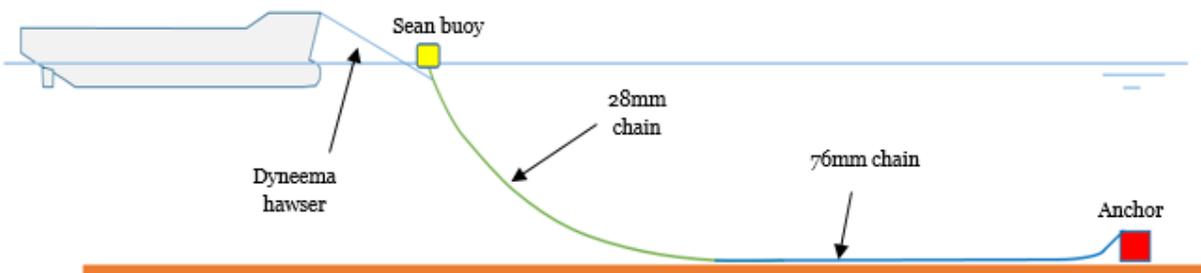


Sean ERRV Mooring Buoys

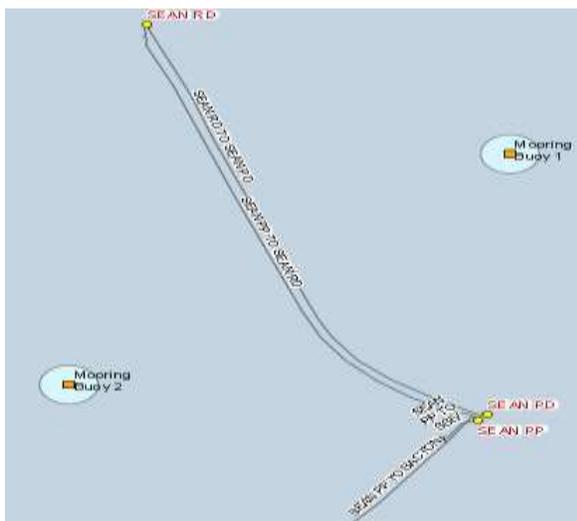
In March 2017 Oranje-Nassau Energie has installed two mooring buoys for the Emergency Response Rescue Vessel (ERRV) near the Sean UK platforms. In the United Kingdom it is required to have an ERRV on standby near a manned oil and gas production platform, to be able to rescue all personnel in case of an emergency. These ERRVs normally stay in position near the platform using their engines, consuming a considerable amount of fuel. When the vessel is moored at one of the Sean mooring buoys, the main engine is turned-off and only a generator remains running. This saves a lot of fuel and reduces the CO2 footprint. The aim was to achieve that the vessel is moored at least 70% of its time at sea. Obviously the ERRV response time and safety in general may not be compromised. In order to achieve that the ERRV will not be moored during the following situations:

- Helicopter operations
- Over the side work
- Adverse weather
- Poor visibility
- When requested by the platform



Mooring buoy configuration

Two mooring buoys were installed at approximately the same distance from the Sean PP/PD and Sean RD platforms, as shown on the map below.



Sean Mooring Buoy Locations

The mooring buoys were validated during sea-trials in April 2017, witnessed and endorsed by engineers from MAC (Bureau Veritas). Conclusion of their report was that the ERRV response time impact, due to being moored at the buoy was negligible. The mooring buoys can be used safely.

Personnel of the Glomar ERRVs were enthusiastic and reported that after some modifications to the mooring rope, mooring and unmooring operations work very well. The buoys have been used from May 2017 onwards.

Oranje-Nassau Energie have been nominated for the EEEGR innovation award in the UK, for the ERRV mooring buoys. The awards gala dinner will be held on 14 September 2017.



ERRV Glomar Patriot Moored at the Sean Buoy