



Rolls-Royce

LNG fuel in RoRo-vessels

A practical example from ships under contract for SeaCargo

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Gas fuelled RORO vessel for SeaCargo



Insert filename

Two alternative system configurations are defined by IMO

1 ESD (emergency shutdown) – protected machinery spaces:

Arrangements in machinery spaces are such that the spaces are considered non-hazardous under normal conditions, but under certain abnormal conditions may have the potential to become gas hazardous.

2 Inherently safe – gas safe machinery spaces:

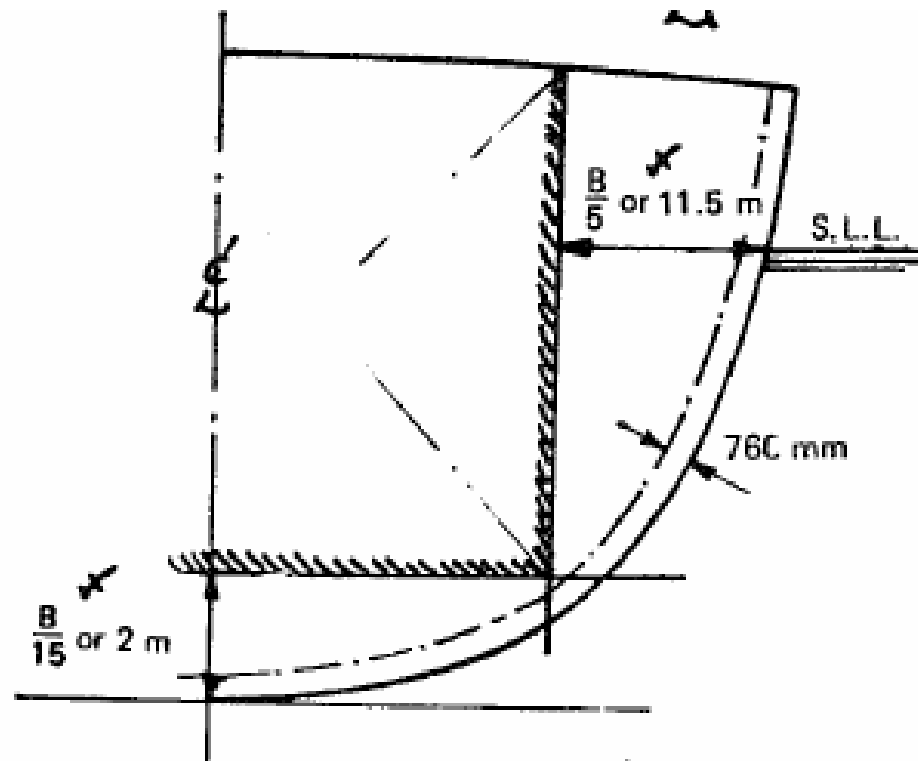
Arrangements in machinery spaces are such that the spaces are considered gas safe under all conditions, normal as well as abnormal conditions i.e. inherently gas safe

Insert filename

Gas fuel storage below deck :

- Minimum, the lesser of $B/5$ and 11.5 m from the ship side
- Minimum, the lesser of $B/15$ and 2 m from the bottom plating
- Not less than 760 mm from the shell plating.

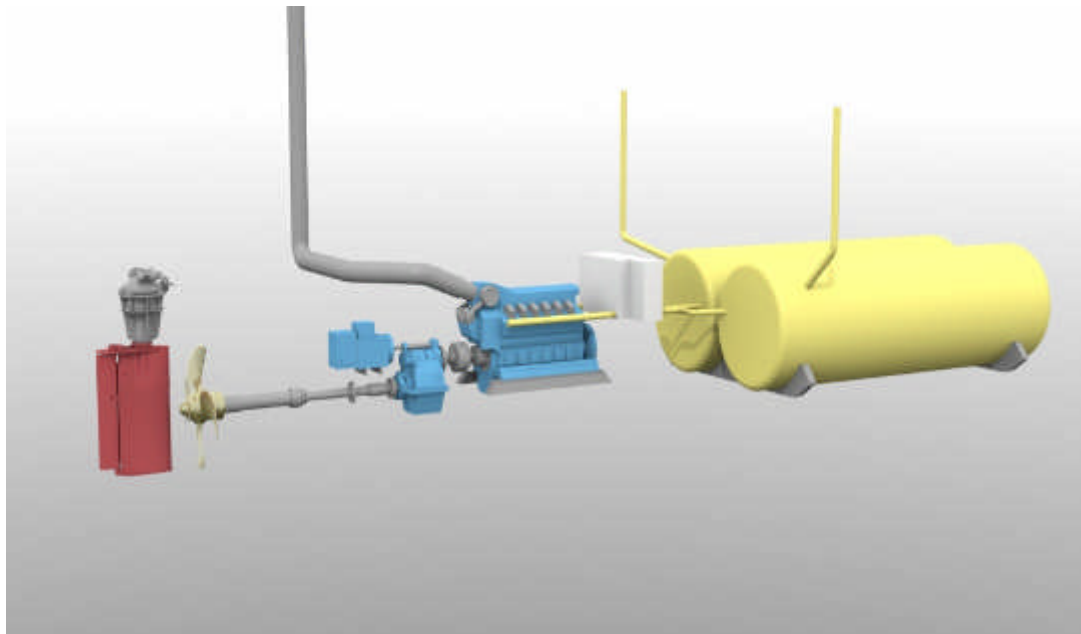
For vessels other than passenger vessels a tank location closer than $B/5$ from the ship side may be accepted, on a case by case basis.



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Propulsion system for Sea-Cargo Ro/RO vessel:

- **LNG tanks:** Cap. 2x216 m³ / L=17m / Dia = 5 m
- **Endurance** Approx 3400 nm at service speed (16 kn)
- **Main Engine (gas only):** RR B35:40 12PG, MCR 5250 kW
- **Reduction gearbox:** RR 3000 AGHC K 560
- **Shaft generator/motor:** ABB 1600 kW
- **Propeller system :** RR Kamewa CPP Dia 4,2 m



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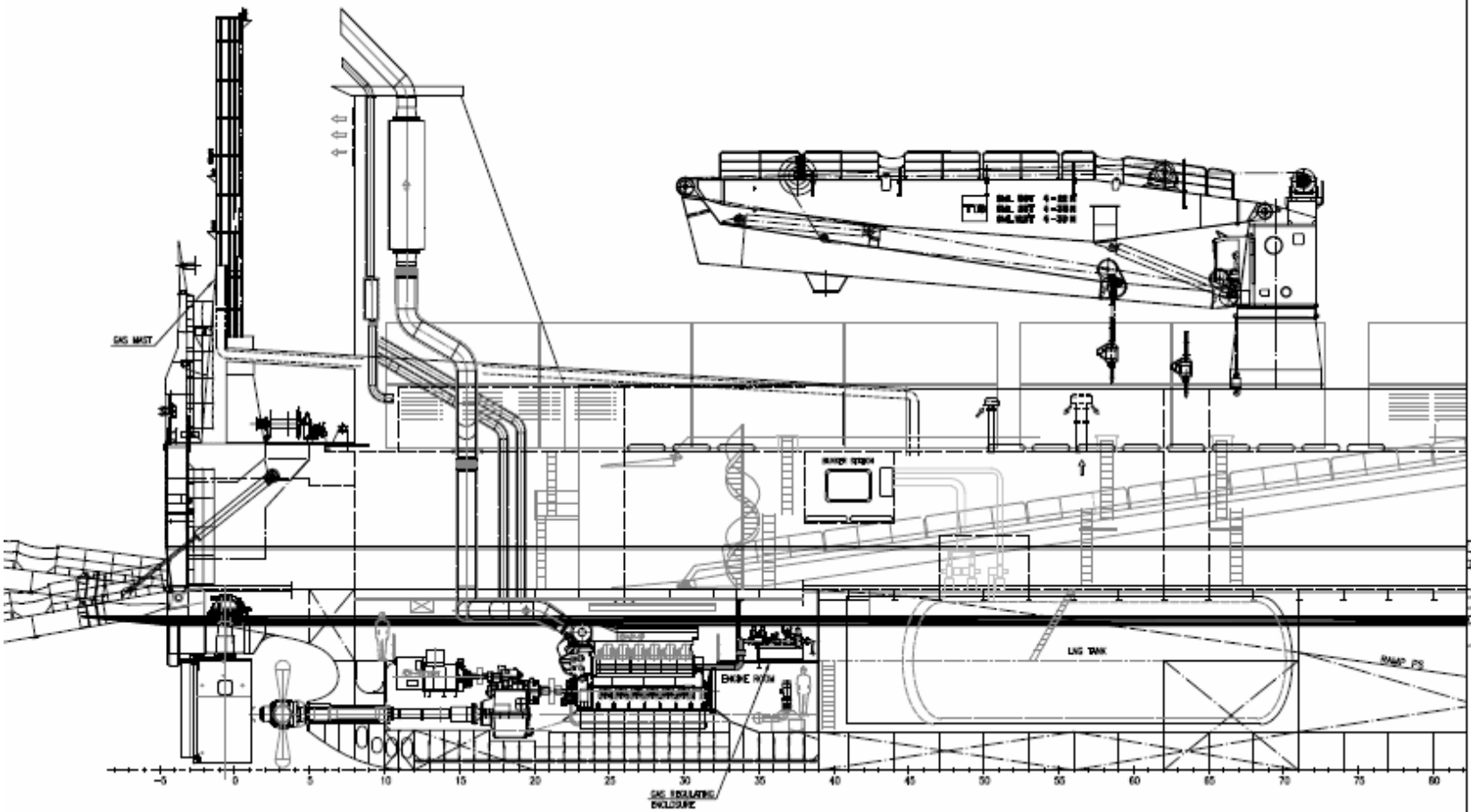
“Gas Only “- engines

If completely segregated gas supplies to the main engine is not possible, the following might be a possible solution:

- On the RO/RO vessel for Sea-Cargo the shaft-generator will be run as motor (PTI/PTH).
- The requirement for such secondary power is either 40% of installed power or according to DNV Pt.6 Ch.19 Sec.2:
 - *The emergency propulsion system power capacity shall be such that it, as recovered after any failure will enable the vessel to maintain a speed of **not less than 7 knots** except for single failures in acceptable common components.*
 - *In addition, the emergency propulsion system power capacity shall be such that it, as recovered after any failure, will enable the vessel to **remain in position in wind speed of 17 m/s (33 knots) and significant wave height of 4.5 m (15 ft) with 7.3 seconds mean period**, both of which are acting concurrently in the same direction, except for single failures in acceptable common components.*

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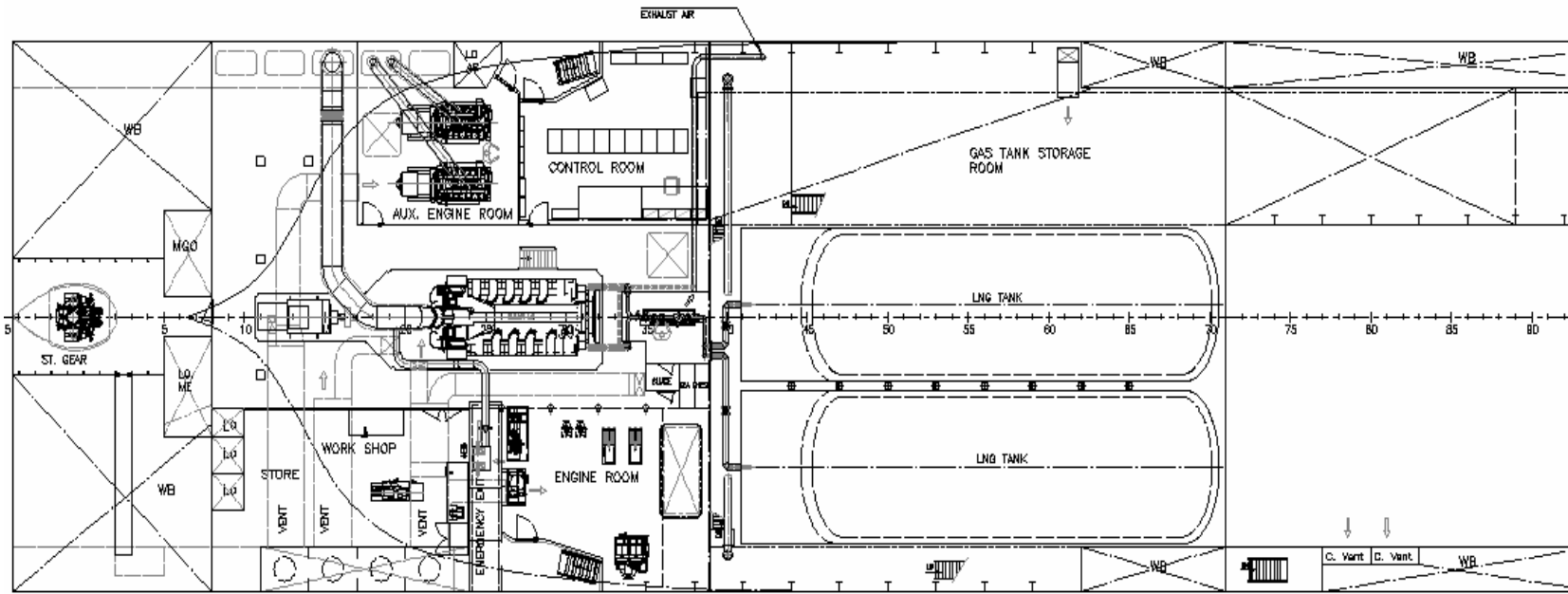
General arrangement of LNG tanks and machinery



Insert filename



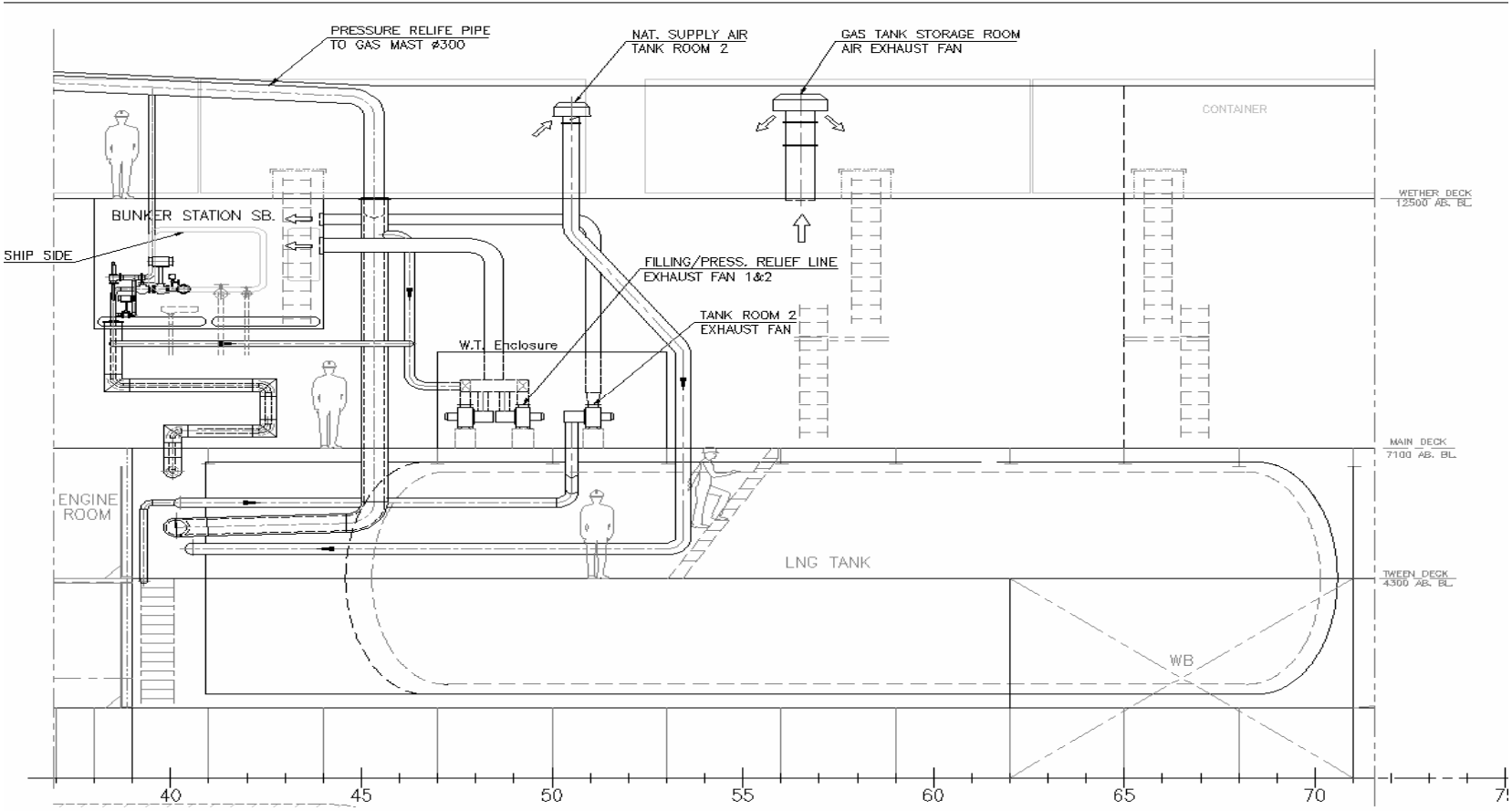
General arrangement of LNG and machinery, plan view



Insert filename

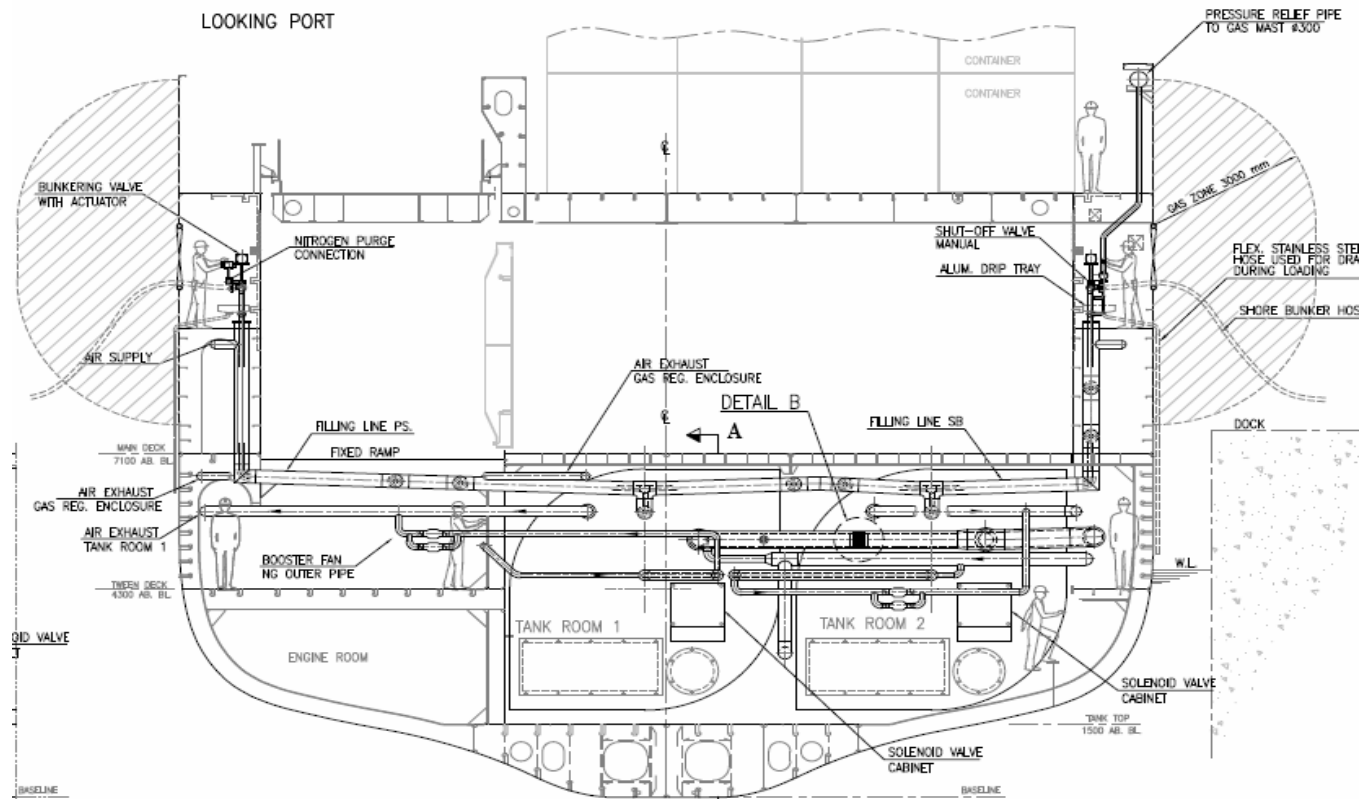


Arrangement LNG tank storage room, ventilation and bunkerstation



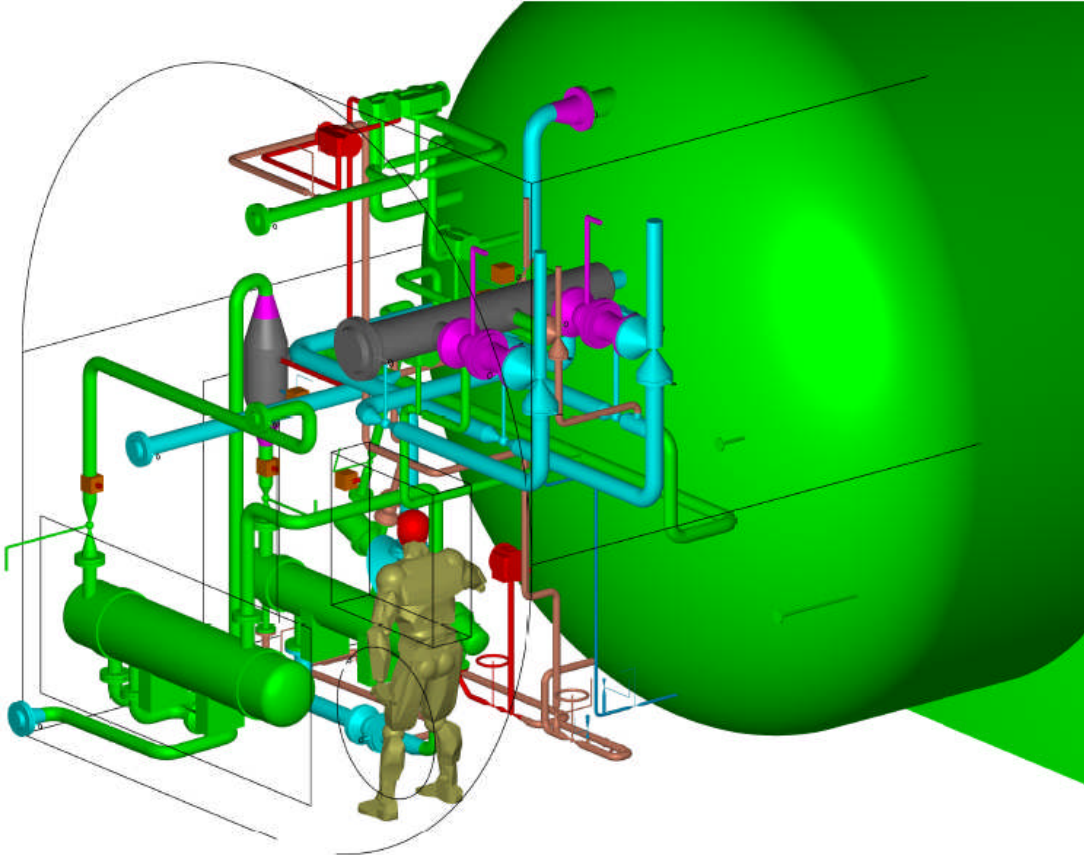
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Section aft of LNG tank



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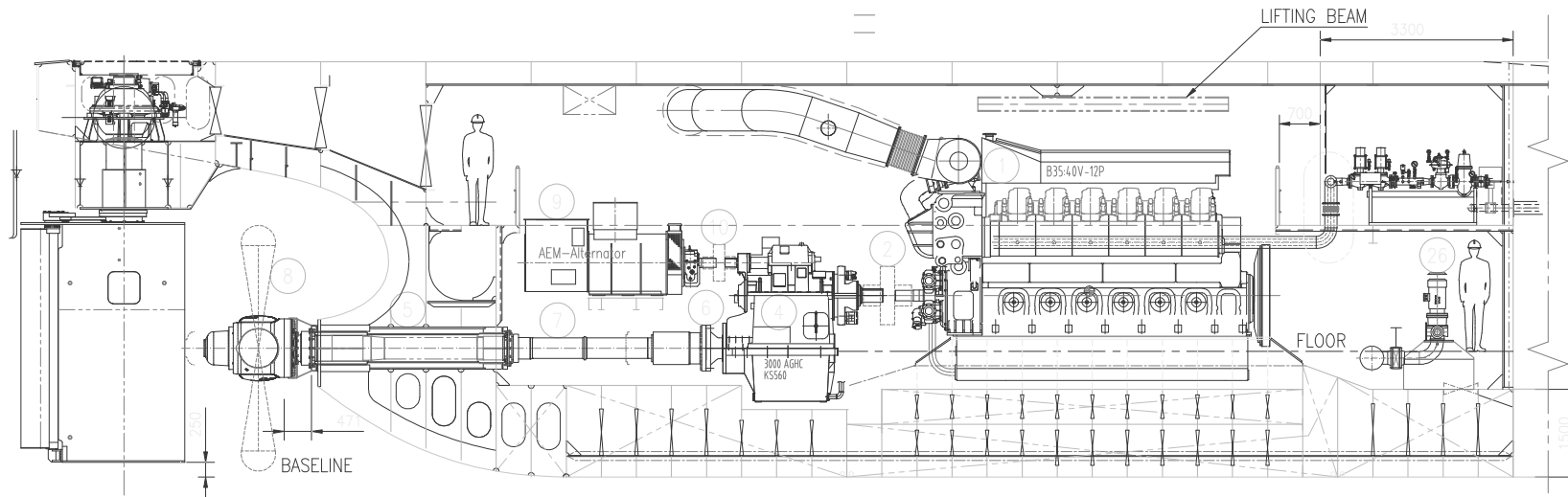
Tank room arrangement



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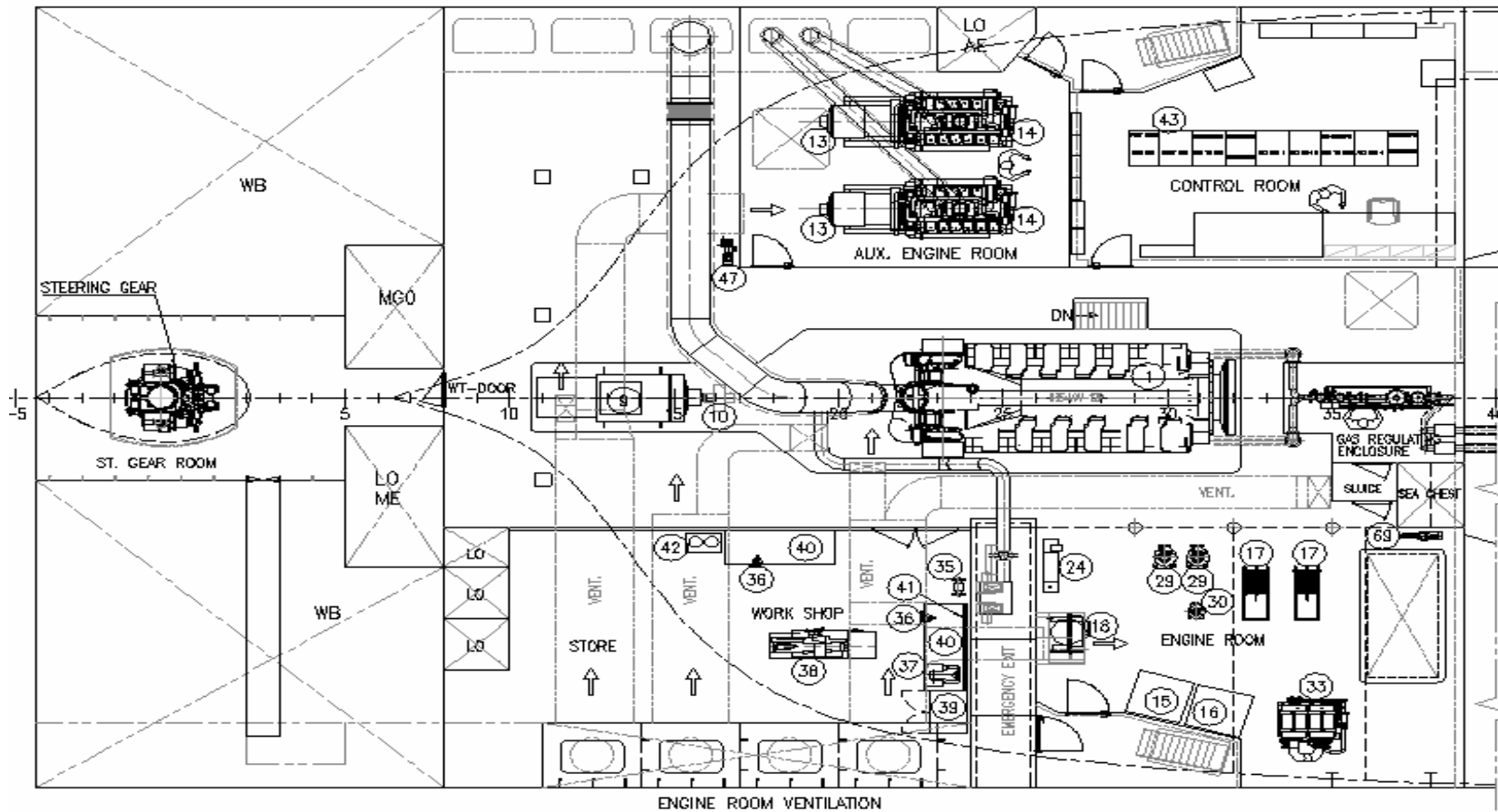


Fuel gas propulsion machinery



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Engine room, plan view



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