THE FUTURE OF NURSE TANK TESTING

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PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION

U.S. DEPARTMENT OF TRANSPORTATION

AUGUST 20, 2008

Mission / Charter

To administer a comprehensive nationwide safety program to protect the Nation from the risks to life, health, property, and the environment inherent in the transportation of hazardous materials by all modes of transportation.

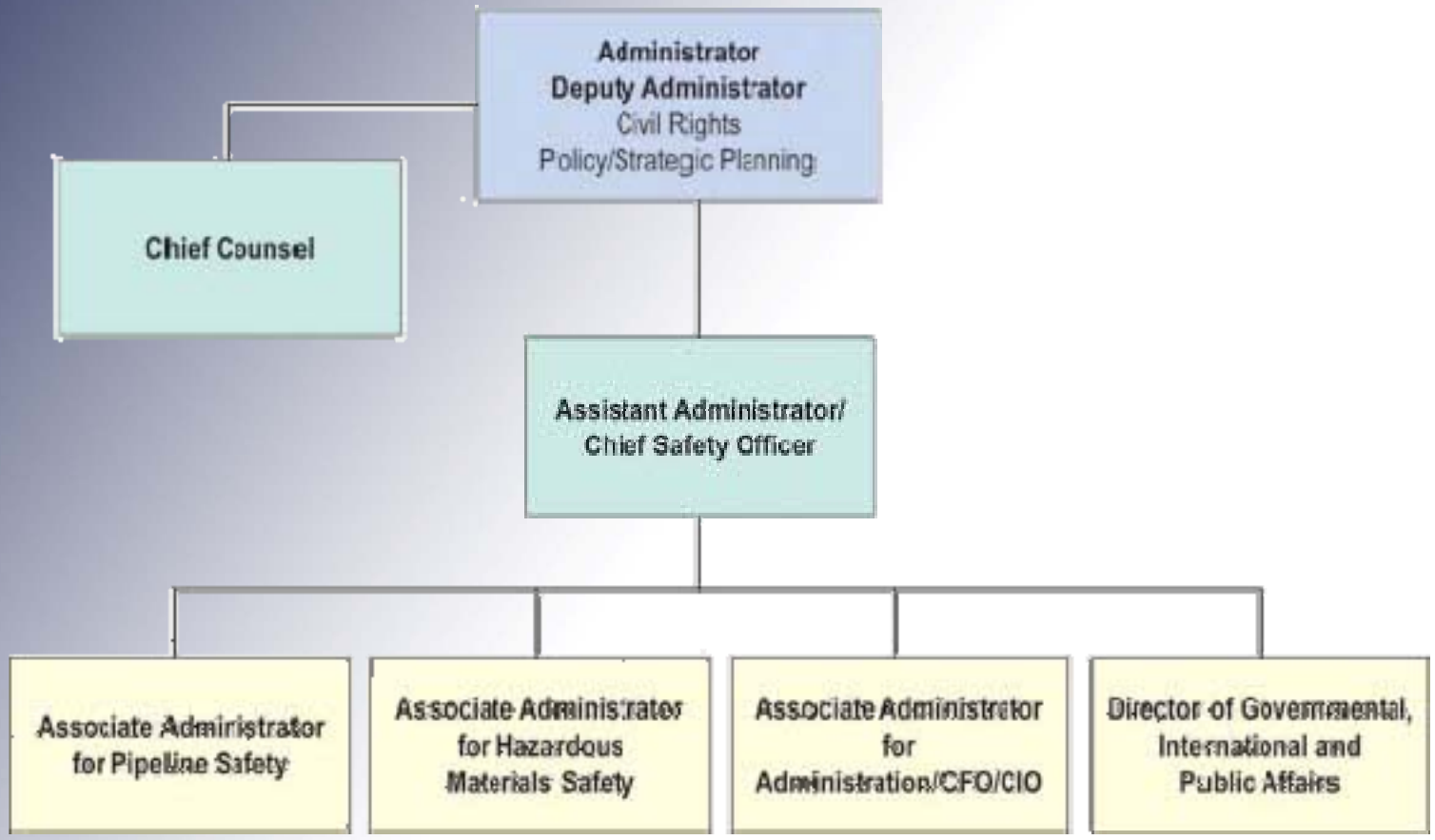
Overarching Objectives

- Enhance Public Safety by Reducing Risk
- Build Public Confidence in the Safety of Hazardous Materials Transportation
- Gain the Participation of All Stakeholders in PHMSA Deliberations

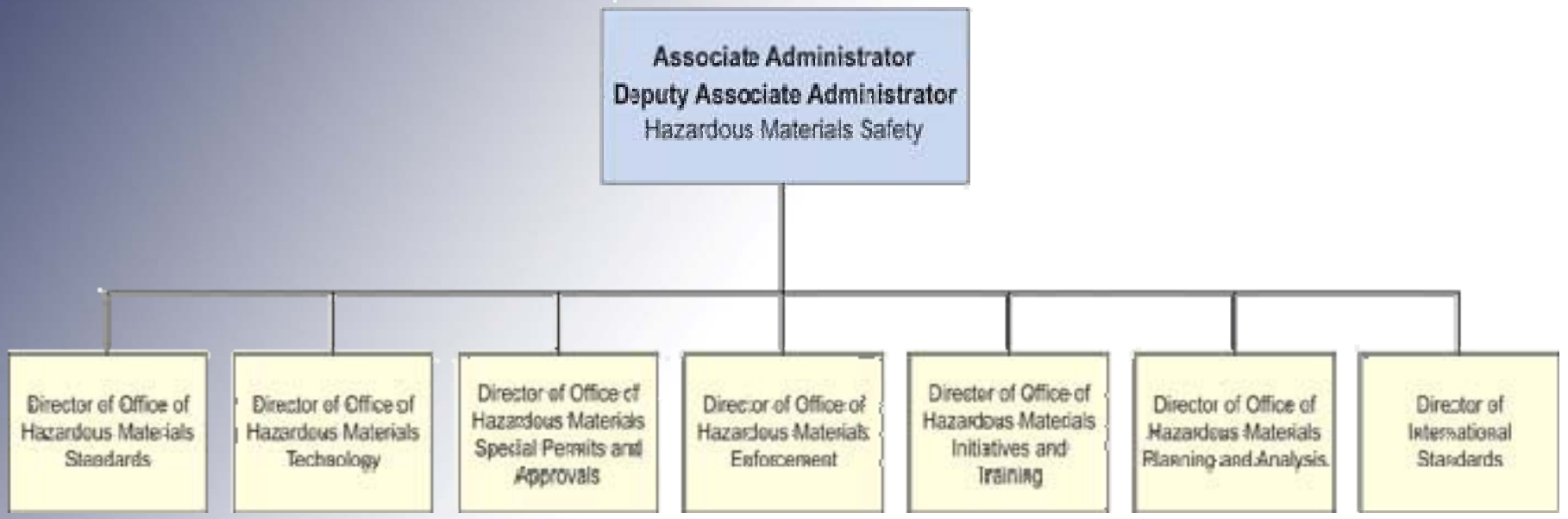
Key Strategies

- Focus on Safety not just Rulemaking and Enforcement
- Develop a More Thorough and Clear Understanding of Risk in Transporting Hazardous Materials
- Use Every Tool Available to Enhance Safety—Rulemaking, Enforcement, Public Education, Partnerships, Enterprise Approaches to Problem Solving, the Internet, Technology
- Be Transparent in All Dealings; Encourage Broad Public Debate and Participation; Communicate Our Activities
- Proactively Address Safety Issues Brought to Our Attention

PHMSA Organizational Chart



Office of Hazardous Materials Safety Organizational Chart



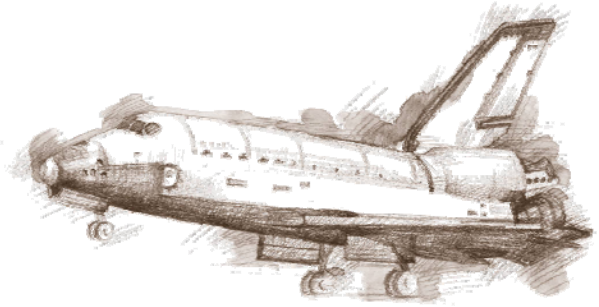
"Risk-Based"

Risk as the Foundation for Focus, Choices, and Priorities

What We are Trying to Prevent

"Enterprise" Approach

- Pitch a "Big Tent"
  - Bring All Stakeholders to the Table
- Share Responsibilities
- Tackle the Tough Problems
- Build Partnerships
- Better, More Innovative Solutions



CALAMUS, IOWA ACCIDENT

- April 15, 2003
- Nurse tank split open (53.5 inches long near right center of tank bottom) after being filled with anhydrous ammonia.
- Approximately 1,300 gallons of anhydrous ammonia escaped.
- Seriously injured two nurse tank loaders, one of whom died from his injuries.

NTSB INVESTIGATION

- Post accident metallurgical examination of the tank indicated that, when manufactured, a portion of the nurse tank's interior longitudinal weld had an unfused region (incomplete weld).
- Owner had no record of inspections of its nurse tanks, investigators were informed that the operator conducts external visual inspections of all of its nurse tanks annually.

NTSB INVESTIGATION

- Probable cause of the accident:
  - inadequate welding and insufficient radiographic inspection during the tank's manufacture, and
  - lack of periodic testing during its service life.

NTSB RECOMMENDATION

- **H-04-23**
  - Require periodic nondestructive testing to be conducted on nurse tanks to identify material flaws that could develop and grow during a tank's service and result in tank failure.

PHMSA RESPONSE

- Reviewed incident data and other information concerning the safety performance of nurse tanks.
- Agree with NTSB that additional requirements, including periodic testing, should be considered.
- Considering alternatives for specific measures to improve the safety of nurse tanks, including the costs and benefits of such measures.

NURSE TANKS REQUIREMENTS § 173.315(m)

- ASME CODE, SECTION VIII, MINIMUM DESIGN PRESSURE OF 250 PSIG
- CGA PAMPHLET S-1.2 PRESSURE RELIEF DEVICES
- PAINTED WHITE OR ALUMINUM
- FILLING DENSITY NO GREATER THAN 56%
- SECURELY MOUNTED ON A FARM WAGON
- IN CONFORMANCE WITH REQUIREMENTS OF 49 CFR PART 172 WITH EXCEPTIONS

MC-331 CARGO TANK MOTOR VEHICLE § 173.315(a)

- ASME CODE, SECTION VIII, MINIMUM DESIGN PRESSURE OF 265 PSIG
- CGA PAMPHLET S-1.2 PRESSURE RELIEF DEVICES
- FILLING DENSITY NO GREATER THAN 56%
- IN CONFORMANCE WITH REQUIREMENTS OF 49 CFR PART 172

PERIODIC RETEST REQUIREMENTS FOR NURSE TANKS

- **NONE (49 CFR Part 180)**
- **§ 173.24 GENERAL REQUIREMENTS FOR PACKAGINGS AND PACKAGES APPLY:**
  - **Package designed, constructed, maintained such that effectiveness is not reduced under conditions normally encountered during transportation**

PERIODIC RETEST REQUIREMENTS FOR MC-331 CARGO TANK MOTOR VEHICLES

- § 180.407(C) REQUIREMENTS APPLY
- EXTERNAL VISUAL INSPECTION - ANNUAL
- INTERNAL VISUAL INSPECTION – 5 YEARS
- LEAKAGE TEST - ANNUAL
- PRESSURE TEST – 5 YEARS

DOT-SP 13554

- **Authorizes the continued transportation in commerce of nurse tanks, which have lost the required ASME identification plates.**
- **Initially tested as follows:**
  - **(i) External visual inspection and testing - § 180.407(d);**
  - **(ii) Thickness tested - § 180.407(i).**
  - **(iii) Pressure tested - § 180.407(g). The minimum test pressure is 375 psig. Pneumatic testing is not authorized; and**
  - **(iv) Marked in accordance with § 180.415.**

DOT-SP 13554

- **At least every 5 years after the completion of the initial tests each nurse tank must be retested and reinspected as specified for DOT Specification MC 331 cargo tanks in § 180.407(c).**

CONTACT INFORMATION

- http://www.phmsa.dot.gov/hazmat
- **Hazardous Materials Information Center**
  - **1-800-HMR-4922**
    1-800-467-4922
    For Washington, DC / Metro area residents: 202-366-4488

Questions?