Shell Oil Products Company
Mormon Island Marine Marine Terminal
Berths 168 & 169
Port of Los Angeles
AGENDA

• Facility Description
• Near Term Programs
  – MOTEMS Audit
  – Berthing Upgrade Projects
  – Piping Upgrades
• Possible Future Upgrade Projects
• Upgrade Status
• Closing
FACILITY DESCRIPTION

• Two Berth Unloading Facility 168 & 169

• 1920’s Vintage Timber Wharf

• MOTEEMS Medium Risk Classification
FACILITY DESCRIPTION

- DECK
- PILES
- TIMBER FENDER SYSTEM
FACILITY DESCRIPTION

- CAMELS
- LOADING MASTS
- PIPING
FACILITY DESCRIPTION

EXISTING TIMBER DECK

EXISTING PILES & STRAPS

EXISTING PILES & FENDER SYSTEM

EXISTING PIPING SYSTEMS
FACILITY DESCRIPTION

Existing Typical Wharf Section
NEAR TERM PROGRAMS

- MOTEMS Initial Audit
- Berthing Improvement Project
- Piping Improvement Project
MOTEMS INITIAL AUDIT

- Field Investigations
- Mooring
- Berthing
- Structural Analysis
- Geotechnical Analysis
- Piping / Mechanical / Electrical
- Fire Protection
MOTEMS INITIAL AUDIT

• Field Investigations
  – Geotechnical Landside and Waterside
  – Diving Inspection
  – Structural Field Inspection
    Top Sides & Below Deck
  – Mechanical, Electrical and FF
MOTEMS INITIAL AUDIT

- Timber fender system
- Agreed with POLA/CSLC to install Composite Camels
  – installed in 2007
  – interim measure
- Pursue Design of New Berthing Dolphins
MOTEMS INITIAL AUDIT

• Preliminary Mooring Analysis
  – Coordination with Pilots
  – Dynamic Mooring Analysis (TERMSIM)
  – Load Conditions:
    • Wind Speed
    • Passing Vessel
SEISMIC & STRUCTURAL EVALUATION

• Analyzed Deck, Bridges and Existing Mooring Points against MOTEMS
• Non-linear Dynamic Analysis (SAP2000)
  – To account for batter piles
• POLA Seismic Criteria
MOTEMS INITIAL AUDIT

- Geotechnical Findings
MOTEMS INITIAL AUDIT

- Piping / Mechanical
- Electrical
- Fire
BERTHING UPGRADE PROJECT

- Interim with Existing Timber Piles and Composite Camels
- New Berthing System:
  - Isolate berthing loads from timber wharf
BERTHING UPGRADE PROJECT

PROPOSED WHARF IMPROVEMENTS
BERTHING UPGRADE PROJECT

PROPOSED WHARF SECTION
BERTHING UPGRADE PROJECT

- Project Staging

Phase I Construction

Phase II Construction
PIPING UPGRADE PROGRAM

• Replace Product Piping
  – Bring Most Piping on Land
  – Reduce Over Water Piping

• Isolate Piping from Timber Wharf
PIPING UPGRADE PROGRAM

PROPOSED PIPING SYSTEM
POSSIBLE FUTURE UPGRADE PROJECTS

- Mooring Upgrades
- Embankment / Ground Improvements
- Unloading Platform
UPGRADE STATUS

• Evaluating Operating Parameters
• Berthing / Piping Upgrade Projects
  – Contract documents
  – Bid process (Contractors pre-qualified)
• MOTEEMS RAP’s Initiated
• Future Upgrades
  – Shell / POLA conceptual design study implemented
CLOSING

•Medium Facility – Audit due 2010
•Proactive
•Implementing Programs and Measures

QUESTIONS