TESORO AVON MOTEEMS STRUCTURAL AND SAFETY COMPONENTS

September 27, 2016
• MOTEMS - Standards were developed to ensure that California Marine Oil Terminals meet the highest levels of safe operation and protection of the environment

• The project consists of upgrading the existing Avon Marine Terminal to current MOTEMS Standards

• Project will be completed by June 2017
AVON WHARF BEFORE THE START OF MOTEAMS UPGRADES
STATE OF ART PROJECT DESIGN

- Designed by Marine Terminal Engineering Experts
  - Anvil – Electrical & Piping
  - Ben C. Gerwick / COWI – Structural
  - Langan Treadwell Rollo – Geotechnical
- Utilized three dimensional Computer Aided Design (CAD)
- Extensive Design Quality Assurance (QA) by multiple engineering specialists
- Design, drawings and calculations evaluated by CSLC and the BCDC Engineering Criteria Review Board
SAFETY ASPECTS

- Rigorous seismic design criteria required by MOTEAMS (that exceed normal local earthquake building codes)
- Rapid pipeline shut-off valves to significantly decrease response time for operators
- Enhanced emergency response capabilities
  - Additional fire fighting and spill response equipment
  - Automated / elevated monitors with remote operation capability
  - New response boat dock
  - Two emergency escape boat lifts
  - Fire detection and alarm system
- New state-of-the-art Operations Control Building
NEW TERMINAL PROJECT ELEMENTS

- West mooring dolphin
- Escape boat and lift
- Emergency/spill response dock
- Escape boat and lift

Berth 1A
MODULE CONSTRUCTION BEGINS
SETTING OF NEW CONTROL BUILDING
BERTH 1A LAYOUT / PROGRESS
COMPLIANCE WITH BCDC PLANS & POLICIES

- New Berth 1A, terminal approach road and pipeway supports designed to accommodate future sea level rise per BCDC San Francisco Bay Plan

- Installation of five seismic accelerometers on the new Berth 1A and approach road
TYPICAL NEW TRESTLE “BENT”

Elevation = 20.0’
Elevation = 16.92’
OLD TRESTLE AND PIPE SUPPORTS
NEW TRESTLE AND PIPE SUPPORTS
NEW BERTH 1A PIPING CONNECTION TIE IN LOCATION
INTERESTING CRANE LIFT