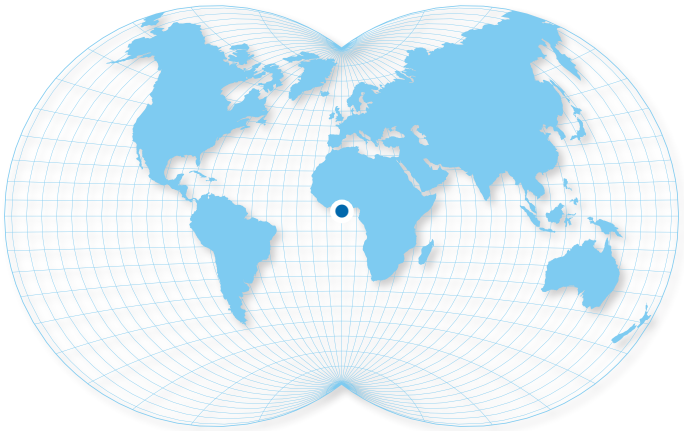
DANGOTE OIL REFINERY, PORT OF LEKKI, NIGERIA:

Dangote CALM Buoys
SPM-P1, SPM-P2 & SPM-P3



Scope of Work

SOFEC was responsible for the engineering, procurement and construction of five (5) CALM Buoys and associated anchor chain legs, PLEMs, piles, hoses, mooring hawsers, and all ancillaries in accordance with Oil Companies International Maine Forum (OCIMF) Guidelines. The project will be executed primarily by SOFEC's Singapore team with support from the Houston office.

These three (3) Multi-Product CALM Buoys will be capable of transferring up to 80,000 Barrels Per Hour (BPH) of Crude oil to a calling tanker of up to 320,000 DWT. They will be used to import feed stock to the refinery.

The Multi-Product buoys will be capable of transferring up to 25,000 BPH of segregated refined products to calling tankers of up to 160,000 DWT. These will be used to export ethanol, gasoline, diesel, jet fuel and kerosene. Each of the export product lines on these multi-product buoys shall be dedicated to a single type of product.

These will be classed by American Bureau of Shipping and will be constructed in the Far East or SE Asia.

General Description

Client Name:	Dangote Petroleum
Contract Award:	August 2016
Installation Date:	2020
Application:	Export ethanol, gasoline, diesel, jet fuel and kerosene
Flow Capacity:	25,000 BPH

Project Specifications

Water Depth:	SPM-P1 & SPM-P3: 22m (72ft) SPM-P2: 24m (79ft)
Tanker Size:	160,000 DWT
Buoy Dimension	11.5mØ x 5.0m
Fluid Swivel Type:	Dual-Path Swivel
Hose Sysem:	Dual 24-in. Double Carcass
Hawser System:	Dual Single Leg (non-grommet) 55m long, braided nylon
Anchor Leg System:	6 x 1 configuration, 81mmØ, Studless Gr. R3, 300m long
Anchor System:	Driven anchor piles

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(Continued)
Design Environmental Criteria

Operational	
Significant Wave Height:	2.8m (9ft)
Wind Velocity:	10.1m/s (19.6 knots)
Surface Current:	0.67m/s (1.3 knots)
Survival	
Significant Wave Height:	3.9m (12.8ft)
Wind Velocity:	12.8m/s (24.8 knots)
Surface Current:	1.0m/s (1.9 knots)