LIFEBOAT DAVIT WHITEPAPER

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THE POWER OF PREPARATION

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INTRODUCTION

Lifeboat davit replacement

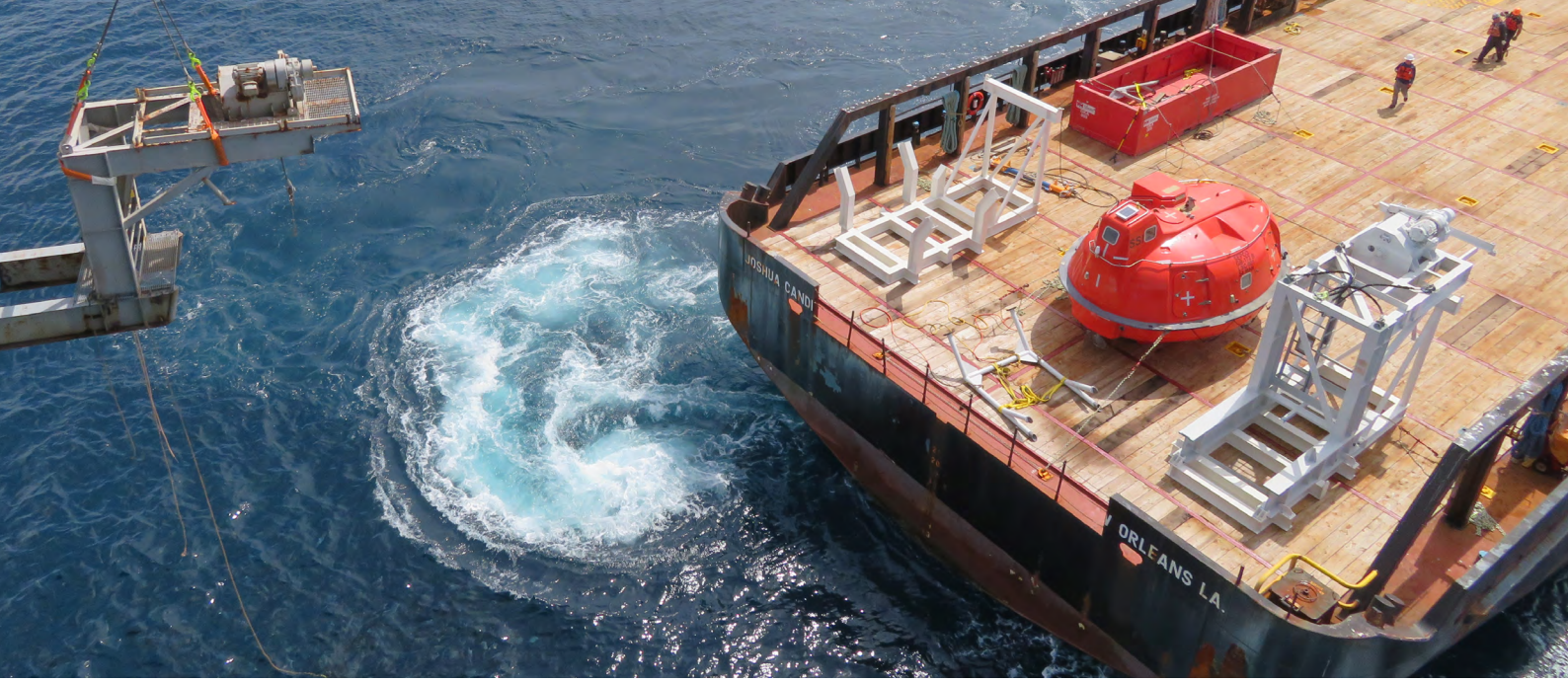
The offshore industry depends on safety systems. The safety of the crew depends on the safety measures in place. Lifeboats are determining the route to escape in case of emergency. The capacity of the lifeboats installed on the offshore platform or FPSO, determine the number of Persons on Board (POB) that are allowed onboard.

When a lifeboat system is not in operation, it will impact the number of people allowed on the facility. Production is immediately impacted by lifeboat systems that are not in operation.

The lifeboat system comprises the lifeboat itself and its retrieving system, which often is a davit type system. Both the lifeboat and the retrieving system have to be in good condition.

Over the years, Conbit has been asked to replace lifeboat davits for several reasons:

- Davit system passed its design life.
- Davit system did not pass inspection and certification
- The capacity of the lifeboat system will be upgraded



Complexity of the replacement

The lifeboats are often installed outside the reach of the deck crane or underneath another deck. External lifting capacity is required to replace the davits.

Traditionally, crane vessels are used to replace the davits. An optimal crane vessel is selected based on the weight of the davit system and the available height above the lifeboat system. This often results in the selection of a relatively small crane vessel.

The crane vessels face significant impact from motions. It is hard to keep them in position. The available space at the installation location makes the job, using a crane vessel, very challenging. The boom of the crane vessel can hit the offshore structure, it is difficult to control the load, and the position of the crane vessel is very close to the offshore facility.

Davit systems are welded to the offshore facility. Before lifting the old davit, the davit needs to be cut loose and temporarily secured, so the crane vessel can make its approach. When receiving the new davit, the module needs to be secured temporarily before the rigging of the crane vessel can be disconnected. These temporarily supports add project risks.

Conbit's solution to replace lifeboat davits

Conbit uses a different approach to offshore lifting challenges. Instead of using crane vessels, Conbit installs lifting capacity on the offshore asset and lifts directly to a supply vessel. The main advantage is that it is easier to keep control of the project. But, there are many more advantages.

- Weather windows can be much shorter. After cutting, the old davit can be secured in rigging.
- When the supply vessel approaches the davit can be lowered to the supply vessel immediately.
- When installing the new davit, the supply vessel can be moved away from the offshore structure immediately after liftoff.
- The dynamic factors impacting the lift are much lower, because you lift from the structure where the component is installed. Once the module is lifted from the deck of the supply vessel, it is much easier to control the load.

- There are significant costs-savings. You do not need an expensive crane vessel. Instead you will be using a standard DP2 supply vessel.
- The offshore execution is much easier to plan, since you are not depending on scarce marine spread.

Conbit has been providing alternatives to crane vessels for lifting smaller modules for many years. Especially when the operation is time critical, Conbit's lifting solutions are favored. A crane vessel lifting operation might seem more time-effective, but in practice you will notice that the planning risk outweighs the factor of time.

The Conbit lifeboat replacement lifting system

Clients have asked Conbit to replace lifeboat davits outside the reach of deck cranes or with a deck above the lifeboat davit. Both situations resulted in different kinds of lifting solutions.

Lifeboats outside the reach of deck cranes

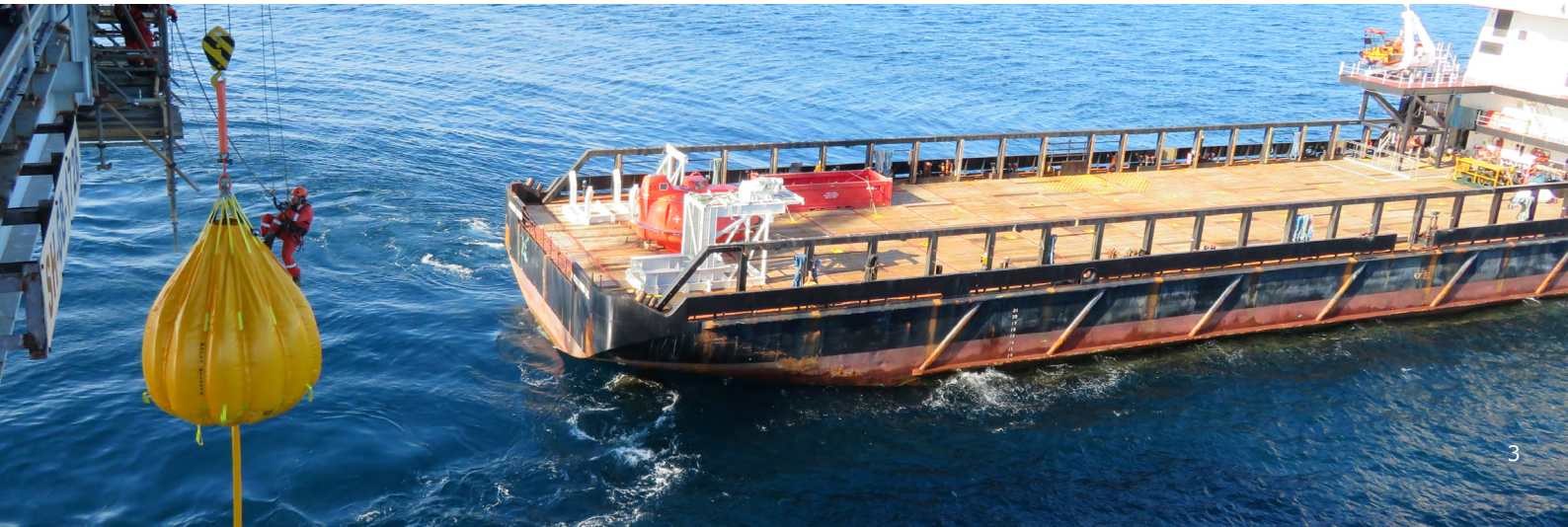
When the life boat system is outside the reach of deck cranes and there is no structure above the lifeboat system, Conbit uses a temporarily lift system which extends above the lifeboat davits.

A gantry structure or single boom lift configuration allow for picking up the davit and luffing it further over the site of the offshore facility. The luffing is done with rigging equipment. The actual lifting is performed by high speed winches.

Lifeboats underneath a structure

When a lifeboat is installed underneath another structure, such as the weather deck or helideck, the lifting operation becomes different. Often there is not enough space above the lifeboat davits to assemble a gantry or single boom lifting configuration. And, why not include the structure above in the lifting configuration?

Conbit has been lifting underneath and between decks for many years and have optimized their solutions. Typically, a lift point is created to the structure above, with a beam clamp. To this beam clamp, a rigging configuration is attached. The lifted object would then be transferred to a next lift point, which performs the offshore lift. The offshore lift is done with high speed winches, which are either incorporated in the below deck lifting configuration or standing on the offshore facility and reeved through the lift point.



In Air takeover of lifeboat davits

Conbit is also involved in hybrid lifting solutions, involving a crane vessel. In those projects, Conbit is requested to take over the lifeboat davit system from a crane vessel into a rigging configuration or lifting system installed on the platform.

These hybrid solutions allow the crane vessel to be further away from the platform, they allow to overcome the motions of a crane vessel better, and they allow for installing large davit systems underneath structural decks.

The Conbit project approach for lifeboat davit replacements

Careful planning is vital to a smooth project execution. Conbit believes in the "power of preparation" to overcome project risks during offshore execution.

Conbit divides its projects in the following phases:

- Engineering
- Project preparation
- Offshore execution

Engineering for lifeboat davit replacements

During the engineering phase, Conbit proposes a replacement method. Initially, a concept replacement method is presented and discussed with the client. Once all parties agree, the replacement method will be worked out in more detail.

The final engineering package will include at least the following deliverables

- Method statement
- Lifeboat davit lift plan
- Equipment installation procedure
- Offshore load test procedure
- Structural analysis report of lifting system
- Structural analysis of structural interfaces with offshore facility (local). Load plans will be reported for client verification.
- Lifting equipment assembly drawings
- HSE Plan(s)
- Rope access rescue plan
- Inspection and test plan
- Warehouse load test procedure

During the engineering phase, a site visit is conducted to verify the feasibility of the concept replacement method. During the site visit missing information will be gathered and the available information will be verified.

Project preparation for lifeboat davit replacement

The engineering documents will be used to fill the material take off list. All items of this list will be gathered prior to the load test, which will take place in Conbit's warehouse. Conbit's inventory system will gather all material and equipment certificates and reports any required actions, e.g. re-certification.

After all components of the lifting system have been gathered, Conbit technicians will perform a load test at Conbit's warehouse. This load test has several objectives: check completeness of the package, very constructability, check the system's funcionality, and verify the safe working load.

After the load test is completed successfully, all equipment and material is packed in offshore containers and shipped out to the client.

In the meantime, the crew is selected, visas are arranged and travel plans are finalized. Just before departure, there is a briefing of the crew. The crew will arrive one or two days before traveling offshore.

Offshore execution of lifeboat davit replacement

Once the crew arrived offshore and completed the site induction, it will start unpacking the containers. The lifting crew will start to assemble the lifting configuration. The mechanical crew will make the preparation for the cutting.

Once the lifting crew secures the lifeboat davits in the rigging arrangement the davit will be cut loose. After the cut is completed the lifting crew will progress the lifting sequence until the supply boat is moved into position.

The lifeboat davit is lowered to the deck of the supply vessel and disconnected from its lifting configuration. The lifting of the new lifeboat davit is done in reverse order.

Special note to the offshore lift. Conbit uses high speed winches as main mitigation to the motions of the vessel. Conbit winch operators are trained to perform the offshore lift with these kind of winches. For the new lifeboat davits, they will start lifting on top of the wave. The speed of the lift winch will make sure the lifted object is high enough before the next wave lifts the supply vessel out of the water again. This proven technology allows to use relatively straightforward winches, that are very unlikely to fail.

SIMOPS

Simultaneous Operations are impacting your life boat davit replacement project significantly. The lifeboat location is often near the helideck. The lifting operation and other activities on the life boat davits will impact the operation of the helideck.

Another SIMOPS challenge is the lack of emergency evacuation capacity at the platform. The amount of additional work which can take place during lifeboat davit replacement projects is therefore limited.

Careful SIMOPS planning is required to mitigate the effects of the life boat davit maintenance works.

Lead time and planning

One of the major objectives during the operation is to keep the offshore time as short as possible, and to prevent unexpected events from impacting the offshore lead time.

The impact on the offshore facility when lifeboat systems are out of operation is significant. The lifeboat system has an impact on the allowable number of people on board (PoB). To further put pressure on the available PoB’s, the lifeboat davit replacement crew also needs to be accommodated. Therefore, it is of vital importance to minimize the offshore lead time.

Conbit uses two project lead times: the lead time to prepare and the offshore lead time.

Project preparation lead time

The lead time starts when the project is awarded to Conbit. In the below table, the standard lead times are displayed. However, more time is favorable and lesser time might be possible on a project-by-project basis.

So, please regard the below lead times as guidelines and take some time to allow for structural commercial discussions.

REF	ACTIVITY	LEAD TIME
A	Contract award	
B	Concept engineering	A + 4 weeks
C	Detailed engineering	B + 10 weeks
D	Project preparation	C + 6 weeks
E	Warehousing and load test (Ready for transportation)	D + 4 weeks
F	Transport to offshore facility	E +*

'* depend on location (travel times, customs, offshore transit time)

Offshore execution lead time

To replace a lifeboat davit system, the following offshore lead times can be used for reference. Project specific planning adjustments are not included.

DAY 1	Arrival and site induction
DAY 2 & 3	Install lifting configuration
DAY 4	Load test and contingency
DAY 5	Lifting of the old boat landing davit
DAY 6	Lifting of new davit and position at final location
DAY 7 & 8	Disassemble lifting system, pack containers and housekeeping

The lifting crew will consist of one team leader, and 4 or 5 technicians. All technicians are rope access qualified (IRATA).

The mechanical works (cutting and welding) are not included in the above schedule.
Those activities will not be on the critical path when using temporary lifting systems.

WHAT DO YOU NEED TO KNOW?

You can, of course, contract a crane vessel and try to perform the replacement of the lifeboat davit as safe as possible. You should especially keep an eye on the planning, but also the risk of motions impacting the lifting operation.

When you would like to approach the project differently, you will be surprised by all the gains that are offered by modular lifting systems, like those of Conbit. At first glance, you might think that these modular systems introduce additional project risks, but once you start realizing that lifting from the offshore structure itself is possible, you will understand the main advantages.

Reach out to the experts of Conbit and they will explain the impact of the modular lifting approach. Conbit's engineers are trained to help decision making in the early phases of your project.

For a first conversation, send an overview drawing of your offshore facility, and pictures of the lifeboats (preferably from a distance). During the first conversation, Conbit will explain the main considerations and the next steps in the project.

Request Expert Session

NOTES

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