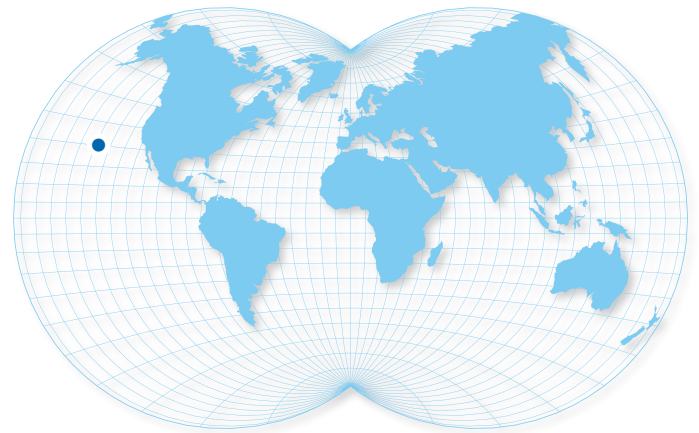


BARBER'S POINT, HAWAII, USA:

Barbers Point (Tesoro) CALM



Scope of Work

SOFEC will design, construct and install a CALM terminal for crude oil, bunker fuel, gasoil, kerosene and gasoline and fuel oil. This unique SOFEC CALM buoy is designed with a three-product swivel, which incorporates a crude oil circuit, a white product circuit, and an export sales circuit.

This SPM is an import CALM Buoy serving the Tesoro Kapolei Refinery. The SPM is located 2.5km offshore from Barber's Point. This SPM replaces an existing 8-point spread mooring system and was installed into the existing anchor chain spread. The installation of the new unit into the old mooring pattern will be achieved by removing 2 of the existing 8 anchor legs, lengthening the remaining 6 legs and installing an auxiliary gravity anchored PLEM.

General Description

Client Name:	Tesoro Hawaiian Corporation
Contract Award:	September 2011
Installation Date:	Planned August 2012
Application:	Three Product – Crude, Bunker and White Oil Import

Project Specifications

Water Depth:	31m (100ft)
Tanker Size:	150,000 dwt
Dimension	11.5mØ x 4.0m
Floating Hose:	2 x 16-in., 1 x 12-in.
Underbuoy Hose:	2 x 16-in., 1 x 20-in. Chinese Lantern
Hauser System:	18-in. Single grommet
Mooring Bridle:	Single Leg
Anchor Leg System:	6 x 3.5-in. Grade U3

Design Environmental Criteria

Operational	
Significant Wave Height:	3m (9.9ft)
Wind Velocity:	23.2m/s (45 knots)
Surface Current:	1.5m/s (3 knots)
Survival	
Significant Wave Height:	9.3m (30.5ft)
Wind Velocity:	46m/s (90 knots)
Surface Current:	1.5m/s (3 knots)