of the offshore platform. However, while increasing the waterplane area of an offshore platform may increase its stability (e.g., its ability to resist sway (lateral/side-to-side motion) and surge (longitudinal /front-and-back motion) imparted by maritime conditions), increasing the waterplane area of the offshore platform may also increase its susceptibility to heave (e.g., vertical/up-and-down motion). Solutions to address heave in the offshore platform and/or affecting components thereon are desirable.

SUMMARY

[0004a] According to a first aspect, there is provided a system, including: a first structure configured to be coupled to a tubular string extending to a seafloor, wherein the first structure includes a drill floor, wherein the first structure circumscribes a derrick of an offshore vessel; and a second structure circumscribing the first structure and slidingly coupled to the first structure via at least one guide to provide a lateral force to the first structure while allowing for vertical movement between the first structure as well as the derrick and the second structure relative to the seafloor, wherein the second structure comprises at least one vertically disposed beam configured to be directly coupled to a deck of an offshore vessel, wherein the at least one vertically disposed beam is directly coupled to the at least one guide.

[0004b] According to a second aspect, there is provided a system, including: a first structure, including: a drill floor; one or more beams directly coupled to and disposed about the drill floor; and one or more upper beams coupled to the one or more beams; a derrick directly coupled to the one or more upper beams; and a second structure disposed at least partially around the first structure, wherein the second structure contacts the first structure to provide a lateral force to the first structure while allowing for vertical movement between the first structure as well as the derrick and the second structure while maintaining a predetermined distance between the first structure and a seafloor.

[0004c] According to a third aspect, there is provided a tangible, non-transitory computer-readable medium having computer executable code stored thereon, the computer executable code including instructions to cause a processor to: receive data related to operational characteristics of a drawworks of an actuation system, wherein the operational characteristics indicate tension or load on a line coupled to a first structure comprising a drill floor, one or more beams coupled to and disposed about the drill floor, and one or more upper beams directly coupled to the one or more beams, wherein the first structure moves vertically relative to a second structure laterally

supporting the first structure, wherein the second structure comprises at least one vertically disposed beam configured to be directly coupled to a deck of an offshore vessel, wherein the at least one vertically disposed beam is coupled to the first structure via at least one guide; determine if the operational characteristics are acceptable; determine an adjustment value as a control signal when the operational characteristics are not determined to be acceptable; and transmit the control signal to control at least the portion of the actuation system to adjust the tension or load on the line to maintain a predetermined distance between the first structure and a seafloor while the first structure moves vertically relative to the second structure.

BRIEF DESCRIPTION OF DRAWINGS

[0005] FIG. 1 illustrates an example of an offshore platform having a riser coupled to a blowout preventer (BOP), in accordance with an embodiment;

[0006] FIG. 2 illustrates a front view a first embodiment of a drilling rig as illustratively presented in FIG. 1, in accordance with an embodiment;

[0007] FIG. 3 illustrates a front view of the tripping apparatus of FIG. 2, in accordance with an embodiment;

[0008] FIG. 4 illustrates a front view a second embodiment of a drilling rig as illustratively presented in FIG. 1, in accordance with an embodiment;

[0009] FIG. 5 illustrates a block diagram of a computing system of FIG. 2, in accordance with an embodiment;

[0010] FIG. 6 illustrates an isometric view of a third embodiment of a drilling rig as illustratively presented in FIG. 1, in accordance with an embodiment;

[0011] FIG. 7 illustrates an side view of the third embodiment of a drilling rig of FIG. 6, in accordance with an embodiment; and

[0012] FIG. 8 illustrates a flow diagram of the actuation system of the drilling rig of FIGS. 6 and 7, in accordance with an embodiment.

What is claimed is:

1. A system, comprising:

a first structure configured to be coupled to a tubular string extending to a seafloor, wherein the first structure comprises a drill floor, wherein the first structure circumscribes a derrick of an offshore vessel; and

a second structure circumscribing the first structure and slidingly coupled to the first structure via at least one guide to provide a lateral force to the first structure while allowing for vertical movement between the first structure as well as the derrick and the second structure relative to the seafloor, wherein the second structure comprises at least one vertically disposed beam configured to be directly coupled to a deck of an offshore vessel, wherein the at least one vertically disposed beam is directly coupled to the at least one guide.

2. The system of claim 1, comprising an actuation system disposed adjacent to the second structure.

3. The system of claim 2, comprising an active heave drawworks as at least a portion of the actuation system.

4. The system of claim 3, comprising a line coupled to the active heave drawworks and connected to the first structure.

5. The system of claim 4, wherein the active heave drawworks comprises:

a drum as a portion of the active heave drawworks coupled to the line; and

a controller that when in operation controls rotation of the drum to retract the line around the drum when the second structure moves vertically towards the seafloor.

6. The system of claim 5, wherein the controller when in operation controls rotation of the drum to extend the line from the drum when the second structure moves vertically away from the seafloor.

7. The system of claim 4, comprising an upper sheave disposed on the second structure, wherein the line passes along the upper sheave to the first structure.

8. The system of claim 7, comprising a lower sheave disposed on the second structure, wherein the line passes from the first structure to along the lower sheave.

9. The system of claim 8, wherein the line is coupled to an anchor point subsequent to passing along the lower sheave.

10. The system of claim 8, wherein the line is coupled to a second active heave drawworks as a second portion of the actuation system subsequent to passing along the lower sheave.

11. The system of claim 10, wherein the second active heave drawworks comprises:

a second drum as a portion of the second active heave drawworks coupled to the line; and

a second controller that when in operation:

controls rotation of the second drum to retract the line around the second drum when a first control signal is received; and

controls rotation of the second drum to extend the line from the second drum when a second control signal is received.

12. The system of claim 11, wherein the second controller when in operation locks the second drum to generate an anchor point upon receipt of a third control signal.

13. A system, comprising:

a first structure, comprising:

a drill floor;

one or more beams coupled to and disposed about the drill floor; and

one or more upper beams directly coupled to the one or more beams;

a derrick directly coupled to the one or more upper beams; and

a second structure disposed at least partially around the first structure, wherein the second structure contacts the first structure to provide a lateral force to the first structure while allowing for vertical movement between the first structure as well as the derrick and the second structure while maintaining a predetermined distance between the first structure and a seafloor.

14. The system of claim 13, wherein the second structure comprises one or more guides to interface with at least a portion of the first structure.

15. The system of claim 14, comprising a lateral support as the at least a portion of the first structure.

16. The system of claim 15, wherein the lateral support comprises a roller bearings or pads.

17. The system of claim 13, comprising an actuation system coupled to the first structure, wherein when in operation, the actuation system controls the vertical movement between the first structure and the second structure to maintaining the predetermined distance between the first structure and the seafloor.

18. A tangible, non-transitory computer-readable medium having computer executable code stored thereon, the computer executable code comprising instructions to cause a processor to:

receive data related to operational characteristics of a drawworks of an actuation system, wherein the operational characteristics indicate tension or load on a line coupled to a first structure comprising a drill floor, one or more beams coupled to and disposed about the drill floor, and one or more upper beams directly coupled to the one or more beams, wherein the first structure moves vertically relative to a second structure laterally supporting the first structure, wherein the second structure comprises at least one vertically disposed beam configured to be directly coupled to a deck of an offshore vessel, wherein the at least one vertically disposed beam is coupled to the first structure via at least one guide;

determine if the operational characteristics are acceptable;

determine an adjustment value as a control signal when the operational characteristics are not determined to be acceptable; and

transmit the control signal to control at least the portion of the actuation system to adjust the tension or load on the line to maintain a predetermined distance between the first structure and a seafloor while the first structure moves vertically relative to the second structure.

19. The tangible, non-transitory computer-readable medium of claim 18, wherein the computer executable code comprises instructions to determine if the operational characteristics are acceptable by comparing at least one of the operational characteristics to a predetermined value.

20. The tangible, non-transitory computer-readable medium of claim 18, wherein the computer executable code comprises instructions to determine if the operational characteristics are acceptable by comparing at least one of the operational characteristics to a predetermined range of values.