

Post-Tensioning

LNG Tanks Trinidad & Tobago



FREYSSINET
SUSTAINABLE TECHNOLOGY

Client

Atlantic LNG

Consultant

Ove Arup & Cleveland Bridge

Contractor

Whessoe & Carrillion

Post-tensioning Specialist

Freyssinet Ltd

Contract Duration

Over 5 years

Work Completed

2003

Contract Value

£2.5m



Following the successful completion of the post tensioning to two 130,000cum LNG tanks for the Atlantic LNG Project at Point Fortin in Trinidad and Tobago. Freyssinet Ltd were awarded the sub contract for the supply and installation of the post tensioning system to the third tank of 160,000 cum capacity on the same site.

The first two tanks 74.4m internal diameter and 30.18m high with a wall thickness of 450mm and post tensioned by 176 No. 15K15 vertical U tendons and 164 No. 15K15 circumferential tendons per tank.

Construction commenced in December of 1997 with the post tensioning of the closure completed in 1999.

Freyssinet Ltd worked closely in the UK with the tank main contractor, Whessoe and their consulting engineer, Ove Arup, to design the post tensioning systems required ensuring cryogenic requirements for LNG construction were adhered to and recognising the aggressive and corrosive nature of the nearby Caribbean, the site being constructed on reclaimed land. A feature of the construction specification was the testing requirements to achieve those corrosion standards and the implementation of the new grouting specification being introduced at that time in the UK through TR47. Corrosion trials were established on site to determine levels of protection to be applied to the strand and grout trials, both vertical and horizontal were carried out to ensure adequacy of the grouting operations.

Tanks 1 & 2 were constructed for LNG train 1 at Point Fortin and with the expansion of the facility a further tank was required with LNG trains 2 & 3. This third tank was of 160,000cum capacity, 34m high and 89m diameter with a wall thickness of 500mm. Freyssinet Ltd once again were chosen as the post tensioning subcontractor this time with Carrillion Caribbean Ltd carrying out the civils works for the tanks for the main contractor Chicago Bridge & Engineering. Tank 3 construction commenced in January 2001. Freyssinet Ltd was responsible for the post tensioning design and worked in conjunction with Chicago Bridge engineers in the USA to develop a system that required 100 No. 19K15 circumferential tendons with no vertical post tensioning. The information gained from trials on tanks 1 and 2 were again used on tank 3 with proven corrosion prevention techniques and grouting procedures used.

Freyssinet have substantial experience of prestressing for LNG tanks throughout the world with post tensioning anchorage systems used in this type of construction being specifically designed and tested to comply with the stringent requirements of LNG specifications, particularly the need for high performance at low temperatures.

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