

Vessel hull for use as a hull of a floating hydrocarbon storage and/or processing plant, method for producing such a vessel hull, vessel comprising such a vessel hull, as well method for producing such a vessel having such a vessel hull

5 Field of the invention

The invention relates to method for producing a vessel hull for use as a hull of a floating hydrocarbon processing and storage plant (FPSO) or a floating hydrocarbon storage plant (FSO), comprising the steps of:

- 10 - producing a vessel hull stern portion, a bow portion and a central portion in between the bow and stern portions, with longitudinal hull sides comprising the longitudinal hull sides of the stern portion, the bow portion and the central portion,
- arranging a deck on the hull, suitable for supporting hydrocarbon processing modules,
- 15 - arranging hydrocarbon storage tanks inside the hull, for storing hydrocarbons to be obtained from a seabed-based wellhead, and
- providing the hull with an anchoring connection arrangement for connection with anchor lines suitable for mooring the FPSO or the FSO to a seabed.

20 Background of the invention

Such a method is known from, for instance, public use. Usually, currently existing FPSO's and FSO's comprise a vessel with a hull that is specifically built for a single application, i.e. for having a single type of anchor line and riser arrangement.

- 25 Such a hull can be a purpose-built 'new-built' hull or a second-hand hull that has previously been used for example with an oil tanker.

However, constructing an FPSO or FSO based on such a new-built hull or based on a vessel with a second-hand hull requires a relatively long construction period in a shipyard to obtain an FPSO or FSO with the desired functionality and characteristics, depending on the state of the second-hand hull and the amount of work to be done. Converting a second-hand hull into an FPSO or FSO requires massive and time-consuming structural works within the hull to achieve refurbishment and conversion. Refurbishment of the existing arrangements of the second-hand hull is needed to ensure

that the 20 to 30 years' service life of the hull as an FPSO or FSO is guaranteed. Conversion of the hull adds arrangements to make the hull ready for use as an FPSO or FSO. The refurbishment and conversion of the hull occurs often in parallel and the whole operation requires often several dry-docking stops, which can be separated in
5 time.

Since demand for FPSO's and FSO's is ever-increasing and pressure for even shorter construction and delivery times is mounting, the time between purchase order and delivery needs to be reduced. Also the time a hull stays in a dry-dock should be reduced, as the time at the above dry dock is relatively expensive and the slot for
10 performing the refurbishment and conversion work or for building a new hull should be booked well in advance.

Attempts have been made by the present applicant to design and construct a generic, new-built hull that will reduce the time required for construction at the dry dock. Such a generic hull was disclosed at the 2003 Offshore Technology Conference
15 in Houston, Texas (USA), and in particular in the paper proposed for presentation at the above conference, prepared (among others) by the present applicant. At the time, the idea behind such a generic hull was that the generic hull could be constructed based on a standard tanker conversion, having a standard mooring system and provided with standard process modules.

20 However, approximately ten years have gone by and the generic hull disclosed during the conference and in the aforementioned paper appears to have done very little, unfortunately, to reduce the time between purchase order and delivery.

Therefore, the need to provide a method for producing a vessel hull for use as a hull of a floating hydrocarbon storage and/or processing plant (FSO, FPSO), wherein
25 the time between purchase order and delivery is reduced, still exists.

An object of the present invention is thus to provide a method for producing a vessel hull for use as a hull of a floating hydrocarbon storage and or processing plant (FSO, FPSO), wherein the time between purchase order and delivery is reduced.

Summary of the invention

Hereto, according to the invention, a method for producing a vessel hull for use as a hull for a floating hydrocarbon storage and/or processing plant is provided, comprising the steps of:

- producing a vessel hull stern portion, a bow portion and a central portion in between the bow and stern portions, the vessel hull provided with longitudinal hull sides comprising the longitudinal hull sides of the stern portion, the bow portion and the central portion,
 - arranging a deck on the hull suitable for supporting hydrocarbon processing modules,
 - arranging hydrocarbon storage tanks inside the hull, for storing hydrocarbons to be obtained from a seabed-based wellhead,
 - providing the hull with an anchoring connection arrangement for connection with anchor lines suitable for mooring the vessel hull to a seabed, characterized by
 - arranging process module reinforcements in the deck, suitable for supporting hydrocarbon process modules,
- and at least two of the following steps:
- providing both longitudinal hull sides with mooring line connection reinforcements near or in the bow portion and stern portion for connecting mooring lines to be used in a spread-moored anchor line arrangement, and arranging in between the mooring line connection reinforcements in longitudinal direction, riser balcony connection reinforcements on one or both longitudinal hull sides suitable for supporting a riser balcony for connecting risers,
 - providing the bow portion with turret reinforcements suitable for receiving an internal turret,
 - providing the bow portion with turret reinforcements suitable for receiving an external turret, wherein the turret is provided with anchor line connection points and riser connection points.

Thus, a sort of ‘multi-purpose hull’ is provided, based on a ‘design one, build several’ philosophy, having reinforcements pre-installed in those hull locations where further FSO or FPSO equipment, in particular relating to anchor line connection points (i.e. the mooring system) and riser connection points, is to be installed. The

reinforcements are to be integrated in the hull at the dry dock and subsequently the hull having the aforementioned reinforcements is transported to a quay side that can receive an FPSO or FSO for the actual conversion into an FPSO or FSO having the desired mooring and riser system arrangement. The conversion can be carried out using local equipment. In a particular scenario, the dry dock is for example situated in South Korea, whereas the quay side for the top sides integration for the FPSO is located in Brazil. If, for instance, an FPSO having an external turret system is to be constructed at the FPSO quay side, the 'non-used' reinforcements (i.e. the ones specifically arranged for use with a spread-moored arrangement and/or an internal turret arrangement) can remain in place, then serving only as general structural reinforcements for the vessel hull but not for a mooring arrangement.

It is found in practice that the total time needed for conversion to an FSO or FPSO can be reduced with about 6-12 months, compared to the classic method of converting and refurbishing the hull of an existing second-hand oil tanker.

The size and flexibility of the hull design enables the FSO or FPSO to be moored in various configurations, i.e. to be compatible with any type of environment, water depth, riser type or storage requirement, with no rework needed within the hull.

In the context of this patent application, 'reinforcements' are to be understood as structural reinforcements for providing additional structural strength/stiffness at the respective hull location, to allow the hull to deal with the relatively larger forces occurring at that hull location due to the presence of riser systems, mooring systems, process modules, crane support, flare stack, etcetera.

Another aspect of the invention relates to a vessel hull for use as a hull of a floating hydrocarbon storage and/or processing plant, comprising:

- a stern portion, a bow portion and a central portion in between the bow and stern portions, the vessel hull provided with longitudinal hull sides comprising the longitudinal hull sides of the stern portion, the bow portion and the central portion,
- a deck, arranged on the hull, suitable for supporting hydrocarbon processing modules,
- hydrocarbon storage tanks, arranged inside the hull, for storing hydrocarbons to be obtained from seabed-based wellheads,
- an anchoring connection arrangement for connection with anchor lines suitable for mooring the vessel hull to a seabed, characterized in that

- the deck comprises process module reinforcements suitable for supporting hydrocarbon process modules,
and at least two of the following elements:

- both longitudinal hull sides comprise mooring line connection reinforcements near or in the bow portion and stern portion for connecting mooring lines to be used with a spread-moored anchor line arrangement and one or both longitudinal hull sides comprise riser balcony connection reinforcements arranged in between the mooring line connection reinforcements in longitudinal direction, suitable for supporting a riser balcony for connecting risers,
- 10 - the bow portion comprises a turret reinforcement suitable for receiving an internal turret,
- the bow portion comprises a turret reinforcement suitable for receiving an external turret, wherein the turret is provided with anchor line connection points and riser connection points.

15 An embodiment relates to an aforementioned vessel hull, wherein the vessel hull is produced with the aforementioned method.

In an preferred embodiment, the hull is provided with all 3 elements, meaning that the hull is provided with reinforcements for a spread mooring arrangement, reinforcements for an internal turret arrangement and for reinforcements for an external
20 arrangement.

However, the following embodiments of the hull are within the scope of the claimed invention; a hull which is provided with only the reinforcements for a spread-mooring arrangement and an external turret arrangement, a hull which is provided with only reinforcements for a spread mooring arrangement and an internal turret
25 arrangement or a hull that is provided with only reinforcements for both an internal and external turret arrangement.

Another embodiment relates to an aforementioned vessel hull, wherein a transverse bulkhead is arranged between the bow portion and the central portion, the central portion comprising two longitudinal central portion bulkheads extending in
30 longitudinal direction from the stern portion to the transverse bulkhead, being spaced-apart at a transverse distance D1, the bow portion comprising two longitudinal bow portion bulkheads extending in longitudinal direction from the transverse bulkhead to the bow, being spaced-apart at an internal turret position at a transverse distance D2,

wherein, when seen in top view, D2 is larger than a maximum outer diameter of an internal turret to be arranged at the internal turret position in between the two longitudinal bow portion bulkheads. Thus, when constructing the above longitudinal bulkheads, the possible arrangement of an internal turret in between the longitudinal bulkheads in the bow portion is already taken into account during construction of the new build hull. At the same time, only minimal deviation from the usual longitudinal bulkhead production processes is needed.

Preferably, D2 is larger than D1, basically giving the longitudinal bulkheads the appearance of a tuning fork, when seen in top view (i.e. when viewing the hull in its usual orientation from above).

More preferably, the two longitudinal central portion bulkheads and the two longitudinal bow portion bulkheads are comprised by two continuous longitudinal bulkheads extending from the stern portion to the bow, that is to say the longitudinal bulkheads are not actually intersected or interrupted by the transverse bulkhead.

Another embodiment concerns an aforementioned vessel hull, wherein the bow portion comprises a vertical plane of symmetry extending in longitudinal direction, wherein, when seen in top view, the longitudinal bow portion bulkheads are each arranged on one side of the vertical plane of symmetry, wherein the longitudinal bow portion bulkheads extend from the transverse bulkhead to the bow in such a way, that a first section of each longitudinal bow portion bulkhead diverges away from the vertical plane of symmetry and a second consecutive section extends substantially parallel to the vertical plane of symmetry forming a reception space for the internal turret at the internal turret location. The (straight) diverging sections make it easier to obtain the aforementioned tuning fork shape to create the reception space for receiving an internal turret. In practice, a relatively minimal amount of time has to be spent to obtain such a longitudinal bulkhead configuration in the bow portion, compared to having just two longitudinal bulkheads running from stern to bow along the length of the vessel.

An embodiment relates to an aforementioned vessel hull, wherein a third consecutive section converges towards the vertical plane of symmetry. Therein, the first, second and third sections of the longitudinal bow portion bulkheads preferably extend at such angles with respect to the vertical plane of symmetry, and have such dimensions that, when seen in top view, the longitudinal bow portion bulkheads each

resemble an arc having a centre of curvature coinciding with a centre point of the internal turret receivable in the reception space.

Yet another embodiment relates to an aforementioned vessel hull, comprising one or more removable propulsion units. Each propulsion unit can be connected to or
 5 associated with a (power) generator unit that is removable as well.

Thus, the vessel hull can be transported from a first location (in particular the dry dock) to a second location (most notably the FPSO or FSO quay side) by using the propulsion provided by the removable propulsion units. After the selective work is performed at the quayside (integration of the selected mooring system with riser
 10 connection points, meaning adding a (upper and lower) riser balcony, integration of an internal or external turret, adding the process modules, adding flare stack, the cranes, etc) the completed FSO or FPSO can be transported by its own propulsion system to the offshore production site where risers and mooring lines are connected to the respective riser and mooring lines connection points. After transportation and hook-up of risers
 15 and mooring lines, the temporary and removable propulsion units and the associated generators are disconnected from the hull and removed so that they can be used for another FPSO or FSO hull according to the invention. Thus, installing permanent propulsion in the vessel hull is not required anymore, which will reduce the initial CAPEX costs of the FPSO or FSO.

20 In an embodiment the deck comprises reinforcement suitable for supporting a flare stack and reinforcements for supporting one or more pedestrian cranes.

Another aspect of the invention relates to a method for producing a vessel for use as a floating hydrocarbon storage and/or processing plant using an aforementioned vessel hull comprising the steps of:

- 25 - arranging the hydrocarbon process modules on the deck, at the location of the process module reinforcements,
- selecting a desired riser and anchor line arrangement, such as a spread moored arrangement, an internal turret arrangement or an external turret arrangement, and
- configuring the vessel hull for use with the desired anchor line and riser
 30 arrangement, in particular by configuring anchor line connection points and riser connection points.

The above method can be carried out conveniently at the second location, away from the dry dock, to obtain the finalized or close-to-being-finalized FPSO or FSO.

The above method may further comprise the steps of:

- transferring the vessel for use as a floating storage and processing plant to a location near the seabed-based wellhead,
- connecting the anchor lines to the anchor line connection points and the risers to the riser connection points.

In a preferred embodiment of the above method, the aforementioned vessel hull is thus produced at a first location, and the method for producing the vessel for use as a floating hydrocarbon storage and/or processing plant (FPSO, FSO) using the vessel hull is carried out at a second location, being different from the first location, comprising transporting the hull from the first location to the second location.

Preferably, prior to transporting the hull from the first location to the second location, the removable propulsion units are integrated in and connected to the vessel hull, wherein the vessel hull is transported from the first to the second location by using the propulsion provided by the removable propulsion units, wherein after transportation the removable propulsion units are disconnected from the hull. As stated before, the first location comprises a dry dock and the second location is a quay side suitable for receiving the vessel hull, in particular an FSO or FPSO quay side, such that only a relatively small part of the total FSO or FPSO construction and process integration time has to be spent at the dry dock.

Patent publications US 2011/263169 A1, US 2003/205188 A1, US 6 126 501 A, US 2009/126617 A1, US 6 453 838 A1 and US 2009/078185 A1 describe further technical background.

Brief description of the drawings

Embodiments of a vessel hull according to the invention will by way of non-limiting example be described in detail with reference to the accompanying drawings. In the drawings:

Figure 1 shows a perspective view of an embodiment of a vessel hull having pre-installed reinforcements;

Figure 2 shows a close-up view of the bow portion of the vessel hull as shown in figure 1;

Figure 3 shows a cross-section of an embodiment of a vessel hull according to the invention, at a typical longitudinal vessel hull position where the anchor line arrangements to be used with a spread-moored arrangement are to be found;

Figure 4 shows a partial cross-section of the embodiment according to figure 3,
5 at a typical longitudinal vessel hull position where the riser balconies are to be found;
and

Figure 5 shows a top view of the embodiment of the vessel hull according to figures 3 and 4.

10 Detailed description of the invention

Figures 1-5 will be discussed in conjunction. Figure 1 shows a perspective view of a hull 1 of a floating hydrocarbon processing and storage plant (FPSO) having reinforcements pre-installed according to the invention. The hull 1 has a stern portion 2
15 (shown in the lower right part of figure 1), a bow portion 3 (shown in the upper left part of figure 1) and a central portion 4 in between the bow 3 and stern portions 2, with longitudinal hull sides 5 comprising the longitudinal hull sides of the stern portion 2, the bow portion 3 and the central portion 4. A deck 6 is arranged on the hull 1 for supporting n processing modules (not shown) like hydrocarbon process modules used
20 for FPSO's or metering skids used for FSO's. Also, hydrocarbon storage tanks (not shown) are to be arranged inside the hull 1, for storing hydrocarbons to be obtained directly from seabed-based wellheads (FPSO) or indirectly via another hydrocarbon production vessel (not shown) in case of an FSO. An anchoring connection arrangement 7 (see figures 3 and 5) is to be provided during use for connection with
25 anchor lines suitable for mooring the FPSO or FSO to a seabed. The orientation of the vessel hull 1 as shown in figures 1-5 corresponds with the usual orientation of such a vessel hull 1 during use. The width of the vessel hull 1 (in Y-direction) may for instance amount to 60m. The vessel length in longitudinal X direction may typically amount to for instance 350 m.

30 According to the invention, the deck 6 comprises process module reinforcements 8 for supporting the hydrocarbon process and other modules during use. An example of such a process module reinforcement 8 is shown near the bow portion 3 of the hull 1. Apart from supporting process modules, similar reinforcements can be

provided to the deck 6, in particular reinforcements for a flare, cranes (such as the crane pedestal 25 shown in figures 2 and 5) or vent masts.

Both longitudinal hull sides 5 can comprise mooring line connection reinforcements 9 near or in the bow portion 3 for connecting mooring lines to be used with a spread-moored anchor line arrangement 13. Two of such mooring line connection reinforcements 9 are arranged at both sides of the vessel hull 1 near or in the bow portion 3. Similarly, two of such mooring line connection reinforcements 9 are arranged in a similar fashion at the stern portion 2 of the vessel hull 1. At deck 6 level, above the mooring line reinforcements 9, chain tensioning system reinforcements 26 (see figure 2) are preferably provided to provide support for chain tensioning systems 27 to be used for tensioning the chains in case of a spread-moored anchor line arrangement 13.

Furthermore, one or more longitudinal hull sides 5 can comprise lower riser connection reinforcements 10 and upper riser connection reinforcements 14 arranged in between the mooring line connection reinforcements 9 in longitudinal direction X. The riser connection reinforcements 10, 14 are for supporting lower and upper riser balconies 28, 29 (see figures 4 and 5) for connecting risers 31 (see figure 4). The riser connection reinforcements 10, 14 preferably have a length in longitudinal direction X roughly corresponding to the length of the respective riser balconies 28, 29.

Preferably, the vessel hull 1 comprises ballast tanks 32 at both longitudinal sides 5 of the vessel (as shown in figures 3, 4 and 5). More preferably, the ballast tanks 32 comprise the mooring line connection reinforcements 9, the lower riser connection reinforcements 10, the upper riser connection reinforcements 14 and/or the chain tensioning system reinforcements 26, i.e. these reinforcements 9, 10, 14, 26 are then arranged in the hollow space of the ballast tanks 32. The reinforcements 9, 10, 14, 26 may comprise reinforcement plates that extend in a plane perpendicular to the longitudinal direction X, for instance over the whole of the cross-section of the hollow space of the ballast tanks 32. The skilled person will understand that the anchoring connection arrangements 7, the chain tensioning systems 27 and the lower and upper riser balconies 28, 29 are also to be connected or arranged on the respective ballast tanks 32.

According to the invention the bow portion 3 can comprise both internal turret reinforcements 11 and external turret reinforcements 12 for receiving both an internal

or an external turret (not shown). The turrets are then provided with anchor line connection points and riser connection points. As mentioned before the hull according to the invention can have reinforcements for all 3 types of mooring arrangements (reinforcements for spread mooring, an internal turret and an external turret mooring arrangement) or just for 2 of the 3 mooring arrangements, like reinforcements for a spread mooring arrangement combined with reinforcements for an internal turret mooring arrangement, or reinforcements for a spread mooring arrangement combined with reinforcement for an external turret mooring arrangement or reinforcements for an internal turret mooring arrangement combined with reinforcements for an external turret mooring arrangement.

As shown in the right part of figure 5, a transverse (i.e. extending in Y-direction) bulkhead 15 is arranged between the bow portion 3 and the central portion 4. The central portion 4 comprises two longitudinal central portion bulkheads 16 extending in longitudinal direction X from the stern portion 2 to the transverse bulkhead 15, being spaced-apart at a transverse distance D1. The bow portion 3 comprises two longitudinal bow portion bulkheads 17 extending in longitudinal direction X from the transverse bulkhead 15 to the bow 19, being spaced-apart at an internal turret position ITP at a transverse distance D2, wherein, when seen in top view, D2 is larger than a maximum outer diameter of an internal turret to be arranged at the internal turret position ITP in between the two longitudinal bow portion bulkheads 17. D2 preferably is larger than D1, such as 1,5 – 2,5 times D1, for instance about 2 times D1.

The two longitudinal central portion bulkheads 16 and the two longitudinal bow portion bulkheads are comprised by two continuous longitudinal bulkheads 18 extending from the stern portion to the bow 19, i.e. these longitudinal bulkheads 18 are each formed as single, integral elements.

The vessel hull 1 and in particular the bow portion 3 comprises a vertical plane of symmetry P extending in longitudinal direction X. When seen in top view, the longitudinal bow portion bulkheads 17 are each arranged on one side of the vertical plane of symmetry P. The longitudinal bow portion bulkheads 17 extend from the transverse bulkhead 15 to the bow 19 in such a way, that a first section 20 of each longitudinal bow portion bulkhead diverges away from the vertical plane of symmetry P. A second consecutive section 21 extends substantially parallel to the vertical plane

of symmetry P. Thus, a reception space 23 for the internal turret is formed at the internal turret location ITP. Preferably, a third consecutive section 22 converges towards the vertical plane of symmetry P. The first 20, second 21 and third 22 sections of the longitudinal bow portion bulkheads 17 extend at such angles with respect to the vertical plane of symmetry P, and have such dimensions that, when seen in top view, the longitudinal bow portion bulkheads 17 each roughly resemble an arc having a centre of curvature coinciding with a centre point 30 of the internal turret receivable in the reception space 23. When seen in top view, the angles as mentioned above may for instance relate to enclosed angles with respect to the vertical plane of symmetry P of 30-60°, preferably about 45°.

In a particular configuration, the vessel hull 1 comprises one or more removable propulsion units 24, for instance azimuth thrusters or the like, to facilitate transport from the dry dock to the FPSO/FSO quay side and/or from the FPSO/FSO quay side to the offshore production side where the FPSO or FSO will be installed and connected to the mooring lines. Removable diesel-electric or gas-powered propulsion units are also conceivable as well as removable power generators that are associated with the removable propulsion units.

Thus, the invention has been described by reference to the embodiments discussed above. It will be recognized that the embodiments are susceptible to various modifications and alternative forms well known to those of skill in the art without departing from the spirit and scope of the invention. Accordingly, although specific embodiments have been described, these are examples only and are not limiting upon the scope of the invention.

Reference numerals

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|----|-----|--|
| | 1. | Vessel hull |
| | 2. | Vessel hull stern portion |
| 5 | 3. | Vessel hull bow portion |
| | 4. | Vessel hull central portion |
| | 5. | Longitudinal hull sides |
| | 6. | Deck |
| | 7. | Anchoring connection arrangement |
| 10 | 8. | Process module reinforcements |
| | 9. | Mooring line connection reinforcements |
| | 10. | Lower riser connection reinforcements |
| | 11. | Internal turret reinforcements |
| | 12. | External turret reinforcements |
| 15 | 13. | Spread-moored anchor line arrangement |
| | 14. | Upper riser connection reinforcements |
| | 15. | Transverse bulkhead |
| | 16. | Longitudinal central portion bulkheads |
| | 17. | Longitudinal bow portion bulkheads |
| 20 | 18. | Continuous longitudinal bulkheads |
| | 19. | Bow |
| | 20. | First section |
| | 21. | Second section |
| | 22. | Third section |
| 25 | 23. | Reception space |
| | 24. | Removable propulsion unit |
| | 25. | Crane pedestal |
| | 26. | Chain tensioning system reinforcements |
| | 27. | Chain tensioning system |
| 30 | 28. | Lower riser balcony |
| | 29. | Upper riser balcony |
| | 30. | Internal turret centre point |
| | 31. | Riser |

32. Ballast tank

X = longitudinal direction

Y = transverse direction

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ITP = internal turret position

P = vertical plane of symmetry

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Claims

1. Vessel hull (1) for use as a hull for a floating hydrocarbon storage and/or processing plant, comprising:
 - 5 - a stern portion (2), a bow portion (3) and a central portion (4) in between the bow and stern portions, the vessel hull (1) provided with longitudinal hull sides (5) comprising the longitudinal hull sides of the stern portion, the bow portion and the central portion, wherein the bow portion (3) comprises a vertical plane of symmetry (P) extending in a longitudinal direction (X) of the hull,
 - 10 - a deck (6), arranged on the hull, suitable for supporting hydrocarbon processing modules,
 - hydrocarbon storage tanks, arranged inside the hull, for storing hydrocarbons to be obtained from seabed-based wellheads,
 - an anchoring connection arrangement (7) for connection with anchor lines
 - 15 suitable for mooring the vessel hull to a seabed,
 - wherein either:
 - both longitudinal hull sides (5) comprise mooring line connection reinforcements (9) near or in the bow portion and stern portion for connecting mooring lines to be used with a spread-moored anchor line
 - 20 arrangement (13) and one or both longitudinal hull sides (5) comprise riser balcony connection reinforcements (10, 14) arranged in between the mooring line connection reinforcements in longitudinal direction, suitable for supporting a riser balcony for connecting risers; or
 - the bow portion comprises a turret reinforcement (11) suitable for
 - 25 receiving an internal turret; or
 - the bow portion comprises a turret reinforcement (12) suitable for receiving an external turret, wherein the turret is provided with anchor line connection points and riser connection points;
- characterized in that**
- 30 - the deck comprises process module reinforcements (8) suitable for supporting hydrocarbon process modules;
 - the vessel hull is provided with a transverse bulkhead (15) arranged between the bow portion (3) and the central portion (4), the central portion comprising two

longitudinal central portion bulkheads (16) extending in the longitudinal direction (X) from the stern portion (2) to the transverse bulkhead (15), the central portion bulkheads (16) being spaced-apart at a transverse distance D1; and

- the bow portion (3) comprises two longitudinal bow portion bulkheads, wherein, when seen in top view, the longitudinal portion bulkheads are each arranged on one side of the vertical plane of symmetry (P), each longitudinal bow portion bulkhead extending from the transverse bulkhead (15) towards the bow and comprising a first section (20) which diverges in a direction from the transverse bulkhead (15) away from the vertical plane of symmetry (P).

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2. Vessel hull (1) according to claim 1, wherein the bow portion (3) comprises a turret reinforcement (11) suitable for receiving an internal turret, each of said longitudinal bow portion bulkheads comprising a second section (21) consecutive to and connected to the first section (20) and extending in the longitudinal direction from the first section (20) of the longitudinal portion bulkhead to the bow, wherein said second sections (21) are spaced-apart from each other at an internal turret position at a transverse distance D2, wherein, when seen in top view, D2 is larger than D1.

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3. Vessel hull (1) according to claim 2, wherein D2 is equal to or larger than the transverse diameter of the turret reinforcement (11).

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4. Vessel hull (1) according to claim 2, wherein the first section (20) and second section (21) forming a reception space (23) for the internal turret at the internal turret location (ITP).

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5. Vessel hull (1) according to claim 4, wherein each of the longitudinal bow portion bulkheads further comprises a third consecutive section (22) which is consecutive to the second section (21) thereof and converges towards the vertical plane of symmetry (P).

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6. Vessel hull (1) according to claim 5, wherein the first, second and third sections of the longitudinal bow portion bulkheads extend at such angles with respect to the vertical plane of symmetry, and have such dimensions that, when seen in top view, the

longitudinal bow portion bulkheads each resemble an arc having a centre of curvature coinciding with a centre point of the internal turret receivable in the reception space.