety critical equipment is essentially eliminated.

5.9 Justification for Rejected Options

Option 1 is rejected because of the inherently higher risk exposure of lifeboat inadvertent release and fall from height to sea and the potential consequence of injury or death as well as the risk exposure to personnel injury and equipment damage while reconnecting the lifeboat hooks and falls in an unsheltered open ocean environment. There have been numerous fatalities in the past and most recently, which could have been avoided, in the marine and

offshore oil & gas industry if not for this practice. Option 2 was rejected because of the inherently higher risk of exposure to personnel injury and collision damage to equipment due to vessel-to-vessel transfer in an unsheltered open ocean environment. Transferring the HSE exposure risk is not a viable solution as it did not reduce the overall risk exposure to personnel and equipment.

5.10 Recommendations

To improve the safety and operational efficiency of lifeboat systems, the following actions are recommended:

1. Perform all OEM required maintenance without lowering/recovering people in lifeboats.
2. Continue to work with lifeboat manufacturers to develop ways to assure the operational readiness of lifeboat systems without requiring launching/retrieving.
3. Look for ways to enhance the training of lifeboat crews, via the establishment of baseline and periodic training, consider the implementation of simulator training or other training as an industry-wide effort.
4. Look for ways to enhance the training of personnel to wear and adjust lifeboat seatbelts as well as familiarization with the seating configuration of the assigned lifeboat in the field.