



# *California State Lands Commission Marine Facilities Division*

## *Trends in Sources of Crude Oil Berkeley, CA June 25, 2014*

California Energy Commission

**DOCKETED**

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IEPR Workshop — Trends in Sources of Crude Oil



# *California State Lands Commission*

## *Marine Facilities Division*

### **Responsibilities Relating to Crude Oil Movements**

- The Marine Facilities Division (Created under Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990)
  - Prevention of oil spills in State waters
    - Inspections/Audit of marine oil terminals
      - Annual inspections
      - Spot inspections
      - MOTEMS Audit Monitoring of marine oil transfers
      - Risk matrix used in order to monitor high risk operations
      - Monitor operations 24/7





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## Responsibilities Relating to Crude Oil Movements

- MOTEMS (Marine Oil Terminal Engineering and Maintenance Standards)
  - Initial Audits and Subsequent Audits
  - Risk Classifications of marine oil terminals
    - Low, Medium, and High based on Barrels of cargo at risk, number of transfers per year, and the size of the vessels that call at the terminal
  - Mooring and Berthing Analysis
  - Fire protection and suppression
  - Seismic analysis
  - Deficiency corrections
  - Design and construction upgrades
    - Existing terminals
    - New terminals





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## **Coordination with Other Agencies**

Memorandum of Understanding with;

United States Coast Guard

Marine Oil Terminal inspections

State Fire Marshal

Pipeline inspections

California Department of Fish and Wildlife – OSPR

Mobile transfers over water

Bunkering monitoring at marine terminals

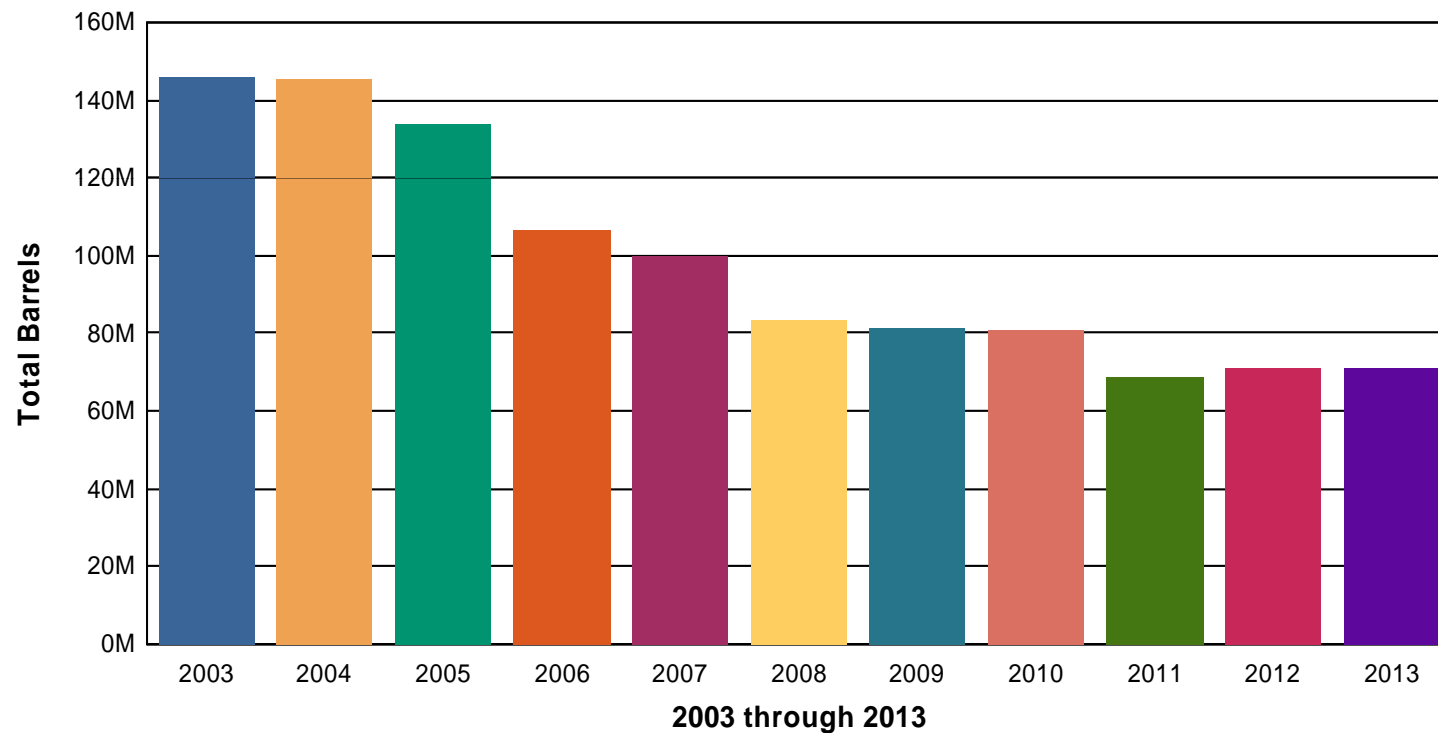




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## Crude - ANS Movement in Marine Oil Terminals

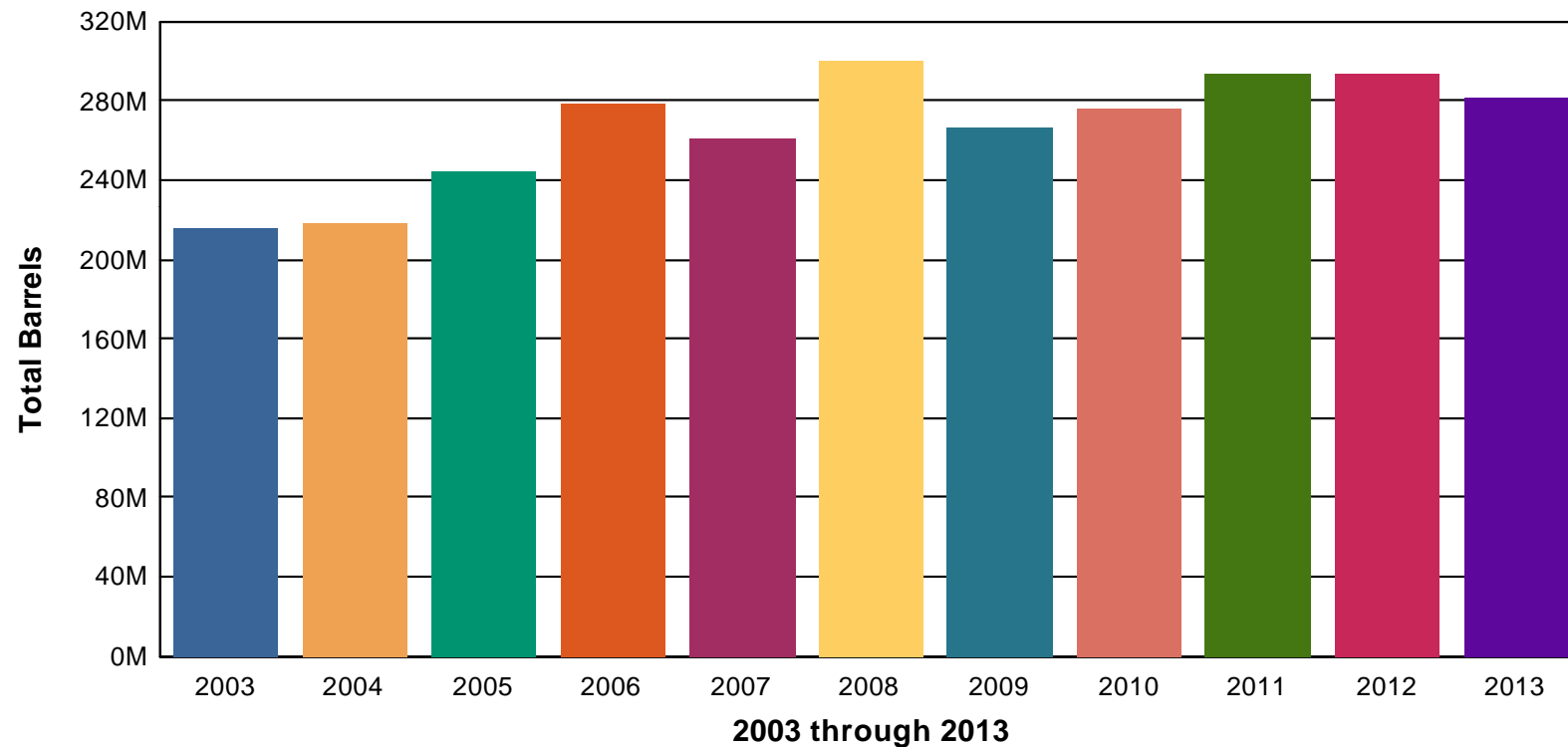




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## Crude – Imports (Foreign) into Marine Oil Terminals

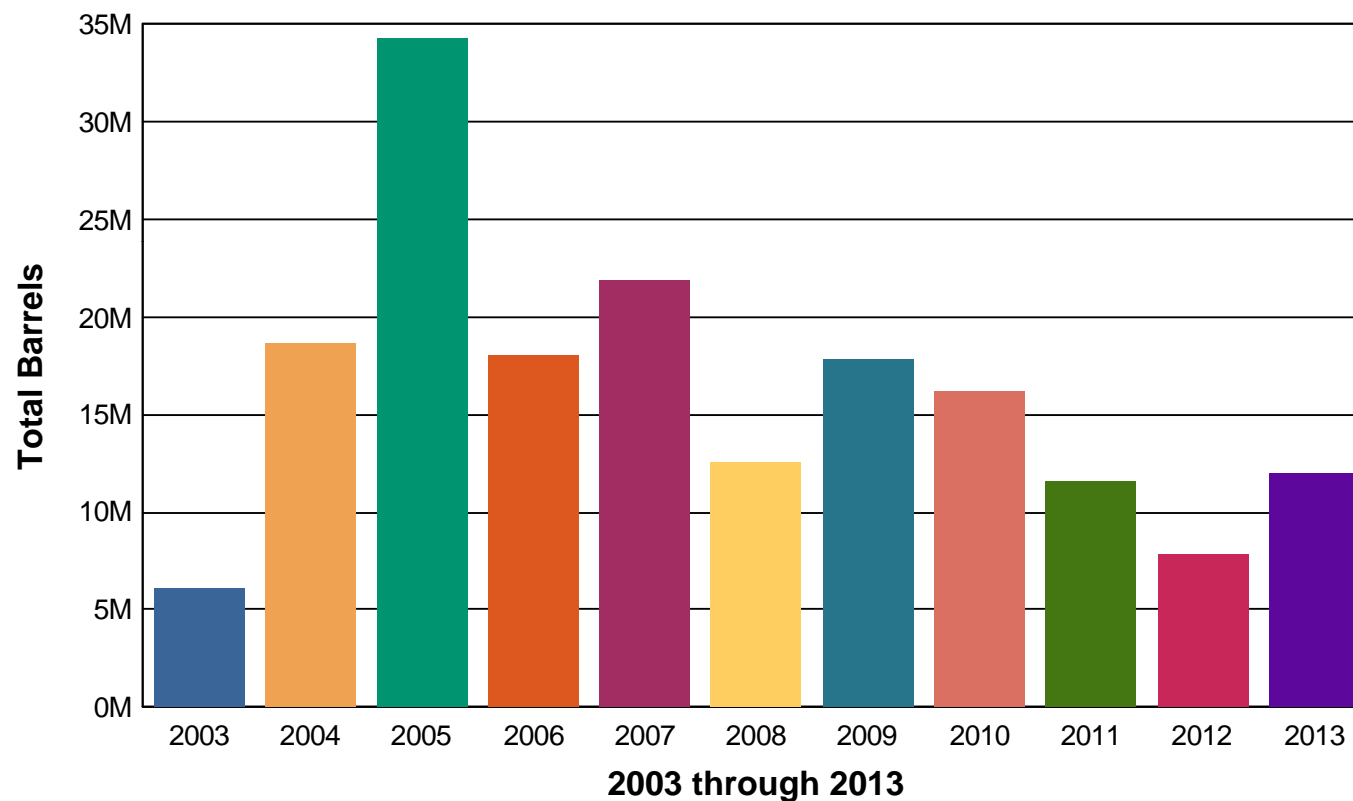




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## Other Crude Movement in Marine Oil Terminals (Crude-Bakken & Crude-Other)





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## Common Hazards in Crude Oil Transportation

- Higher H<sub>2</sub>S content in some crudes
  - Toxic component
  - Extremely explosive
  - Dangerous to worker safety and to the public
  - Correlation with water/gas injection
- High pressure which increases the volatility
  - Lower Flashpoint (generally considered as flammable)
- Persistent components when released into environment
- Toxic components; Benzene, H<sub>2</sub>S, etc.







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## Gaps in Regulations

- Biofuels/Renewable Diesels
  - Variability of Formulas
  - Variability of Flashpoint
  - Not regulated by CSLC-MFD except when mixed with hydrocarbon components in any amount
- Crude Transportation
  - Regulations on H<sub>2</sub>S are not definitive



# Sansinena Oil Tanker Explosion and Fire

December 17, 1976, San Pedro, Los Angeles, California



Before



During



After



Aftermath



# Betelgeuse Disaster, January 8, 1979

## Whiddy Island, Ireland



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## Lessons Learned from Sansinena/Betelgeuse

- Vessel construction (IMO and Classification Societies)
  - Segregated ballast tanks
  - Mid-ship houses removed
- Closed loading of tanks
  - Removing ignition sources
  - Controlling Hydrocarbon vapors
- Inert (or nitrogen) gas systems
  - Oxygen removal from fire triangle
- Safety Management Systems for marine terminals
  - Audit and Inspection (OCIMF Baseline Criteria)
- **How can the Rail industry use these lessons learned?**





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## Questions?

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