LNG fuel in RoRo-vessels

A practical example from ships under contract for SeaCargo

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Gas fuelled RORO vessel for SeaCargo

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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.***

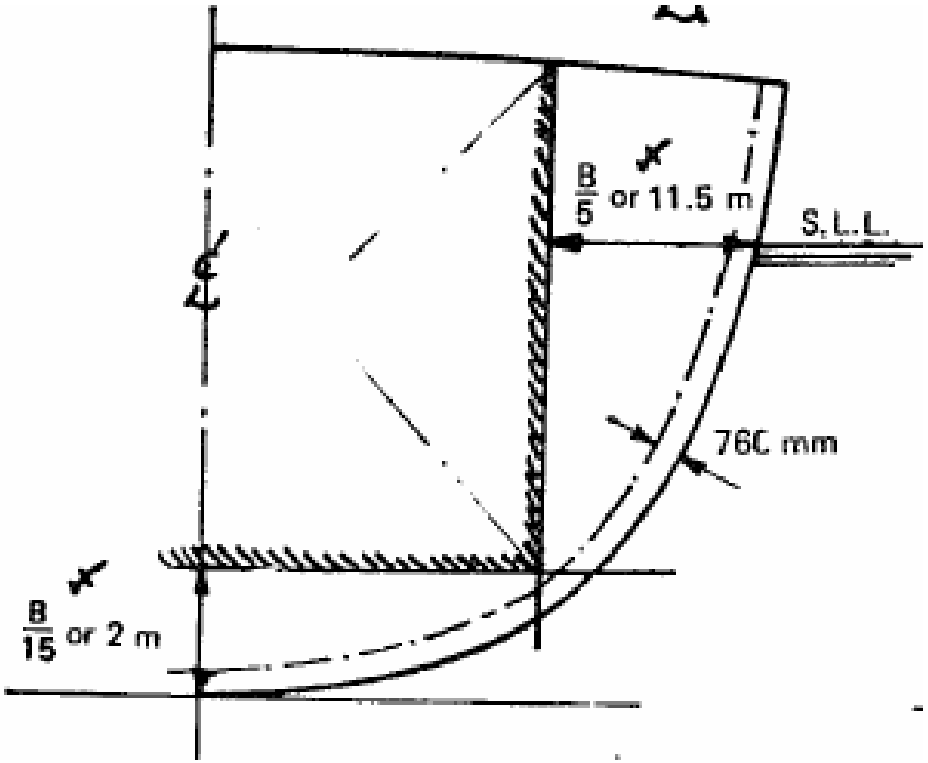
2 Inherently safe – gas safe machinery spaces:

> ***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***

Gas fuel storage below deck :

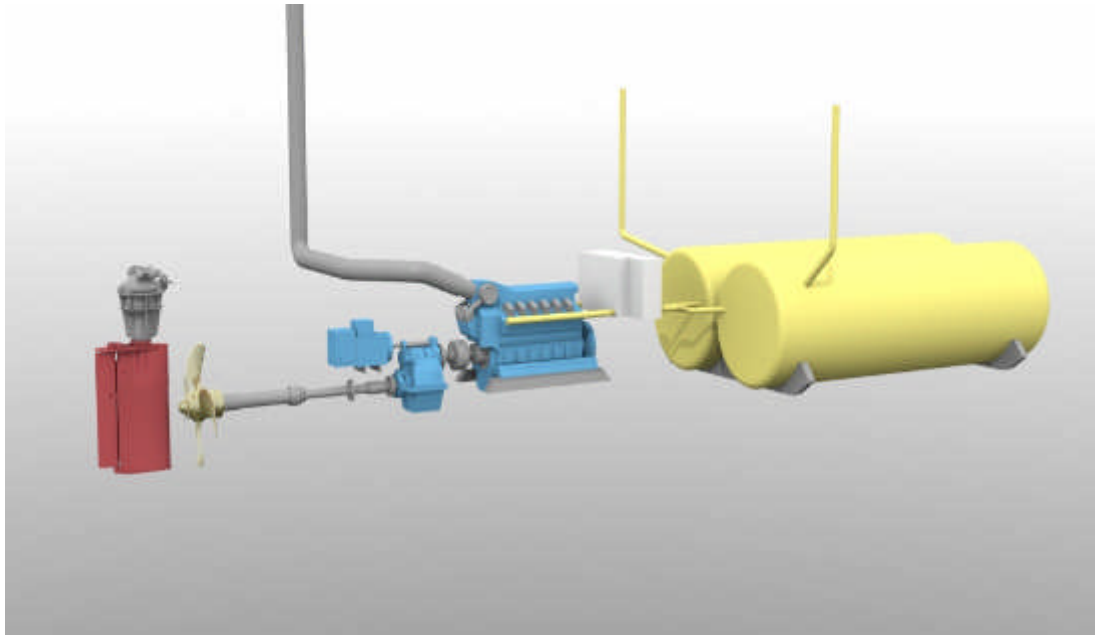
- Minimum, the lesser of B/5 and 11.5 m from the ship side
- Minimum, the lesser of B/15 and 2 m from the bottom plating
- Not less than 760 mm from the shell plating.

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.



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

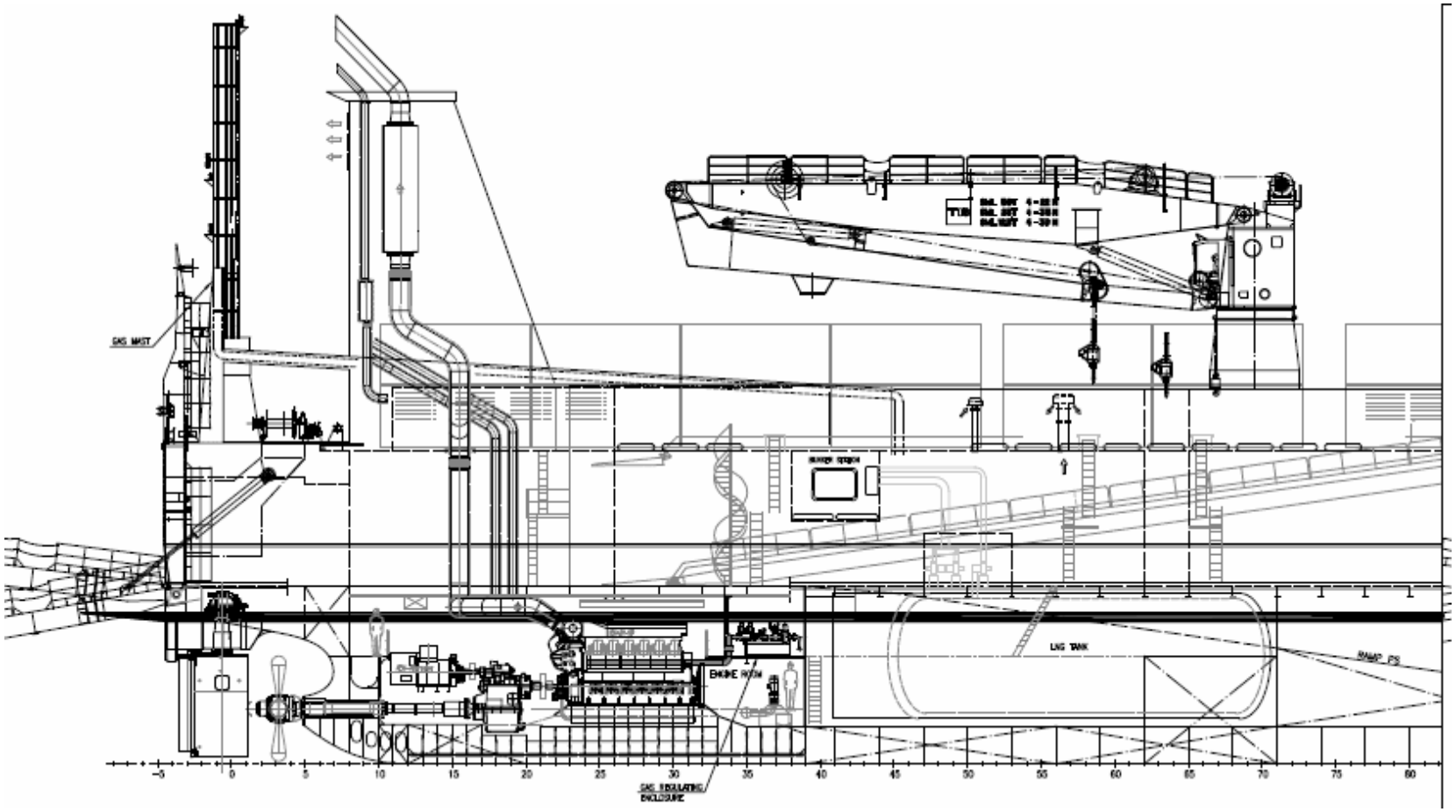


“Gas Only “- engines

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.*

General arrangement of LNG tanks and machinery



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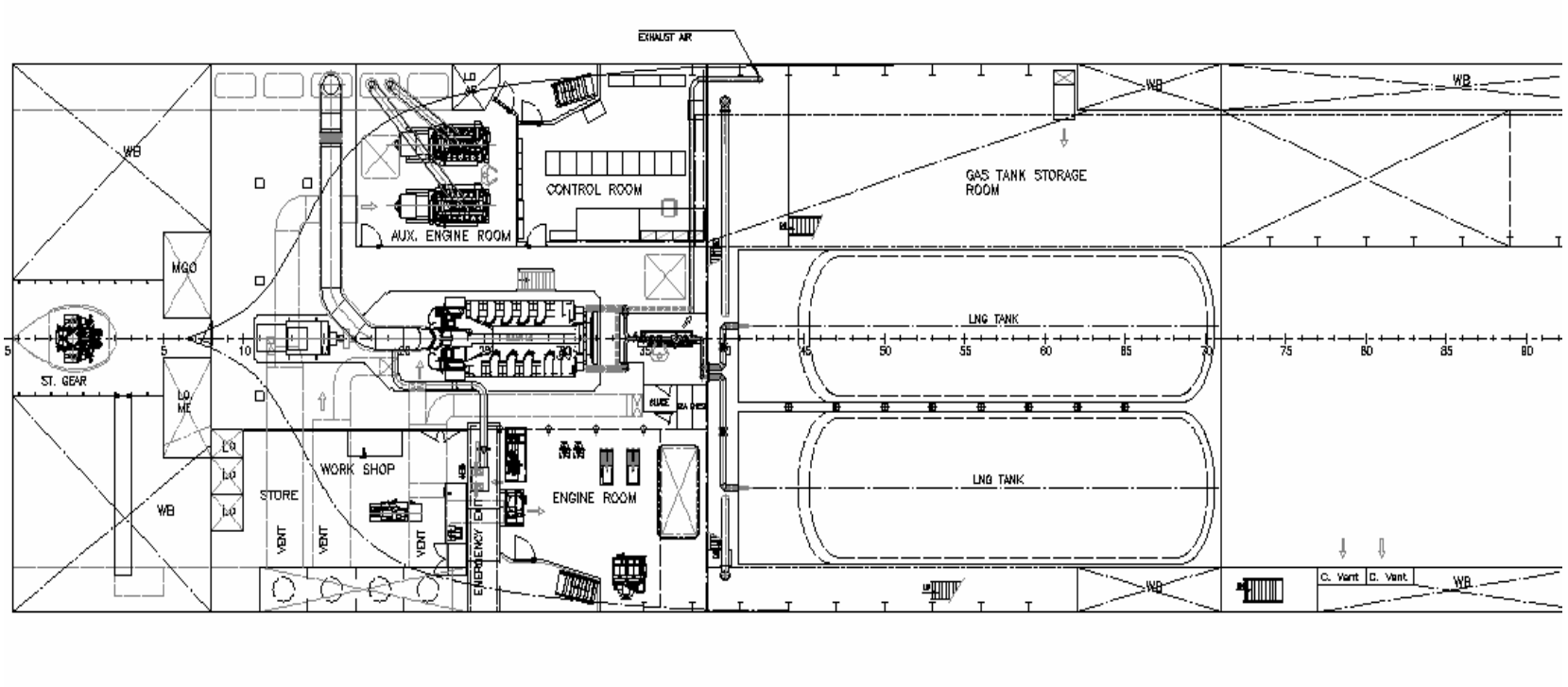
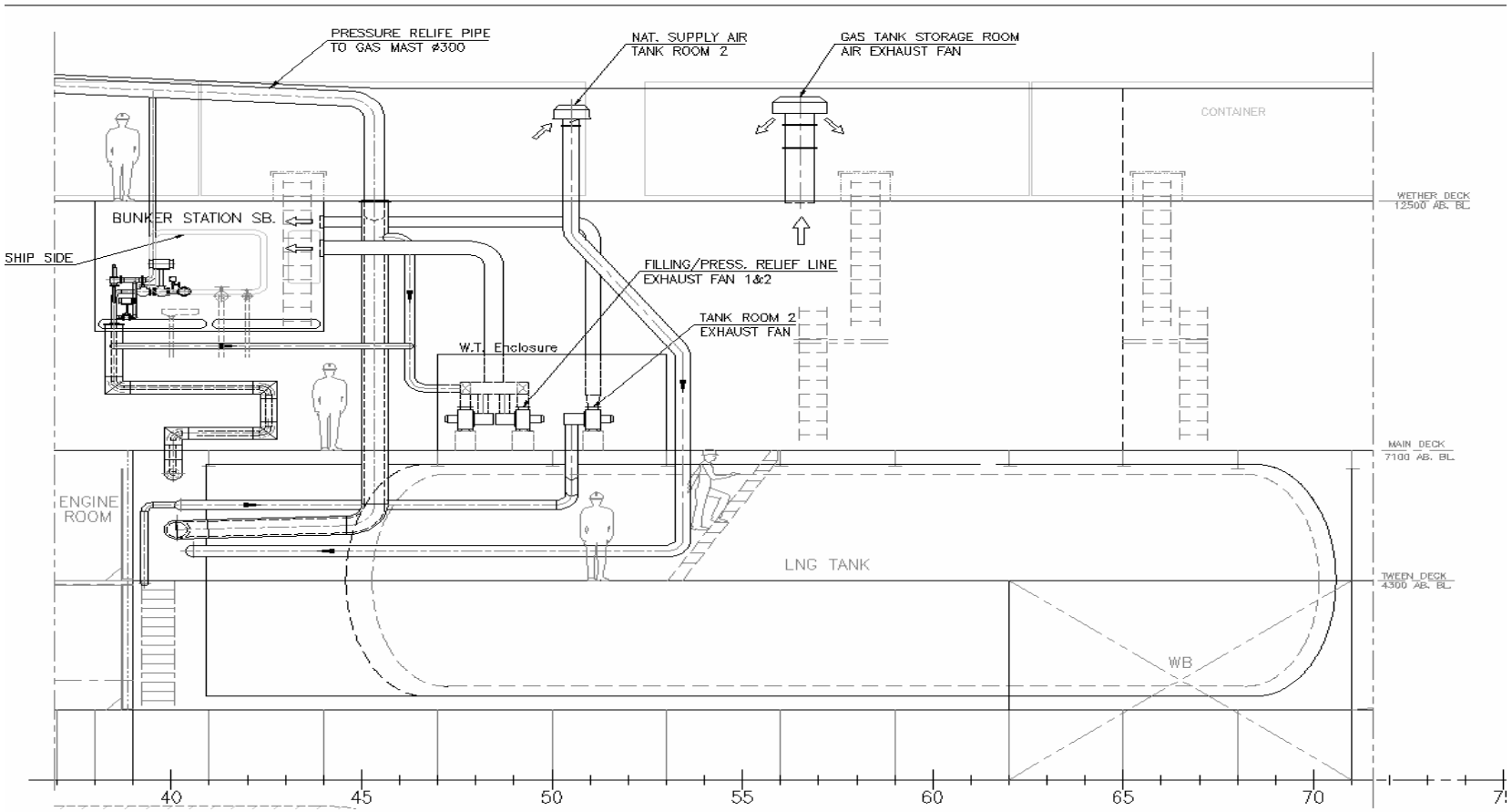
General arrangement of LNG and machinery, plan view



Arrangement LNG tank storage room, ventilation and bunkerstation



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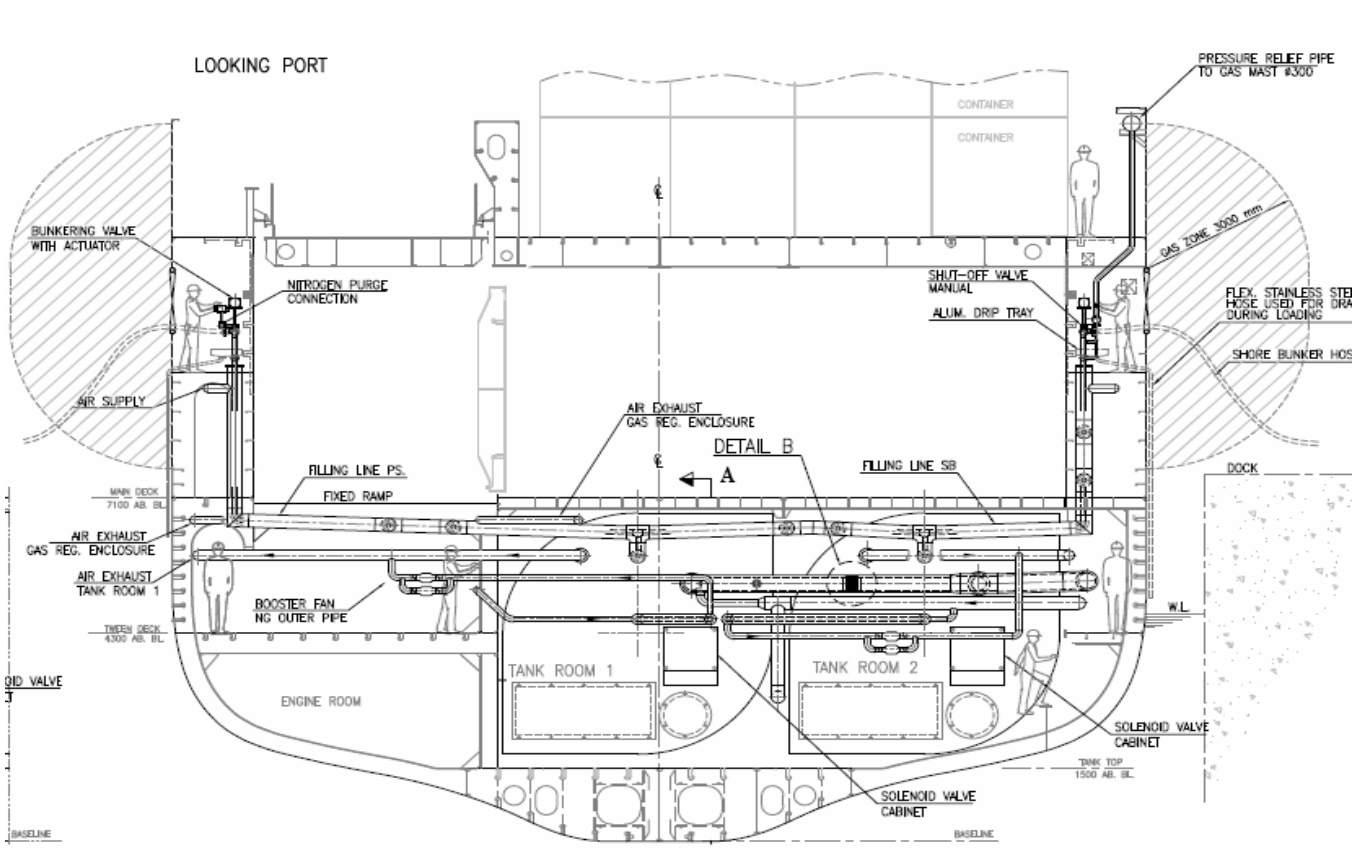
Section aft of LNG tank



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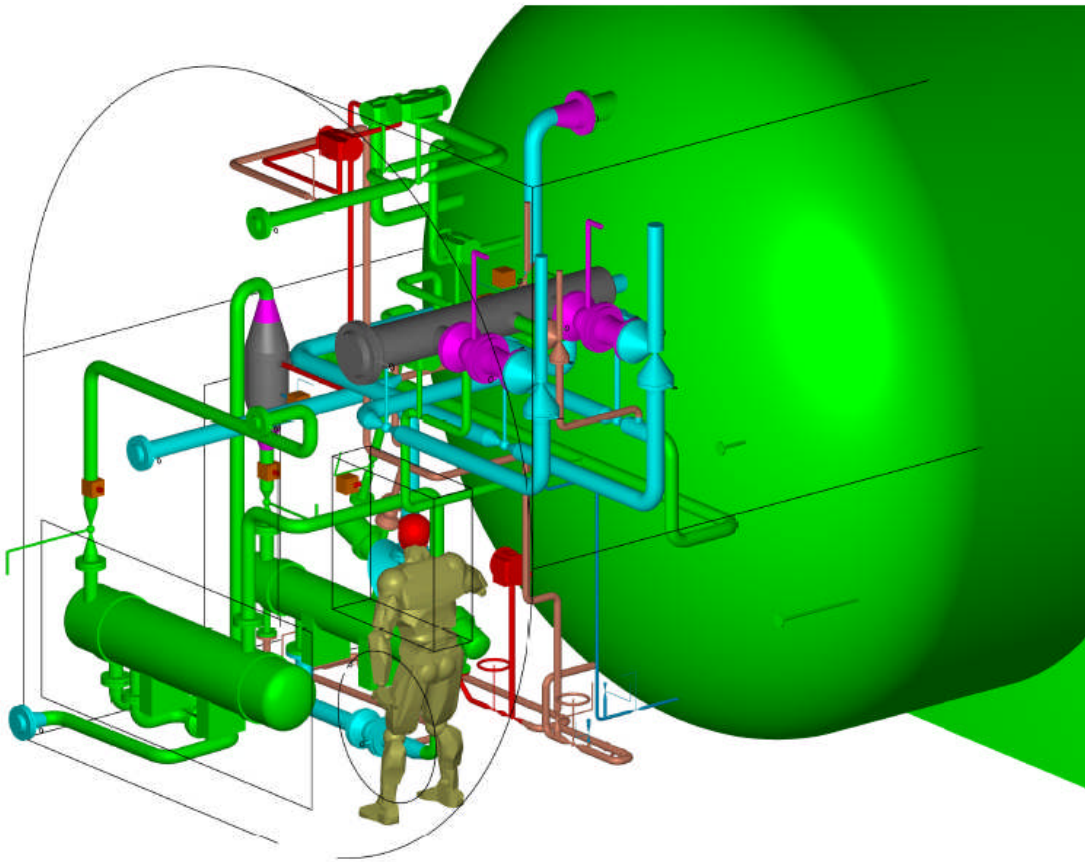
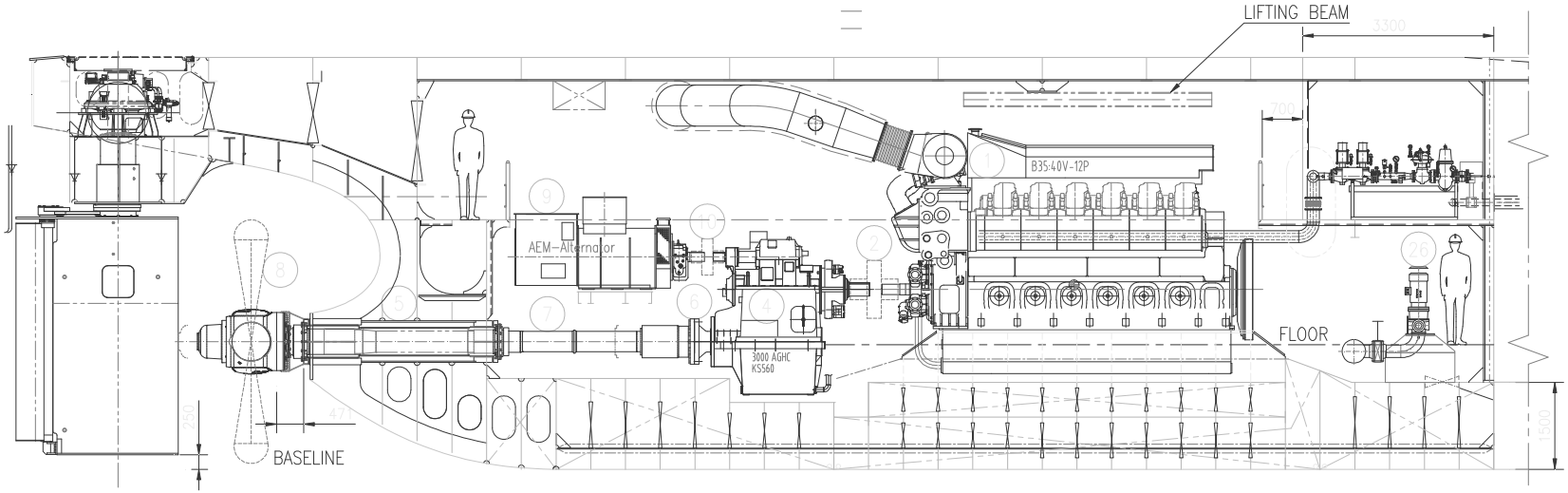
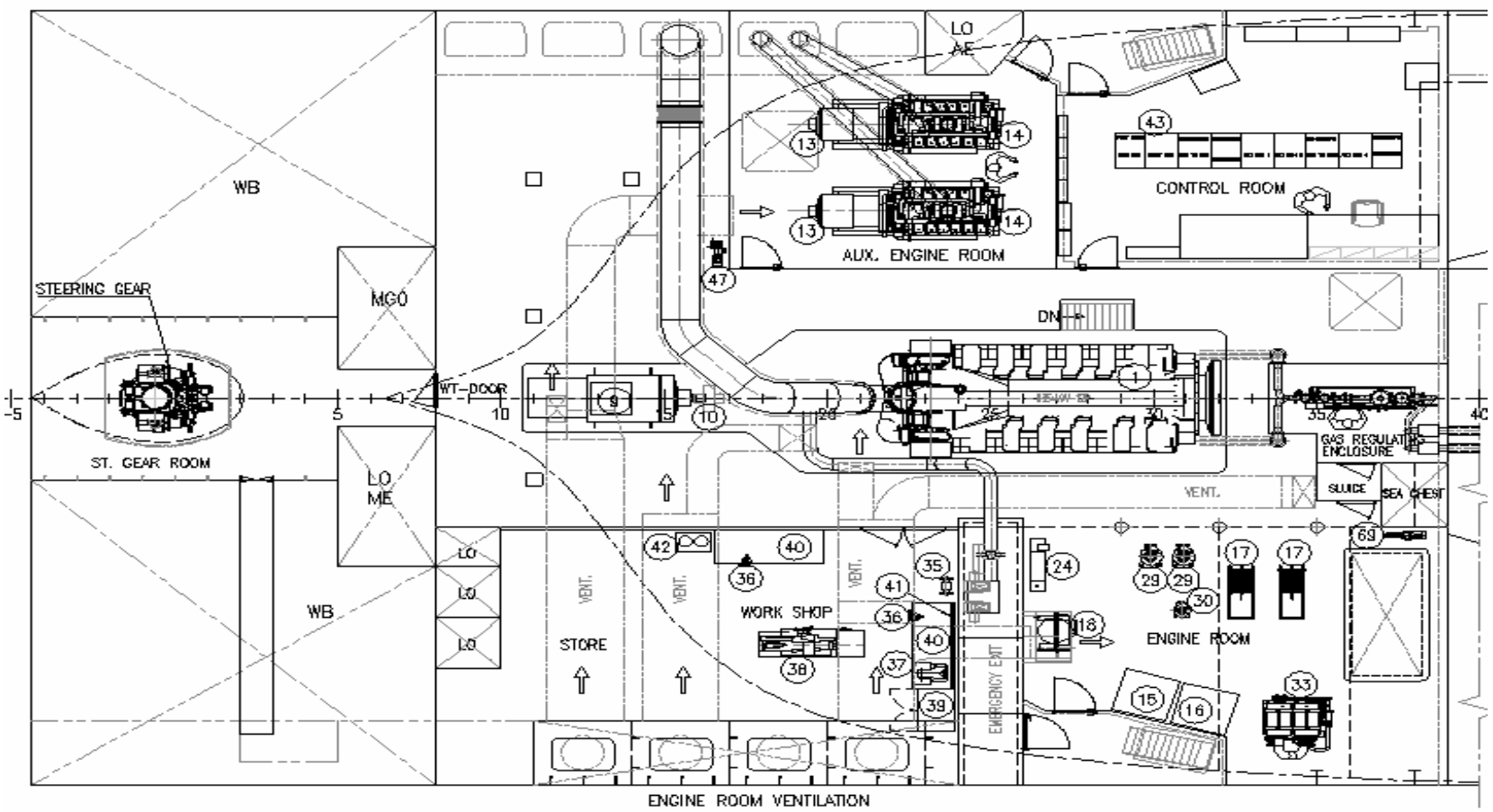
Tank room arrangement



Fuel gas propulsion machinery



Engine room, plan view



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