CLAIMS

1. A lift mechanism for a rail chassis for a ship mounted rail system, comprising a lift unit couplable to a rail such that it may move along the rail with the rail chassis, the lift unit comprising a lift actuator movable between a first configuration and a second configuration, movement of the lift actuator from the first configuration to the second configuration causing the rail chassis to move relative to the rail from a resting position to a raised position so that the rail chassis can be transported along the rail in a raised position, wherein:

when the rail chassis is in the resting position, the rail chassis is securely engageable with a foundation; and

the lift mechanism is configured such that, when the rail chassis is in the raised position, the rail chassis is separated from the foundation and thereby freely movable relative to the foundation in the direction of the rail.

2. A lift mechanism according to claim 1, further comprising a friction formation grippingly engageable with the rail when the lift actuator is in the first configuration.

3. A lift mechanism according to claim 2, wherein the friction formation comprises at least one gripping pad moveable within the friction formation and the friction formation further comprises a biasing formation engageable with the at least one gripping pad and configured such that, in use, downward force on the friction formation is transmitted from the biasing formation to the at least one gripping pad in more than one direction so that the rail is gripped by the friction formation.

4. A lift mechanism according to any of claims 1 to 3, wherein the lift unit is mountable to a wheel assembly comprising a wheel rotatably engageable with the rail.

5. A lift mechanism according to any of claims 1 to 4, wherein the lift unit further comprises a restraint assembly engageable with the rail and configured to restrain movement of the rail chassis transversely and/or upwardly relative to the rail.

6. A lift mechanism according to any of claims 1 to 5, further comprising a lift attachment for attaching a tow assembly to the lift actuator, wherein sufficient actuation of the tow assembly moves the lift actuator from the first configuration to the second configuration so that the rail chassis can be transported along the rail in the raised position by the tow assembly.

7. A lift mechanism according to claim 5, wherein the lift mechanism is configured such that actuation of the tow assembly providing a force greater than a predetermined lifting force required to raise the rail chassis causes the lift actuator to move from the first configuration to the second configuration.

8. A lift mechanism according to any of claims 1 to 7, wherein:

the lift mechanism further comprises a tow assembly, the tow assembly comprising a direction filtering apparatus;

the direction filtering apparatus is couplable to a winch apparatus, the winch apparatus being operable to apply a force on the direction filtering apparatus in a first direction substantially parallel to the rail or a second direction substantially parallel to the rail and substantially opposite to the first direction; and,

the direction filtering apparatus is configured to operatively link the winch apparatus to the lift actuator such that operation of the winch apparatus to apply a force on the direction filtering apparatus in either the first direction or the second direction actuates the lift actuator between the first and second configurations so that the rail chassis can be moved to the raised position by the tow assembly.

9. A deployment mechanism for a rail chassis for a ship mounted rail system, comprising:

a lift mechanism according to claim 1;

a brake unit couplable to a rail such that it may move along the rail with the rail chassis, the brake unit comprising a brake and a resilient bias that biases the brake towards locked engagement with the rail; and

a tow assembly operatively couplable to the brake, wherein sufficient actuation of the tow assembly loosens the brake from the rail so that the rail chassis can be transported along the rail in a raised position by the tow assembly.

10. A deployment mechanism according to claim 9, wherein the brake comprises a moveable brake pad and the resilient bias comprises a spring biasing the moveable brake pad towards locked engagement with the rail.

11. A deployment mechanism according to claim 9 or claim 10, wherein the brake unit further comprises a brake actuator operatively coupling the tow assembly to the brake and moveable by the tow assembly between a locked configuration in which the brake is in locked engagement with the rail and an unlocked configuration in which the brake is loosened from locked engagement with the rail so that the brake unit is movable along the rail.

12. A deployment mechanism according to any of claims 9 to 11, wherein the tow assembly is additionally couplable to the lift actuator and sufficient actuation of the tow assembly moves the lift actuator from the first configuration to the second configuration.

13. A deployment mechanism according to claim 12, wherein:

the deployment mechanism is configured such that actuation of the tow assembly providing a force greater than a predetermined de-braking force required to overcome the resilient bias loosens the brake from the rail;

actuation of the tow assembly providing a force greater than a predetermined lifting force required to raise the rail chassis causes the lift actuator to move from the first configuration to the second configuration; and,

the predetermined de-braking force is greater than the predetermined lifting force so that the brake is loosened from the rail once the rail chassis is in the raised position.

14. A deployment mechanism according to claim 12, wherein:

the tow assembly comprises a brake coupler, coupling the winch apparatus to the brake, and a lift coupler, coupling the winch apparatus to the lift actuator; and,

the tow assembly is configured so that an initial displacement of the winch apparatus causes movement of the lift actuator from the first configuration to the second configuration and a further displacement of the winch apparatus causes loosening of the brake.

15. A deployment mechanism according to any of claims 9 to 14, wherein the tow assembly comprises a fluid actuated brake coupler coupling the winch apparatus to the brake; whereby, if a force greater than a predetermined de-braking force is applied by the winch apparatus on the fluid actuated brake coupler, the fluid actuated brake coupler is pressurised sufficiently to loosen the brake from the rail.

16. A deployment mechanism according to any of claims 9 to 15, wherein:

the deployment mechanism further comprises a fluid actuated brake coupler operatively coupling the tow assembly to the brake;

the tow assembly is couplable to a winch apparatus, the winch apparatus being operable to apply a force on the fluid actuated brake coupler; whereby, if a force greater than a predetermined de-braking force is applied by the winch apparatus on

the fluid actuated brake coupler, the fluid actuated brake coupler is pressurised sufficiently to loosen the brake from the rail; and,

the fluid actuated brake coupler comprises a fluid and a de-braking valve operable to allow pressurised fluid to act against the resilient bias so as to loosen the brake from the rail.

17. A deployment mechanism according claim 16, wherein:

the fluid actuated brake coupler further comprises a release valve operable between a closed configuration, which maintains pressurisation of the fluid, and an open configuration, which reduces pressurisation of the fluid so that the resilient bias returns the brake to locked engagement with the rail; and,

optionally, the release valve defaults to an open configuration and comprises a controller requiring active control by a user to maintain the release valve in the closed configuration.

18. A deployment mechanism according to any of claims 15 to 17, wherein:

the lift actuator is reversibly fluid actuated to move between the first configuration and the second configuration.

19. A deployment mechanism according to claim 18, wherein the lift actuator is configured so that pressure is released automatically if pressure in the fluid actuated brake coupler is below a predetermined release threshold.

20. A deployment mechanism according to any of claims 15 to 19, further comprising a hydraulic accumulator coupled to the lift actuator and configured to hydraulically bias the lift actuator towards the first or second configuration.

21. A rail chassis set for a ship mounted rail system, the rail chassis set comprising:

a rail chassis for conveying a wind assisted propulsion device over the deck of a ship; and,

a lift mechanism according to any of claims 1 to 8, or a deployment mechanism according to any of claims 9 to 20.

22. A rail chassis assembly for a ship mounted rail system, the assembly assembled from a rail chassis set according to claim 21.

23. A ship comprising:

a deck;

a deck mounted rail system; and,

a rail chassis assembly according to claim 22.

24. A ship according to claim 23, further comprising a wind assisted propulsion device mounted on the rail chassis, preferably the wind assisted propulsion device is a Flettner rotor.

25. A ship according to claim 22 or claim 24, further comprising a foundation on the deck of the ship for supporting a wind assisted propulsion device.