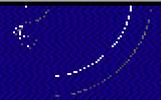


# UL2248 Marina Fueling Systems Project



# MARINA FUELING SYSTEMS PROJECT

Maggie Carroll - Project Manager

Paul Lloret - Standards Development

Susan Stene - Piping

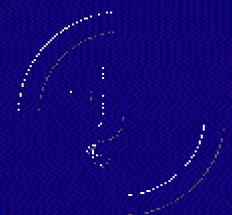
Greg Okada - General Systems

Phil York - Tanks

Wendy Winter - Technical Support

# UL's Role

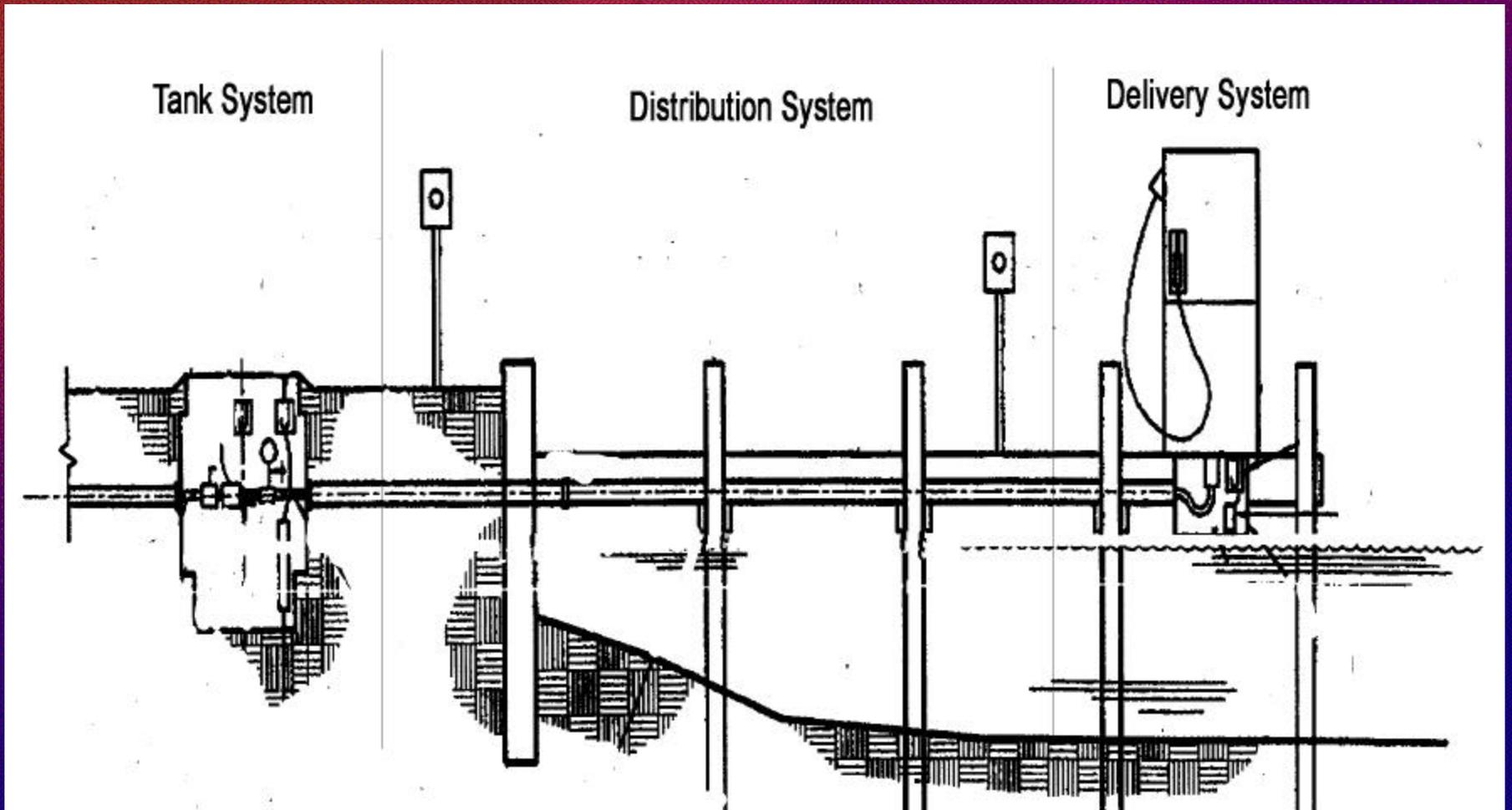
- Standards Writing Body
  - NOT responsible for standards adoption or enforcement
- Obtain input from
  - Authorities Having Jurisdiction (AHJ's)
  - Product Manufacturers
  - Users (Marina Owners/Associations, Contractors)
  - Other Interested Parties
- Maintain UL's Safety Mission



# Scope of Standard

- “These requirements apply to marina fueling systems intended for temporary storage (tank system), transporting (piping system from tank to dispensing systems) and dispensing (dispensing system) of flammable or combustible liquids, such as gasoline or diesel fuel, on waterways serviced by land based marinas intended to service floating vessels.”

# UL2248

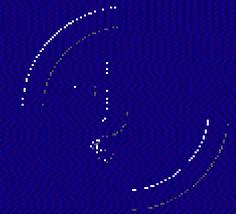


# Exclusions

- Fuel Delivery to Vessels
- Fuel Delivery to Tank System
- Fueling Practices or Procedures
- Submerged or Floating Tanks
- Tank Foundation
- Anchoring of primary tank to pier or pier to shore
- Construction/Stability of Pier
- ADA Requirements

# Consistent with Current Code Requirements

- NFPA
- UFC
- IFC
- OSHA
- CCR - California Code of Regulations
- CFR - Code of Federal Regulations



# Potential Hazards Addressed

- Public Safety
  - Fire Hazards
  - Electrical Hazards
  - Environmental Hazards
    - Leak Prevention and Detection
  - Other Hazards (Mechanical)

# General

- Ease in Determining Compliance with Requirements
- Address Environmental, Tidal and Situational Issues
- Consideration to Marina Owners

# Overall System Requirements

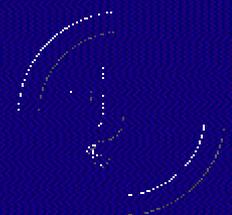
- Secondary Containment
- Continuous Monitoring for Leakage
- Audible and Visual Alarms

# Tank System

- All tanks secondarily contained
- Tank Capacity per NFPA Requirements
  - 12K gal. (individual) (15K if vaulted)
  - 40K gal. Aggregate Capacity

# Aboveground Storage Tanks

- Meet UL2085 Requirements
- Protected Tank - “An aboveground atmospheric tank with secondary containment and an insulation system intended to reduce the heat transferred to the primary tank when the tank is exposed to a hydrocarbon pool fire and provided with protection from physical damage”
- Optional Projectile Protection
- If vaulted, must comply with UL2245 Requirements



# Underground Storage Tanks

- Comply with Existing Requirements per:
  - UL58 (Steel Tanks)
  - API Specification 12B
  - UL1316 (Fiberglass Reinforced)
  - Flood Areas – Additional NFPA 30 requirements may apply

# Additional Tank Issues

- Secondary Containment and Tank Supports
- Fill connection, Gauges, other openings
- Venting (Normal and Emergency)
- Flexible Connectors
  - Less than 8 feet
  - Comply with UL 2405
- Piping, Valves and Fittings

# Distribution System

- Aboveground Piping shall comply with UL2405
- All Piping System Components shall be secondarily contained
- Continuous Audible and Visual Alarm
- Pier Piping Secured and Protected
- Installed on pier – opposite side of electrical wiring

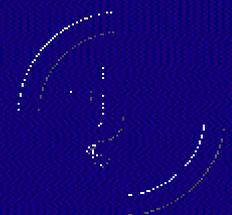


# Valves

- Block Valves – Isolate Tank and Piping
- Upstream of basic equipment – Prevent release of Product
- Solenoid Valve
  - Tank and Pier
  - Every 40 feet of Distribution Piping

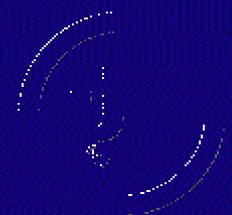
# Emergency

- **Emergency Shut off Valves**
  - Fire Valve – Approach to Pier
- **Double–Poppeted Breakaway**
  - All product lines
  - Directly Upstream from Pier



# Sumps

- Secondary Containment
  - “When used as secondary containment, sumps shall have a volume adequate to capture all fuel in the system from the solenoid valve directly before the sump to the point of exit from the sump.”



# Distribution System

- Pipe Joints, Compounds and Gaskets
- Piping Materials
  - Steel, Nodular Iron, Malleable Iron Brass, Bronze, Stainless Steel
  - Exception: Non-metallic materials may be used when comply with UL971, UL2405 as applicable

# Leak Detection

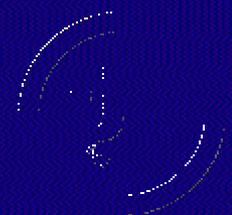
- Earliest possible detection
- Lesser of:
  - Detecting 3 g/hr at 10 psi within one hour, or
  - 25% of the lower flammable liquid stored
- 95% probability of detection, false alarm less than 5%

# Secondary Containment

- Contain 100% of usable capacity of primary containment system
- For multiple primaries in single secondary- which ever is greater:
  - 150% of the volume of the largest primary container
  - 10% or aggregate internal volume of all primary containers within the secondary system

# Dispensing System

- UL87 Dispenser
- UL330 Hose and Hose Assemblies
- UL1238 Control Equipment
- UL109 Fittings and Tubing
- UL25 Meters



# Dispensing System Requirements

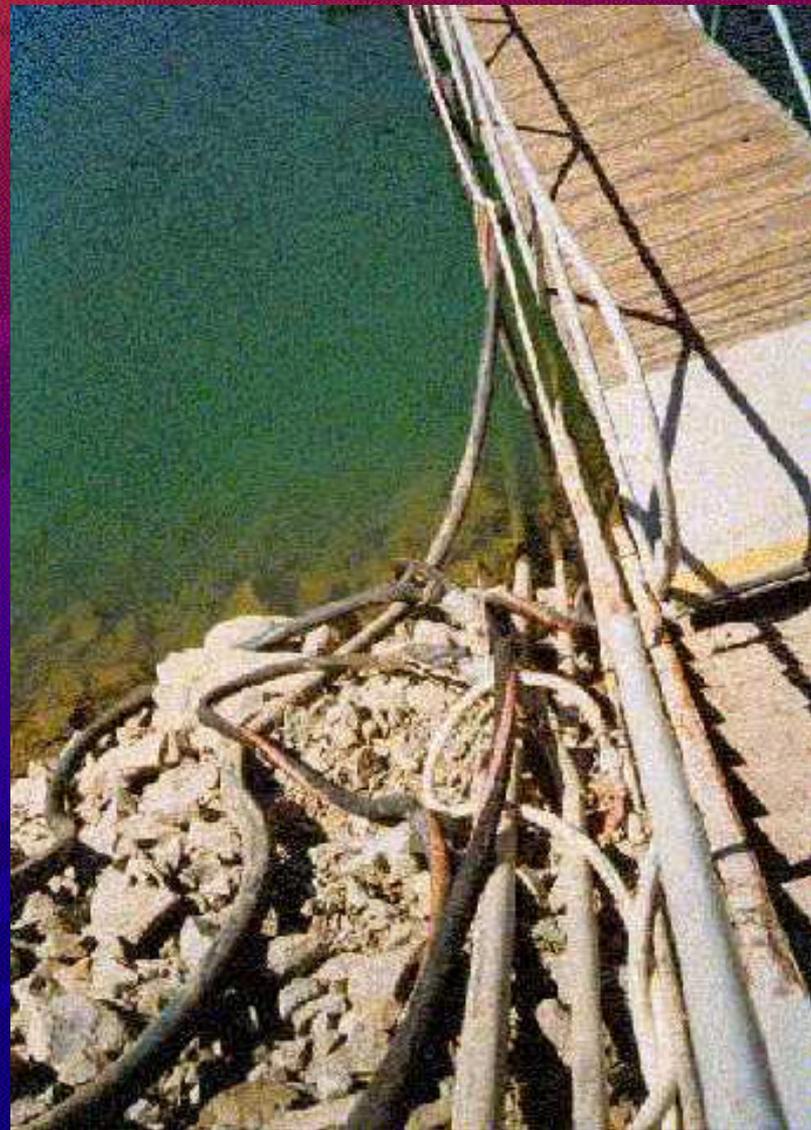
- Length 18 ft. or less unless protected from damage when not in use
  - Rack, reel, retriever
- Automatic Closing
- Shall not have latch open capability

# Electrical System

- Per NEC Requirements
  - Corrosion Resistant
  - Wet Locations
  - Grounding Requirements
  - Opposite Side of Pier from Flammable Liquid Piping
  - Emergency Disconnect

# UL2405 –Aboveground Secondary-contained Piping For Flammable Liquids

- Requirements Separated from UL2248
- UL971 (Non-metallic Underground Piping)
- ASTM A53, A106, A135, B31.3 (Metallic)



# Scope of Standard

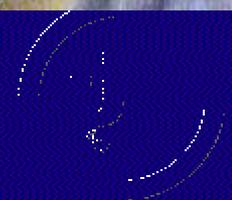
- “These requirements cover primary carrier pipe, secondary containment pipe, secondary containment pans, outer protective pipe and fittings intended for use aboveground in the distribution of petroleum-based flammable and combustible liquids, alcohols, and alcohol-blended fuels.”

# Other Considerations

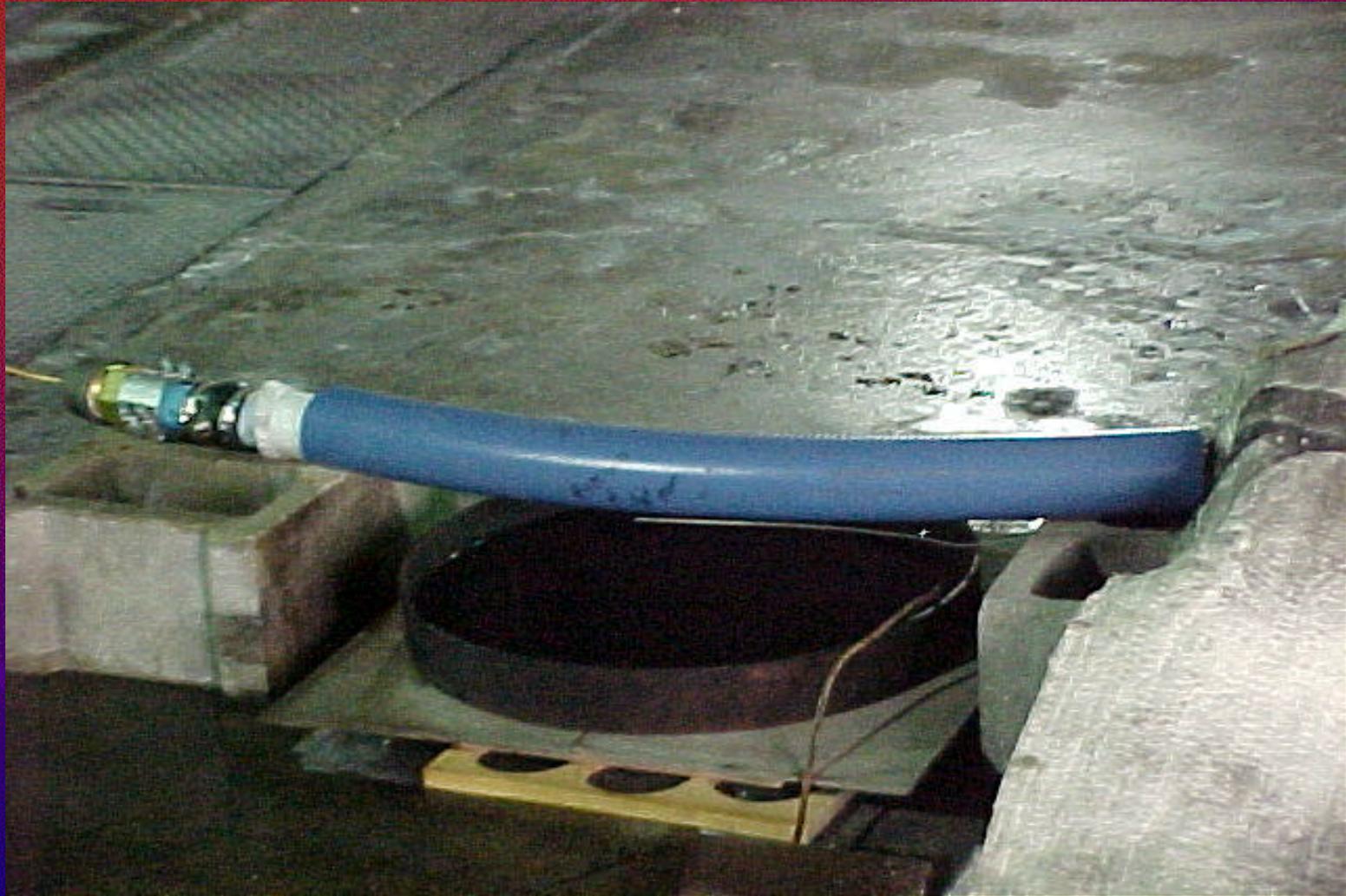
- Corrosion Protection
- Permeability:
  - Primary –  $2.05 \times 10^{-5}$  lb/ft<sup>2</sup>/day
  - Secondary –  $4.92 \times 10^{-3}$  lb/ft<sup>2</sup>/day

# Test Program

- Per Table 9.1



# Flammability Testing (1/4)



# Flammability Testing (2/4)



# Flammability Testing (3/4)

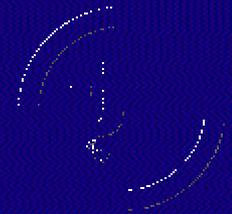


# Flammability Testing (4/4)



# Verification of Compliance

- UL2405 – Product Marking
- UL2248 – Certificate Program

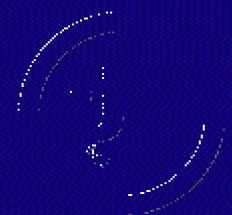


# UL2248 Certificate Program (Preliminary)

- Initial Inspection Certificate
- State Documents
- Ongoing Inspections by State

# Where are we going?

- Comments on Current Draft Due by JULY 22, 2002.
- First Edition Published
- National Standard
- ANSI
- Living Document, Ongoing Support



# Questions ?

