CLAIMS:

1. A system for floating dockside liquefaction of natural gas comprising:

a natural gas pretreatment facility located onshore proximate a dock, wherein the onshore natural gas pretreatment facility ~~is configured to~~ processes pipeline quality gas into pretreated natural gas;

a floating liquefaction unit moored at the dock, wherein the floating liquefaction unit further comprises a natural gas liquefaction module on a deck, and an LNG storage tank for storing produced LNG below the deck;

a pipeline coupling the onshore pretreatment facility to the dock, wherein the pipeline ~~is configured to~~ transports pretreated natural gas onto the dock; and

a high pressure gas arm fluidly coupling the pipeline to the floating liquefaction unit, wherein the gas arm ~~is configured to~~ transfers pretreated natural gas to the floating liquefaction unit~~.~~; wherein the onshore pretreatment facility further comprises a closed loop cooling system configured to cool equipment onboard the floating liquefaction unit.

2. The system of claim 1, wherein the pretreated natural gas is near-LNG quality and the floating liquefaction unit further comprises a final gas processing unit onboard configured to bring the near-LNG quality natural gas to LNG quality prior to liquefaction.

3. The system of claim 1, further comprising an LNG carrier configured to receive LNG from the LNG storage tank onboard the floating liquefaction unit.

4. The system of claim 3, wherein the LNG carrier is a regasification vessel.

~~5. The system of claim 1, wherein the onshore pretreatment facility further comprises a closed loop cooling system configured to cool equipment onboard the floating liquefaction unit.~~

~~6~~5. The system of claim 1, wherein the dock is a sea island and the pipeline extends at least partially below the surface of water.

~~7~~6. The system of claim 1, further comprising a gas conduit configured to transport pipeline quality natural gas to the onshore pretreatment facility.

~~8~~7. The system of claim ~~7~~6, wherein the gas conduit is coupled to an offshore gas reserve.

~~9~~8. The system of claim ~~7~~6, wherein the gas conduit is coupled to an onshore gas reserve.

~~10~~9. ~~The system of claim 1,~~ A system for floating dockside liquefaction of natural gas comprising:

a natural gas pretreatment facility located onshore proximate a dock, wherein the onshore natural gas pretreatment facility processes pipeline quality gas into pretreated natural gas;

a floating liquefaction unit moored at the dock, wherein the floating liquefaction unit further comprises a natural gas liquefaction module on a deck, and an LNG storage tank for storing produced LNG below the deck;

a pipeline coupling the onshore pretreatment facility to the dock, wherein the pipeline transports pretreated natural gas onto the dock;

a high pressure gas arm fluidly coupling the pipeline to the floating liquefaction unit, wherein the gas arm transfers pretreated natural gas to the floating liquefaction unit; ~~further comprising~~and

an onshore storage facility located proximate the dock configured to store condensate removed from natural gas onboard the floating liquefaction unit.

~~11. A system for floating dockside liquefaction of natural gas comprising:~~

~~a floating liquefaction unit moored at a sea island, wherein the floating liquefaction unit further comprises a natural gas liquefaction module on a deck, and an LNG storage tank for storing produced LNG below the deck;~~

~~a natural gas pretreatment facility located onshore proximate the sea island;~~

~~a pipeline extending at least partially below the surface of a water and configured to transport pretreated natural gas from the onshore pretreatment facility to the dock; and~~

~~a natural gas conduit configured to deliver pipeline quality natural gas to the onshore pretreatment facility.~~

~~12. The system of claim 11, further comprising a high pressure gas arm coupling the floating liquefaction unit and the pipeline.~~

13. The system of claim 11, further comprising an LNG carrier configured to receive LNG from the LNG storage tank onboard the floating liquefaction unit.

14. The system of claim 13, wherein the LNG carrier is moored at the sea island.

15. The system of claim 13, wherein the LNG carrier is moored side-by-side with the floating liquefaction unit.

16. The system of claim 13, wherein the receiving LNG carrier is configured to receive LNG from the floating liquefaction unit using across-the-dock ship-to-ship transfer of LNG.

17. The system of claim 13, wherein the LNG carrier is a regasification vessel.

18. The system of claim 13, further comprising a cryogenic hard arm coupling the LNG carrier and the floating liquefaction unit and configured to transfer LNG to the LNG carrier.

19. The system of claim 11, wherein the sea island is located in water less than 65 feet deep.

20. The system of claim 11, wherein the pipeline is at least partially on the sea island.

21. The system of claim 11, wherein the floating liquefaction unit comprises four liquefaction modules on deck.

22. The system of claim 11, wherein the floating liquefaction unit is capable of storing about 250,000 cubic meters of LNG.

23. The system of claim 11, wherein the floating liquefaction unit is permanently moored at the dock.

24. The system of claim 11, wherein the floating liquefaction unit is temporarily moored at the dock.

25. The system of claim 11, wherein the onshore natural gas pretreatment facility comprises facilities for the removal of impurities from the natural gas.

~~26~~10. The system of claim ~~11~~1, further comprising a fractionation system located on the floating liquefaction unit and associated condensate storage is located at the onshore pretreatment facility.

~~27~~11. The system of claim ~~11~~1, wherein the onshore natural gas pretreatment facility comprises storage for condensate removed from natural gas onboard the floating liquefaction unit.

~~28~~12. The system of claim ~~11~~9, wherein the onshore pretreatment facility further comprises a closed loop cooling system configured to cool equipment onboard the floating liquefaction unit.

~~29~~13. The system of claim ~~28~~1, wherein the closed loop cooling system further comprises an onshore cooling water heat exchanger and flexible connections to the aft and forward of the floating liquefaction unit.

~~30~~14. A method for floating dockside liquefaction of natural gas, comprising:

pretreating natural gas for shipboard liquefaction at an onshore pretreatment facility proximate a dock;

transporting the pretreated natural gas by pipeline from the onshore pretreatment facility to a floating liquefaction unit moored at the dock;

liquefying the natural gas onboard the floating liquefaction unit to form LNG;

storing the LNG onboard the floating liquefaction unit; and

transferring the LNG from the floating liquefaction unit to a receiving LNG carrier for transport to the location of use~~.~~; and

removing condensate from the natural gas onboard the floating liquefaction unit and subsequently transferring the condensate to an onshore storage facility located proximate the dock for storage.

~~31~~15. The method of claim ~~30~~14, wherein up to about five million tons per annum of natural gas are liquefied onboard the floating liquefaction unit.

~~32~~16. The method of claim ~~30~~14, wherein the LNG is transferred from the floating liquefaction unit to a receiving LNG carrier using side-by-side ship-to-ship transfer.

~~33~~17. The method of claim ~~30~~14, wherein the floating liquefaction unit is moored at the dock with mooring lines to deadmen anchors located onshore.

~~34. The method of claim 33, wherein the floating liquefaction unit is capable of remaining moored at the dock throughout severe weather conditions.~~

~~35~~18. The method of claim ~~30~~14, further comprising ~~the steps of~~ completing construction of the floating liquefaction unit at a shipyard and transporting the fully constructed unit from the shipyard to the dock.

~~36~~19. The method of claim ~~30~~14, wherein the dock is a sea island.

~~37~~20. The method of claim ~~36~~19, wherein the natural gas is transported to the floating liquefaction unit at least partially beneath the surface of a water and at least partially on the sea island.

~~38. The method of claim 30, wherein an onshore storage facility located proximate the dock comprises storage for condensate, and further comprising the step of removing the condensate from the natural gas onboard the floating liquefaction unit and subsequently transferring the condensate to the onshore storage facility for storage.~~

~~39. The method of claim 30, wherein the pipeline extends at least partially along the dock.~~

~~40~~21. The method of claim ~~30~~14, further comprising ~~the step of~~ cooling liquefaction machine drivers onboard the floating liquefaction unit using an onshore cooling water heat exchanger.

~~41~~22. The method of claim ~~30~~14, further comprising ~~the step of~~ cooling liquefaction systems onboard the floating liquefaction unit using shore-based water.