CLAIMS

1. A method of handling~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea wherein said cargo is loaded to and offloaded from a store (12; 110) in which it is blanketed with inert blanket gas (18; 114) ~~wherein the liquid hydrocarbon (14; 112) is loaded to and offloaded from said store (12; 110)~~ and wherein the loading of the cargo causes vent gas (C; P) ~~comprises~~ comprising a mixture of the blanket gas (18; 114) and VOC given off by the liquid hydrocarbon (14; 112), in varying proportions, to be displaced from the store (12; 110); characterised in that said method comprises burning the vent gas (C; P) displaced from the store (12; ~~112~~110) during loading undissociated and in gaseous form to provide heat for heating the cargo.

2. A method of handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 1 characterised in that said method comprises burning fuel gas (R) ~~as well as the vent gas (C; P)~~ during offloading to provide heat and utilising said heat ~~to heat the cargo and/or~~ to pump the cargo during offloading.

3. A method of handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 1 characterised in that the vent gas (C; P) is burned in a burner (32; 126) together with support fuel (F; R,S) providing stable combustion.

4. A method of handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 3 characterised in that said support fuel (F; S) comprises a quantity of the liquid hydrocarbon (14; 112).

5. A method of handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 3 characterised in that the quantity of support fuel (F; R,S) is adjusted automatically according to the Wobbe Index and flow rate of the vent gas (C; P).

6. A method of handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 3 characterised in that the vent gas (C; P) is burned in the presence of combustion air (E) supplied in an amount not less than that required for stoichiometric combustion whereby the vent gas (C; P) is burned so as to produce combustion products (G) which are substantially less damaging to the environment than untreated vent gas (C; P).

7. A method of handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 6 characterised in that in burning the vent gas (C; P) substantially all methane in the vent gas (C; P) supplied to the burner (32; 126) is converted to carbon dioxide plus water and substantially all hydrogen sulphide in the vent gas (C; P) supplied to the burner (32; 126) is converted to sulphur dioxide plus water and substantially all toxic components of the vent gas (C; P) are incinerated.

8. A method of handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim 1 characterised in that the vent gas (P) is compressed before being burned and VOC in the compressed vent gas is reabsorbed into the liquid hydrocarbon (112) by vapour absorption.

9. A method of handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 1 in which the blanket gas (114) comprises hydrocarbon gas.

10. A method of handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim 9 characterised in that the liquid hydrocarbon (L) and the hydrocarbon gas (M) are extracted from crude oil (K) and mutually separated.

11. Apparatus for handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea, which apparatus comprises a store (12; 110) to which the cargo is loaded and from which the cargo is offloaded and in which the cargo is blanketed with inert blanket gas (18; 114) and from which ~~wherein the liquid hydrocarbon (14; 112) is loaded to and offloaded from said store (12; 110) and wherein the~~ vent gas (C; P) ~~comprises~~ comprising a mixture of the blanket gas (18; 114) and VOC given off by the liquid hydrocarbon (14; 112), in varying proportions, is displaced from the store (12; 110) during loading and wherein said apparatus comprises a burner (32; 126) operative to burn the vent gas (C; P) undissociated and in gaseous form together with a support fuel (F; R,S) providing stable combustion, a gas conduit (30; 124) for supply of the undissociated vent gas (D; Q) to the burner (32; 126), a support fuel conduit (36; 128,129) for supply of the support fuel (F; R,S) to the burner (32; 126) and an air conduit (32b) arranged to supply combustion air (E) to the burner (32; 126) for combustion of the undissociated vent gas (D; Q) with the support fuel (F; R,S)~~; characterised in that the support fuel conduit (36; 128, 129) is arranged to supply a quantity of the liquid hydrocarbon (14; 112) to the burner (32; 126) as said support fuel (F; R,S)~~.

12. Apparatus for handling a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim 11, characterised in that the support fuel conduit (36; 128, 129) is arranged to supply a quantity of the liquid hydrocarbon (14; 112) to the burner (32; 126) as said support fuel (F; R,S).

~~12~~13. Apparatus for handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim ~~11~~ 12 characterised in that said apparatus comprises a supply means (116) operative to extract hydrocarbon gas (M) from crude oil (K) to leave said liquid hydrocarbon (L) and a hydrocarbon gas conduit means (148, 122) connected to the supply means (116) to receive hydrocarbon gas (M) and deliver it to the store (110) as a blanket (114) over the liquid hydrocarbon (112) therein.

~~13~~14. Apparatus for handling ~~treating vent gas (C; P) from a store (12; 110) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim ~~11~~ 12 characterised in that the apparatus includes burner control means (62) operative automatically to adjust the amount of said support fuel (F) supplied to the burner (32; 126) according to the Wobbe Index and flow rate of the vent gas (D).

~~14~~15. Apparatus for handling ~~treating vent gas (C) from a store (12) containing~~ a cargo of liquid hydrocarbon (14; 112) at sea as claimed in claim ~~11~~ 12 characterised in that said apparatus includes a compressor (40) operative to compress the vent gas (C) and a return conduit (44) extending from the compressor (40) to a vapour absorption device whereby VOC in the compressed vent gas is reabsorbed into the liquid hydrocarbon (14).

~~15~~16. Apparatus for handling ~~treating vent gas (C) from a store (12) containing~~ a cargo of liquid hydrocarbon (14) at sea as claimed in claim ~~11~~12 characterised in that said apparatus comprises a boiler (34) fired by means of the burner (32) to generate steam, a gas conduit (30) for supply of undissociated vent gas (D) from the store (12) to the burner (32) to be burned therein, a liquid hydrocarbon conduit (36) for supply of liquid hydrocarbon (F) to the burner (32) to be burned therein and provide stable combustion for the vent gas (D), an air conduit (32b) arranged to supply combustion air (E) to the burner (32) for combustion of the undissociated vent gas (D) with the liquid hydrocarbon (F), and a steam conduit (48) extending from the boiler (34) to heat the cargo.

~~16~~17. Apparatus for handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim 11 wherein the blanket gas (114) comprises hydrocarbon gas and the vent gas (P) is vented from a top of the store (110), characterised in that said apparatus comprises:

a supply means (116) operative to extract the hydrocarbon gas from crude oil to leave said liquid hydrocarbon;

a hydrocarbon gas conduit (120) connected to the supply means (116) to receive the hydrocarbon gas;

a liquid hydrocarbon conduit (118) connected between the supply means (116) and the tank (110) for delivering the liquid hydrocarbon to the store (110);

a blanket gas transfer conduit (122) connected to the top of the store (110)

a blanket gas supply conduit (148) connected between the hydrocarbon gas conduit (120) and the blanket gas transfer conduit (122) thereby to supply hydrocarbon gas to the store (110) to form a blanket (114) over the liquid hydrocarbon (112) therein;

a burner (126);

a vent gas supply conduit (124) connected between the blanket gas transfer conduit (122) and the burner (126) to deliver to the burner (126) vent gas vented from the store (110) during loading of the liquid hydrocarbon (112); and

a fuel gas supply conduit (128) connected between the hydrocarbon gas conduit (120) and the burner (126) to deliver hydrocarbon gas (M) to the burner (126) as fuel gas (R).

~~17~~18. Apparatus for handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim ~~16~~17 characterised in that said apparatus includes a steam generator (127) heated by burning the fuel gas (R) and/or the vent gas (Q).

~~18~~19. Apparatus for handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim ~~17~~18 characterised in that said apparatus includes a heater (140) in said store (110) heated by steam from said steam generator (127) when the steam generator (127) is heated by burning the vent gas (Q).

2019. Apparatus for handling ~~treating vent gas (P) from a store (110) containing~~ a cargo of liquid hydrocarbon (112) at sea as claimed in claim 1817 characterised in that said apparatus includes a pump (134) for offloading the liquid hydrocarbon (112) from the store (110), which pump (134) is powered by steam from said steam generator (127) when the steam generator is heated by burning the fuel gas (R).