



NPCC

2023 IPLOCA HSE AWARD

INNOVATIVE SHORE PULLING AND TIE-IN METHOD FOR PIPELINE

May 2023

National Petroleum Construction Company (NPCC) is a world class Engineering, Procurement and Construction (EPC) company that offers full EPC solutions to the Offshore and Onshore Oil & Gas industries, including engineering, procurement, project management, fabrication, installation and commissioning to project owners and operators.

Since its inception, NPCC has successfully completed more than 1200 projects over the span of five decades, while maintaining a high standard of excellence, growth, and integrity.



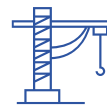
Headquartered in Abu Dhabi, NPCC operates throughout the Arabian Gulf, South Asia and Southeast Asia, with plans to expand its operations to Africa and the Caspian region.



It has longstanding relationships with most of the Operating Companies (OPCOs), National Oil Companies (NOCs) and International Oil Companies (IOCs), building on its proven track record of project delivery, quality, safety and customer satisfaction.



NPCC Engineering, a wholly owned subsidiary of NPCC, provides innovative basic, detailed and offshore engineering solutions, utilizing the latest and most advanced design software. The company's engineering services are provided by a team of over 1400 engineers based in four engineering centers in Abu Dhabi, UAE, Hyderabad and Mumbai, India and La Ciotat, France.



NPCC has a state-of-the-art fabrication facilities in Mussafah, Abu Dhabi set in an area of 1.3 million sq. meters, and the largest manufacturing yard in the region capable of fabricating up to 100,000 MT of structural steel every year.



The company owns a fleet of 22 offshore vessels equipped with modern facilities to support its shallow and deep-water operations. It can lift structures weighing up to 4,200 Tons and is also equipped for laying sub-sea cables and pipelines, up to 66 inches diameter; in water depths from 10 to 2000 Meters.

COFFERDAM

A cofferdam is a temporary structure built to enclose and provide access to work areas below the surface of water bodies. safety hazards associated with Cofferdam are significant. The following are some of the most common hazards associated with cofferdams:

Collapses	Entrapment
Electrical Hazards	Fire Hazards
Confined Spaces	Falling Hazard
Environmental Hazard	

AIM

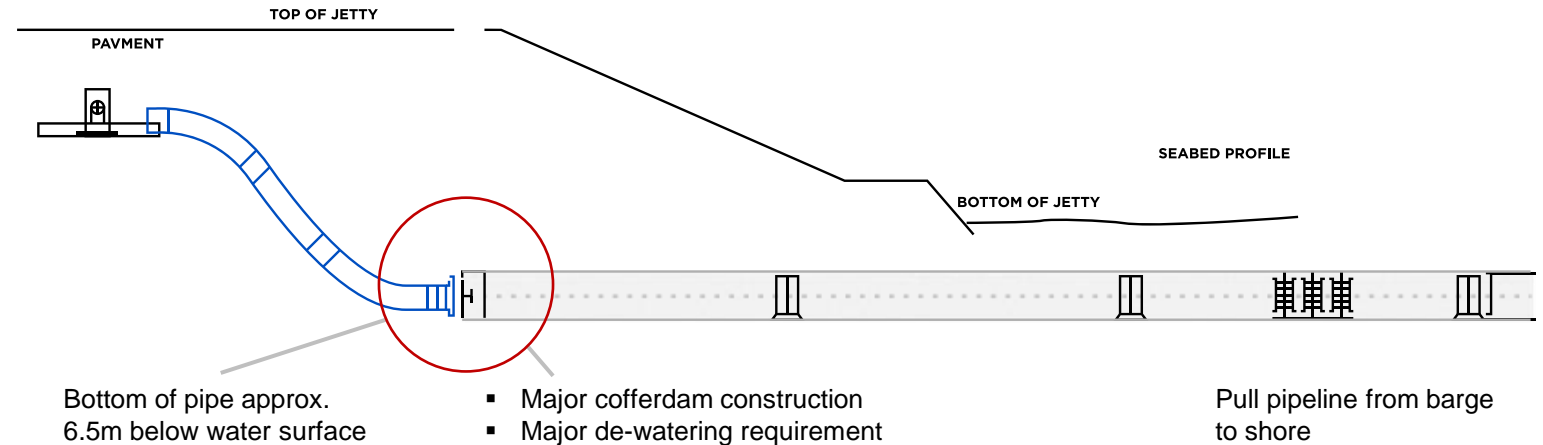


- To limit the use of cofferdam for pipeline tie- ins and shore pulling
- Reducing potential risks
- Improving safe work condition
- To avoid working under water

CONVENTIONAL METHOD

Working at approx. 6.5m below water surface

- High Risk
- Slow Operation
- Expensive setup

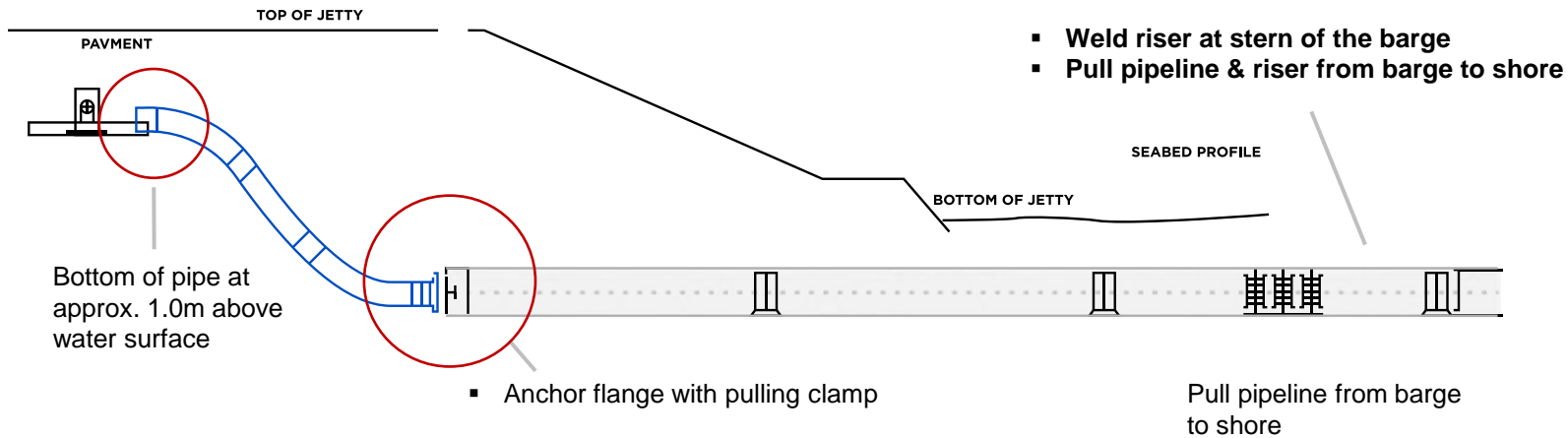


INNOVATIVE CONFIGURATION

- For one of our project involving laying of 42" PIPELINE , the beach approach at shore is a reclaimed land, more than 100 m into the sea. The new beach landing is approx. + 5 m above water. The riser between onshore / offshore section would have to be welded at -6.5 m below water surface.
- Shore pull along with the riser – **this configuration was never used before** – This concept evolved to a fully viable solution that envisaged performing the required pull by incorporating an anchor flange and a pulling sleeve/clamp. The shore pull was successfully executed safely
- Such arrangement is recommended particularly for pipelines of larger diameters and relatively high wall thickness substantially resulting in safer operation.



SOLUTION



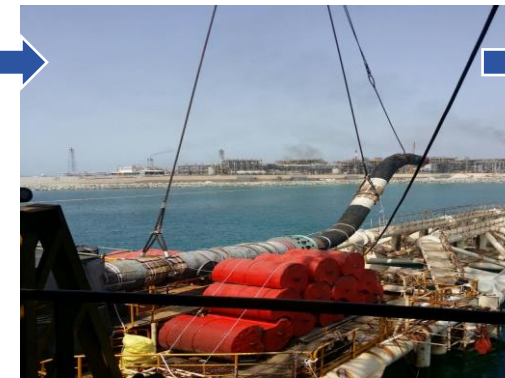
Shore pull along with an incorporated Anchor flange and pulling sleeve to avoid Cofferdam construction and under water work

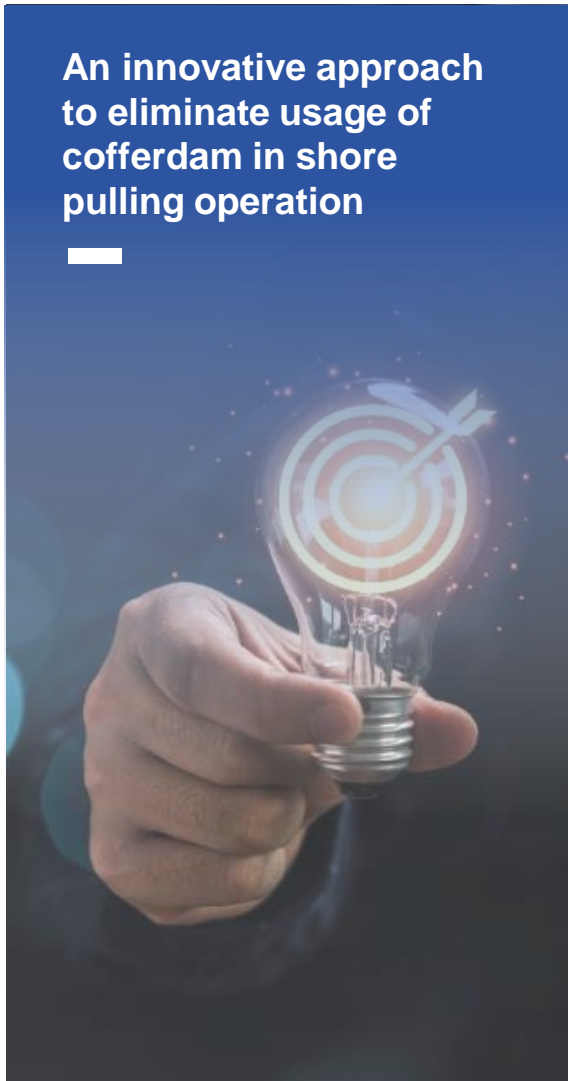
ADVANTAGES

- Eliminated cofferdam associated hazards & risks
- Safe working environment
- Mitigated substantial risk in fabrication & welding works, etc. at -6.5 m below sea level
- Environmental protection

IMPLEMENTATION

- The solution envisaged performing the pull incorporating an anchor flange and a pulling sleeve.
- This implementation evolved to be a fully viable solution that was endorsed by construction Engineering section.
- Pulling analysis considered 170 M.tons pulling force and the Tie-ins were made on the shore safely.





An innovative approach to eliminate usage of cofferdam in shore pulling operation

Eliminated construction of time consuming, expensive and environmentally impacting cofferdam



Mitigated substantial risks by avoiding fabrication & welding works, etc. at -6.5 m



Mitigated potential Health and safety interface and resulting constraints with other contractors working at site



Avoided the use of cofferdam for pipeline tie-ins and shore pulling for major pipe laying projects undertaken by NPCC



Reducing potential risks such as personnel risk, compliance risk, operational risk and reputation risk



Improving safe work condition through engineering controls



Eliminates the potential for any injury and illness and help enhancing employee morale.



Thank You