Bantry Bay Oil Terminal Fire

Fire damage of structures is not a subject familiar to many people. However, I was a member of the Brown & Root team responsible for investigating the extent of the structural damage to a burnt jetty.

Bantry Bay and Whiddy Island SW Ireland

The Gulf Oil Bantry Bay Terminal was developed during the late 1960s to provide storage for oil delivered by super tankers. The location in SW Ireland is ideal. The water depth is 30m and it is accessible directly from the Atlantic Ocean.

The terminal was constructed on Whiddy Island, a small island within the bay near the town of Bantry. An island jetty was constructed with a provision to berth tankers on both sides.

In January 1979 130,000ton MV Betelgeuse delivered and discharged a cargo of crude oil from the Persian Gulf at the jetty. During ballasting there were several explosions and an extensive fire which surrounded the tanker and jetty in the early hours of Monday 8th January. Gulf Oil contacted Brown & Root, who had been the contractor for completing the construction of the jetty, to survey the structure and recommend possible options for reinstatement.

Messrs Sandberg and their fire damage consultant, Burks, Green & Partners were engaged by Brown & Root to determine the extent of the damage. John PH Frearson MA (Oxon) MICT AMIQ FGS, Principal Engineer and John EM Jubb BSc FWeldI, Head of Metallurgy & Inspection Dept of Messrs Sandberg were involved with checking the residual concrete and steel strengths and Mr J Keith Green BSc CEng FICE MIStructE FIHE, Partner Burks, Green & Partners was retained by Messrs Sandberg as a Fire Damage Consultant.

When concrete is subjected to intense heat, it spalls off the surface as the aggregate expands and the cement is weakened. The concrete changes colour with a similar effect to that to that when tempering steel. Concrete exposed to temperatures above approximately 300 °C tends to turn pink. Over approximately 600 °C it turns light grey, and over approximately 1000 °C it turns yellow-brown.

A programme of core drilling was established to obtain test samples to check the extent of damage to the concrete beyond the remaining surface. I recall that the pundit, a device to check the velocity of concrete across the diameter of a core sample, was used (possibly for the first time).

The steel cased piles were 40” diameter x 5/8” grade ASTM A36 or equivalent. They were filled with concrete but the excess moisture present during construction would have been trapped inside and become steam when they were exposed to the heat of the fire for several hours. As a result, some of them burst and the thickness reduced to approximately 1/8”.

The following photos show the jetty and extent of damage.

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Bantry Bay Jetty

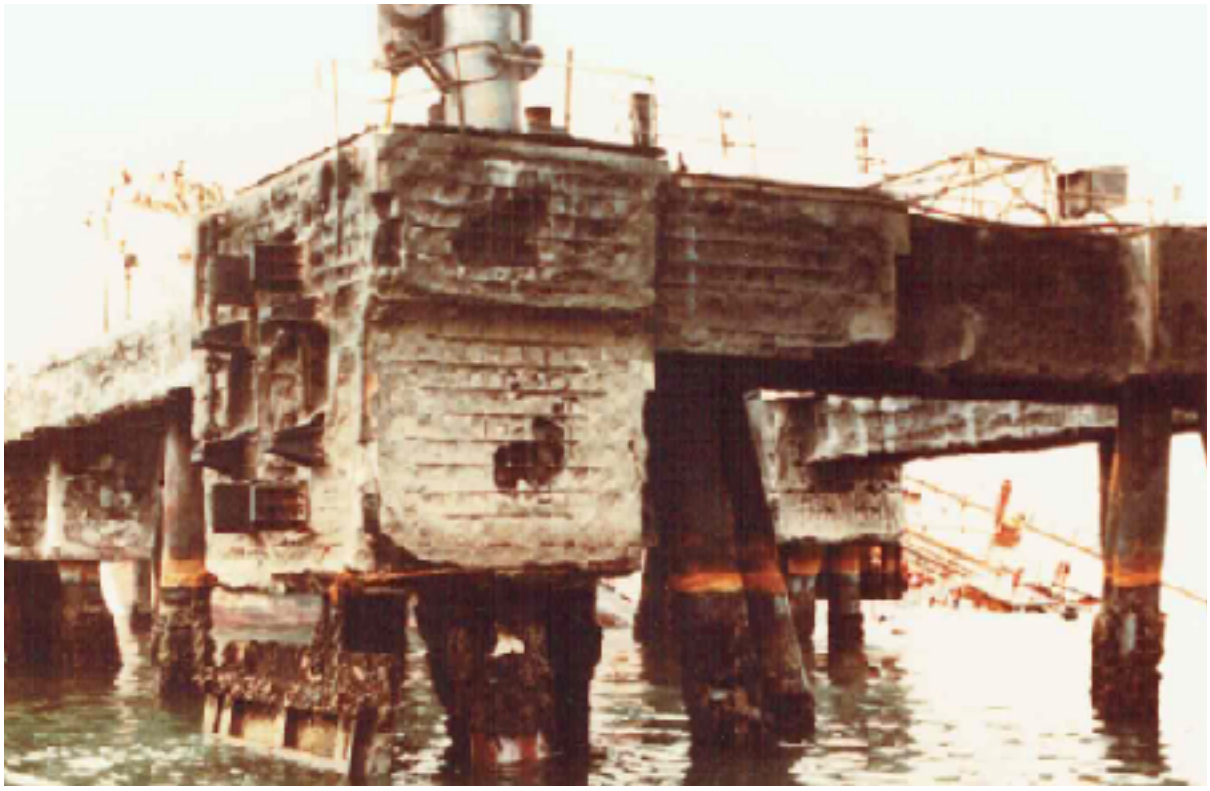
Betelgeuse on Fire

Bow of Betelgeuse at Jetty

Damaged Underside of Jetty

Burst Pile

Burst Piles



Damaged Concrete

Damaged Concrete showing Reinforcement

Damaged Piles

Core Drilling

Tony Barber June 2020