A SEMI-SUBMERSIBLE PLATFORM WITH A MOVABLE SUBMERGIBLE PLATFORM FOR DRY DOCKING A VESSEL

Field of the Invention

This invention relates to a semi-submersible platform with a landing bay. More particularly, this invention relates to a semi-submersible platform having a landing bay with a movable platform sized to fit under a docked seaworthy vessel whereby the movable platform together with the docked vessel moves between a submerged position and an exposed position. Still more particularly, this invention relates to a semi-submersible platform with a landing bay whereby the landing bay has a stabilizing mechanism for holding a docked vessel steady when the platform and the vessel are moving between a submerged position and an exposed position using a lifting mechanism.

Prior Art

Offshore well drilling platforms have been widely used by oil-drilling companies over the past few decades. Of these, mobile semi-submersible drilling platforms are preferred over stationary platforms as mobile semi-submersibles are not dependent upon the surface of the ocean floor for a stable foundation. Another advantage of semi-submersibles is that these mobile platforms may be moved easily from one drilling site to another.

Through the years, as drilling sites move further away from landmasses, various logistical problems arise. In particular, oil-drilling companies face logistical issues in transporting personnel to and from the drilling sites. Typically, helicopters are used to transport personnel. Helicopters may be deployed when the drilling sites are located around 150 km offshore however, when the drilling sites are located around 300 km offshore, the use of helicopters as a regular means of large-scale transportation becomes inefficient. To address this logistical issue, it was proposed that accommodation platforms be built halfway between the coast and the drilling sites. In this manner, helicopters could be deployed to transport people from the coast to the accommodation platforms, and subsequently onwards to the drilling

water. In the disclosed design, the watercraft lift has a plurality of air tanks, each configured with an internal chamber to receive and release pressurized air. Each air tank is connected to a swing arm. When the air tank receives sufficient pressurized air, the air tank has sufficient buoyancy to lift a docked watercraft out of the water. When the air tank releases the pressurized air, this causes the swing arms to release from a raised position thus submerging the hull of the docked watercraft into the water. This design may only be applied in situations whereby a watercraft is to be lifted in calm water conditions and in docking situations whereby the watercraft is located near to a landmass. Under rough sea conditions, this design would not result in a stable "dry docking" apparatus as the design disclosed in this publication would be unable to achieve the level of stability required to operate under rough sea conditions. Furthermore, this design does not provide a guiding or stabilizing mechanism for guiding a watercraft safely into the docking area under rough sea conditions and for holding the watercraft stable when the watercraft is being raised.

Therefore, for the purposes of a mobile accommodation platform for oil drilling operations, those skilled in the art are constantly looking for ways to provide a mobile accommodation platform with berthing means to allow a vessel to dock safely under unpredictable and/or rough sea conditions.

Summary of Invention

The above and other problems in the art are solved and an advance in the art is made in accordance with this invention. A first advantage of a semi-submersible platform with a landing bay in accordance with this invention is that this semi-submersible provides a landing bay for the berthing of vessels at offshore drilling sites. A second advantage of a ~~wearable speaker system~~semi-submersible platform in accordance with this invention is that the landing bay has a movable submergible platform that is used to raise and lower a berthed vessel within the landing bay. A third advantage of a ~~wearable speaker system~~semi-submersible platform in accordance with this invention is that the landing bay of the semi-submersible has a stabilization mechanism for holding the vessel steady when the vessel is approaching the landing bay and when the vessel is being raised or lowered.

In accordance with an embodiment of this invention, a ~~wearable speaker system~~ semi-submersible platform in accordance with this invention comprises a semi-submersible structure. The semi-submersible structure has a landing bay located within. The landing bay is accessible by an opening through which docking vessels may pass through. The landing bay further comprises a platform sized to fit under a docking vessel, a stabilizing mechanism for holding the docked vessel stable and a lifting mechanism for moving the platform between a submerged position and a raised position. In the submerged position, the platform is at a depth beneath the surface of the water and at a depth beneath the hull of the docking vessel. In the raised position, the platform together with the docked vessel is raised out of the water to a predetermined height. As the vessel is raised, the stabilizing mechanism holds the docked vessel level, preventing the vessel from tipping over and hitting the sides of the landing bay.

In accordance with an embodiment of this invention, the semi-submersible structure comprises a first and a second semi-submersible pontoon. The pontoons are positioned substantially parallel to one another and are spaced apart to define an open area between them.

In accordance with an embodiment of this invention, the semi-submersible structure further comprises a first plurality of support columns extending upwardly from the first semi-submersible pontoon whereby these support columns are substantially aligned in a parallel manner to one another. A second plurality of support column also extends upwardly from the second semi-submersible pontoon and these support columns are also substantially aligned in a parallel manner to one another,

In accordance with an embodiment of this invention, the lifting mechanism are affixed to a portion of the first and second semi-submersible pontoons.

In accordance with an embodiment of this invention, the landing bay is located between a first end of the first and second semi-submersible pontoons.

CLAIMS:

1. A semi-submersible platform comprising:

a semi-submersible structure; and

a landing bay inside said semi-submersible structure accessible by vessels through an opening through said semi-submersible structure; wherein said landing bay comprises:

a platform sized to fit under a docking vessel and movable between a submerged position in which said platform is beneath the surface of water in said landing bay to a depth that allows said vessel to float over said platform, and an exposed position in which said platform holds said docking vessel out of the water;

a stabilizing mechanism for holding said docking vessel in a level position responsive to said platform being in said exposed position; and

a lifting mechanism for moving said platform between said submerged position and said exposed position.

2. The semi-submersible platform of claim 1 wherein said semi-submersible structure comprises:

a first semi-submersible pontoon on a first side of said structure; and

a second semi-submersible pontoon on a second side of said structure wherein said first and second semi-submersible pontoons are substantially parallel and spaced apart to define an open area between said first and second semi-submersible pontoons.

3. The semi-submersible structure of claim 2 further comprising:

a first plurality of support columns extending out of a top side of said first semi-submersible pontoon wherein said first plurality of support columns are substantially aligned parallel to one another; and

a second plurality of support columns extending out of a top side of said second semi-submersible pontoon wherein said second plurality of support columns are substantially aligned parallel to one another.

4. The semi-submersible structure of claim 2 wherein said lifting mechanism is affixed a portion of said first semi-submersible pontoon and a portion of said second semi-submersible pontoon.

5. The semi-submersible structure of claim 3 wherein said landing bay is between a first end of said first and second semi-submersible pontoons.

6. The semi-submersible structure of claim 5 further comprising:

a platform spanning a portion of said first and second plurality of support columns at a second end of said first and second semi-submersible pontoons wherein said platform spans said open area between said pontoons.

7. The semi-submersible platform of claim 1 wherein said stabilizing mechanism comprises:

a plurality of suction moorings having a first end affixed to said semi-submersible structure and a second end for attaching to the sides of said docking vessels.

8. The semi-submersible platform of claim 1 wherein said lifting mechanism comprises:

a plurality of hydraulic lifts.

9. The semi-submersible platform of claim 1 wherein said semi-submersible structure further comprises:

a guiding mechanism for guiding said docking vessel through said opening through said semi-submersible structure.

10. The guiding mechanism of claim 9 wherein said guiding mechanism comprises a docking car setup.

11. The guiding mechanism of claim 9 wherein said guiding mechanism comprises a rigid yoke structure.

12. The semi-submersible platform of claim 1 wherein said semi-submersible structure further comprises:

a disembarking mechanism having a first end adjacent said semi-submersible structure and a second end positioned adjacent said docking vessel.

13. The semi-submersible structure of claim 12 wherein said disembarking mechanism comprises a telescopic personnel access system.

14. The semi-submersible platform of claim 1 wherein said semi-submersible structure further comprises:

an embarking mechanism having a first end adjacent said semi-submersible structure and a second end positioned adjacent said docking vessel.

15. The semi-submersible structure of claim 14 wherein said embarking mechanism comprises a telescopic personnel access system.

16. The semi-submersible platform of claim 1 wherein said securing mechanism further comprises:

a plurality of air bags affixed on a first side of said platform for receiving said docking vessel.

17. The semi-submersible platform of claim 1 further comprising:

crew quarters.

18. The semi-submersible platform of claim 1 further comprising:

helicopter pads.

19. The semi-submersible platform of claim 1 further comprising:

lifeboats.

CLAIMS:

1. A semi-submersible platform comprising:

a semi-submersible structure; and

a landing bay inside said semi-submersible structure accessible by vessels through an opening through said semi-submersible structure; wherein said landing bay comprises:

a platform sized to fit under a docking vessel and movable between a submerged position in which said platform is beneath the surface of water in said landing bay to a depth that allows said vessel to float over said platform, and an exposed position in which said platform holds said docking vessel out of the water;

a lifting mechanism for moving said platform between said submerged position and said exposed position; and

a stabilizing mechanism for holding said docking vessel in a level position responsive to said platform moving from said submerged position to said exposed position wherein said stabilizing mechanism comprises a plurality of suction moorings having a first end affixed to said semi-submersible structure and a second end for attaching to the sides of said docking vessels.

2. The semi-submersible platform of claim 1 wherein said semi-submersible structure comprises:

a first semi-submersible pontoon on a first side of said structure; and

a second semi-submersible pontoon on a second side of said structure wherein said first and second semi-submersible pontoons are substantially parallel and spaced apart to define an open area between said first and second semi-submersible pontoons.

3. The semi-submersible structure of claim 2 further comprising:

a first plurality of support columns extending out of a top side of said first semi-submersible pontoon wherein said first plurality of support columns are substantially aligned parallel to one another; and

a second plurality of support columns extending out of a top side of said second semi-submersible pontoon wherein said second plurality of support columns are substantially aligned parallel to one another.

4. The semi-submersible structure of claim 2 wherein said lifting mechanism is affixed a portion of said first semi-submersible pontoon and a portion of said second semi-submersible pontoon.

5. The semi-submersible structure of claim 3 wherein said landing bay is between a first end of said first and second semi-submersible pontoons.

6. The semi-submersible structure of claim 5 further comprising:

a platform spanning a portion of said first and second plurality of support columns at a second end of said first and second semi-submersible pontoons wherein said platform spans said open area between said pontoons.

7. The semi-submersible platform of claim 1 wherein said lifting mechanism comprises:

a plurality of hydraulic lifts.

8. The semi-submersible platform of claim 1 wherein said semi-submersible structure further comprises:

a guiding mechanism for guiding said docking vessel through said opening through said semi-submersible structure.

9. The guiding mechanism of claim 8 wherein said guiding mechanism comprises a docking car setup.

10. The guiding mechanism of claim 8 wherein said guiding mechanism comprises a rigid yoke structure.

11. The semi-submersible platform of claim 1 wherein said semi-submersible structure further comprises:

a disembarking mechanism having a first end adjacent said semi-submersible structure and a second end positioned adjacent said docking vessel.

12. The semi-submersible structure of claim 11 wherein said disembarking mechanism comprises a telescopic personnel access system.

13. The semi-submersible platform of claim 1 wherein said semi-submersible structure further comprises:

an embarking mechanism having a first end adjacent said semi-submersible structure and a second end positioned adjacent said docking vessel.

14. The semi-submersible structure of claim 13 wherein said embarking mechanism comprises a telescopic personnel access system.

15. The semi-submersible platform of claim 1 wherein said securing mechanism further comprises:

a plurality of air bags affixed on a first side of said platform for receiving said docking vessel.

16. The semi-submersible platform of claim 1 further comprising:

crew quarters.

17. The semi-submersible platform of claim 1 further comprising:

helicopter pads.

18. The semi-submersible platform of claim 1 further comprising:

lifeboats.