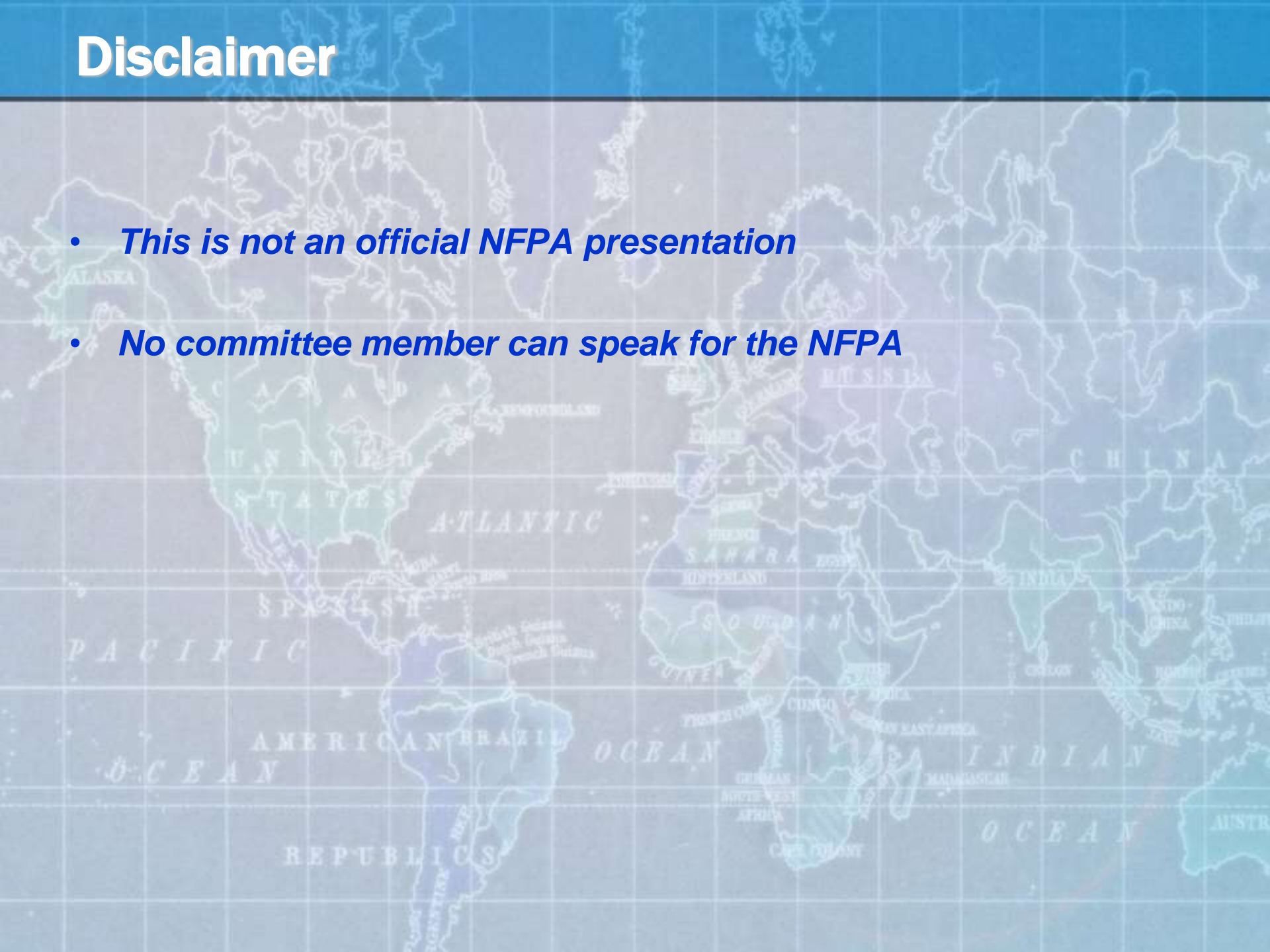




# NFPA Updates

# Disclaimer

- ***This is not an official NFPA presentation***
- ***No committee member can speak for the NFPA***





## NFPA 1901-2009 Effectivity

This standard shall apply to all new fire apparatus that are:

**Contracted for, on, or after January 1, 2009**



# NFPA Committee

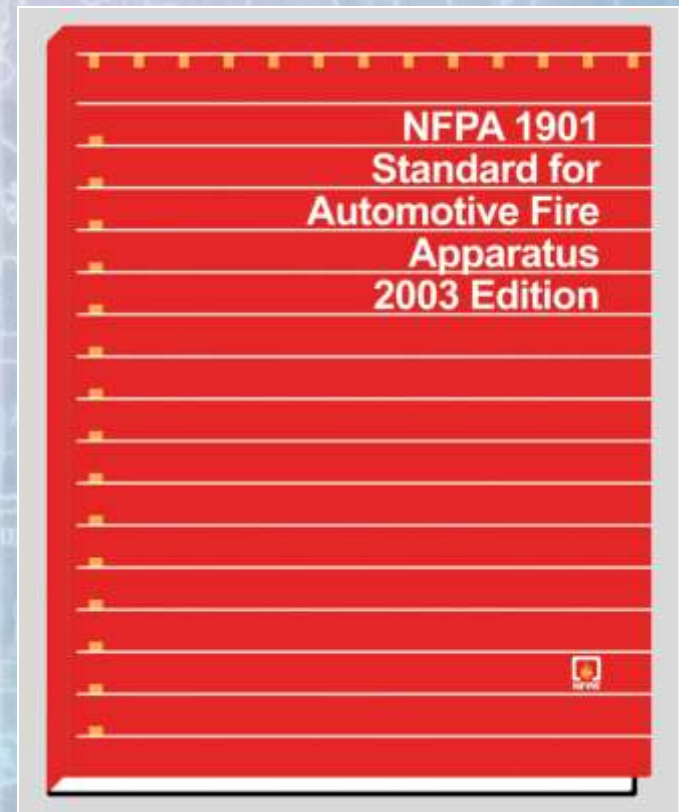
## Chairman of NFPA Apparatus Committee

- Is **always** an active fire service officer



# NFPA Standards

- Main chapter information is mandatory
- Annex information is recommended, explanatory or supplemental

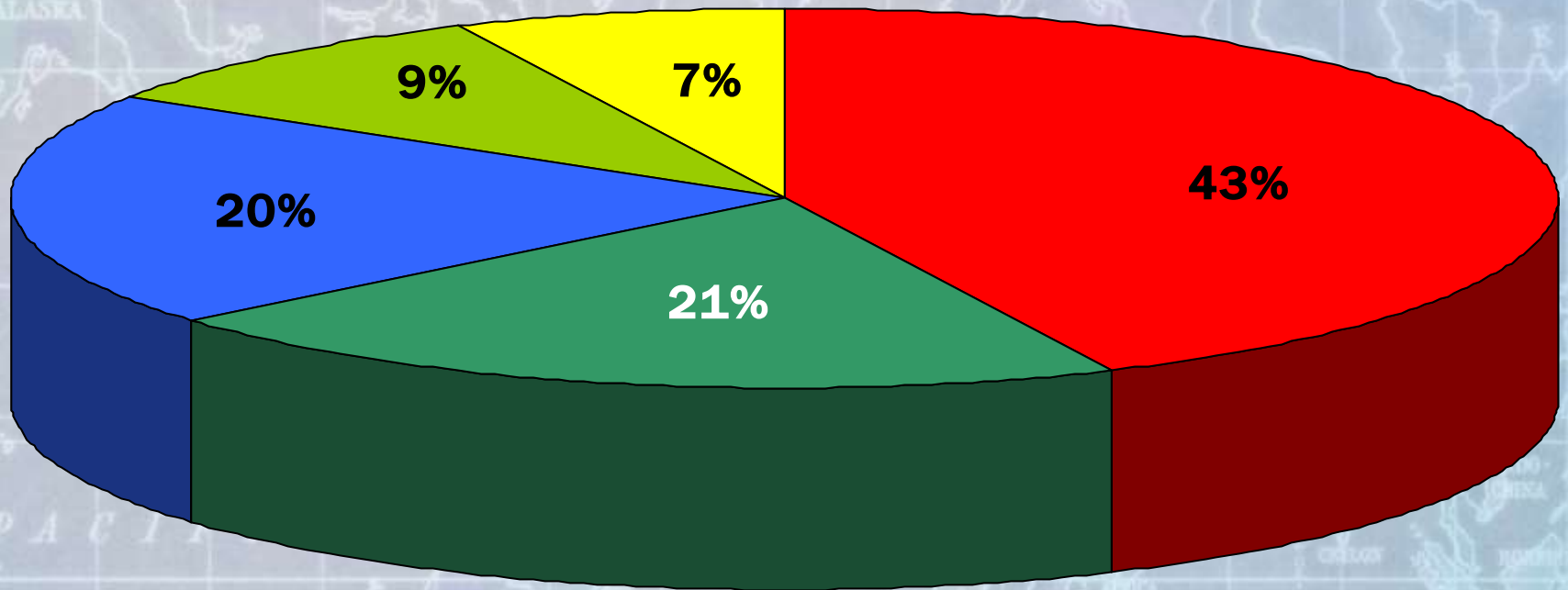




# Firefighter Safety Statistics



# 2006 Firefighter Deaths by Type of Duty



- Fire Ground
- Other On-Duty
- Responding to/Returning from Alarms
- Training
- Non-Fire Emergency

# Firefighter Safety Statistics

## Firefighter Deaths: Responding/Returning

- 1994: 22
- 1995: 29
- 1996: 22
- 1997: 21
- 1998: 14
- 1999: 26
- 2000: 19
- 2001: 23
- 2002: 13
- 2003: 36
- 2004: 23
- 2005: 23
- 2006: 19
- 2007: 26 (prelim.)



# Firefighter Safety Statistics

## Firefighter Deaths: Responding/Returning

- 406 deaths from 1977 to 2006
- 76% were **NOT** belted



# Vehicles Involved in Crash Deaths

- Firefighters' own vehicles (37.7%)
- Tankers/tenders (22.7%)
- Engines/pumpers (21.7%)
- Ambulances/rescues (6.4%)
- Ladders (2.2%)
- Other public service vehicles (9.4%)



# Victim Profile

- 76.4 percent were volunteer firefighters
- 14 percent were career firefighters
- 8.6 percent were contractors for or employees of land management agencies
- Remaining 1 percent were military or industrial firefighters

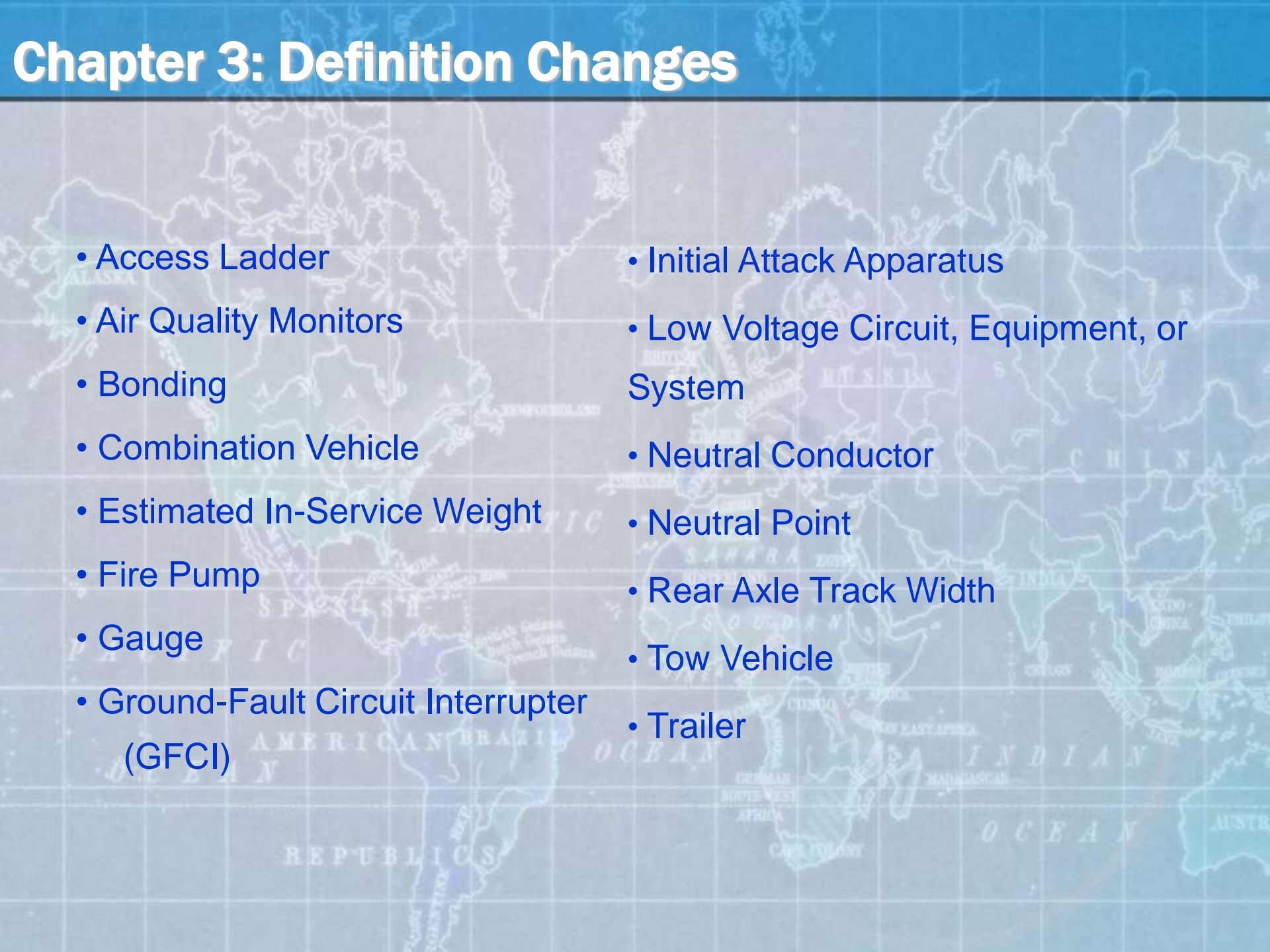






# **Additional Items Added to NFPA Standard To Address Safety Statistics**

# Chapter 3: Definition Changes

- 
- A faint world map is visible in the background of the slide, showing continents and oceans in a light blue and green color scheme. The map is centered on the Atlantic Ocean, with North and South America on the left and Europe and Africa on the right.
- Access Ladder
  - Air Quality Monitors
  - Bonding
  - Combination Vehicle
  - Estimated In-Service Weight
  - Fire Pump
  - Gauge
  - Ground-Fault Circuit Interrupter (GFCI)
  - Initial Attack Apparatus
  - Low Voltage Circuit, Equipment, or System
  - Neutral Conductor
  - Neutral Point
  - Rear Axle Track Width
  - Tow Vehicle
  - Trailer



# Chapter 4: General Requirements

## Third-Party Certification of Test Results:

All certification shall be performed by a certification organization accredited for inspecting and testing systems of fire apparatus in accordance with:

ISO/IEC 17020 or ISO/IEC Guide 65





# Chapter 4: General Requirements

## Vehicle data recorders

- Daily, weekly and monthly reports to user
- Logs the following items:
  - Vehicle speed (MPH)
  - Acceleration (MPH/sec)
  - Deceleration (MPH/sec)
  - Engine speed (RPM)
  - Engine throttle position
  - ABS event
  - Seat occupied status
  - Seat belt status
  - Master optical warning device switch position
  - Time
  - Date



# Chapter 4: General Requirements

## Rollover stability requirements

Vehicle shall meet one of the following criteria:

- Vehicle remains stable to 26.5 degrees
  - Tilt table verification
  - Calculated or Measured CG

**Or** • Apparatus shall be equipped with a stability control system





# Chapter 4: General Requirements

## Tire pressure monitoring system

Each tire shall be equipped with the following:

- A visual indicator for tire pressure

**Or** • A monitoring system for tire pressure





# Chapter 4: General Requirements

## Maximum Top Speed

- Vehicles meeting following criteria **shall not exceed 60 mph:**
  - 1250 gallon combined water tank capacity
  - GVWR of vehicle over 50,000 lbs.
- Vehicles **over 26,000 lbs. shall not exceed 68 mph**



# Chapter 4: General Requirements

## Additional certification requirements:

- Optical warning system certification
- Siren manufacturers' certification
- Air system certification, when equipped
- Foam system certification, when equipped
- CAFS system certification, when equipped



# Chapter 4: General Requirements

## Additional documentation requirements:

- Load distribution plan
- Drive axle ratios
- Maximum governed road speed
- Maximum tire speed ratings



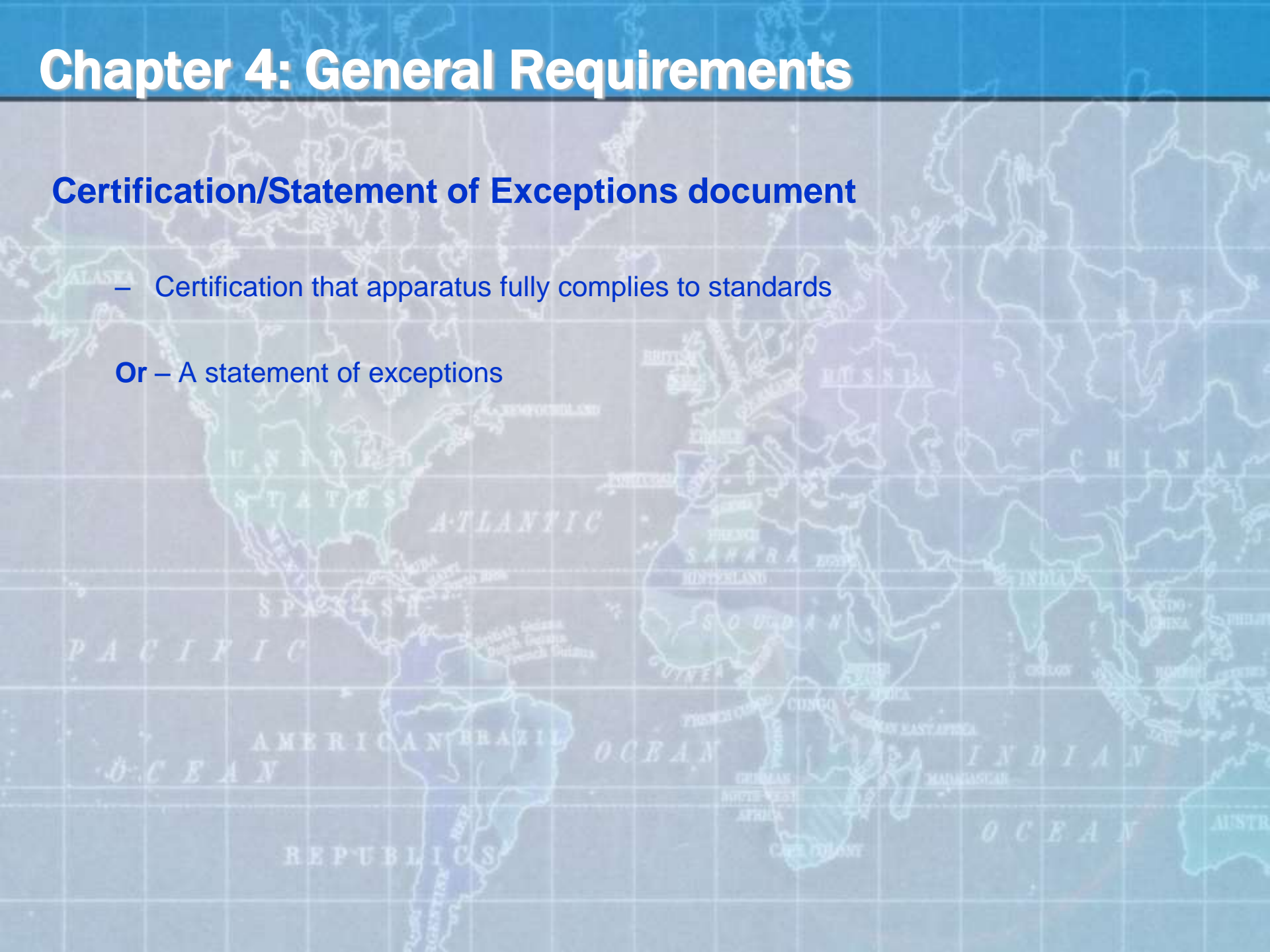


# Chapter 4: General Requirements

## Certification/Statement of Exceptions document

- Certification that apparatus fully complies to standards

**Or** – A statement of exceptions



# Chapter 4: General Requirements

## Statement of Exceptions Document

A Statement of Exceptions shall include:

- The separate specification of the section of the standard
- A description of the particular aspect of the apparatus not compliant
- Description of further changes/modifications required
- Identification of the entity responsible for making changes, or supplying and installing any missing equipment to achieve compliance

# Chapter 4: General Requirements

## Statement of Exceptions Document

- A signed document by authorized agent of apparatus manufacturer and the purchasing entity, indicating mutual understanding and agreement between the parties
- An apparatus which is delivered subject to a Statement of Exceptions shall not be placed into service until modified to comply



# Chapter 5-11: Apparatus Function Types and Additional Equipment

## Ground Ladders

- Step ladders and other types of multi-purpose ladders meeting ANSI A14.2 or ANSI A14.5 with duty ratings of Type 1A or Type 1AA shall be permitted as follows:
  - Substituted for folding ladder requirement
  - Carried in addition to minimum fire department ground ladders specified



# Chapter 5-11: Apparatus Function Types and Additional Equipment

## Additional loose equipment requirements:

- Five (5) fluorescent orange traffic cones
- Five (5) illuminated warning devices, such as flares
- One (1) traffic vest for each seating position
- One (1) automatic external defibrillator (AED)



# Chapter 12: Chassis and Vehicle Components

## Vehicle weight requirement changes

- Permanent label in driving compartment will now specify:
  - The maximum tire speed rating
- Estimated in-service weight will utilize:
  - ***250 lbs. in each seating position***





# Chapter 12: Chassis and Vehicle Components

## Diesel particulate filter/regeneration

- Regeneration process activated by two methods:
  - Automatically by the engine system
  - Manually initiated by activation of a switch located in the driver's area
- A switch shall be provided at the driver's area that will inhibit DPF regeneration until switch is reset or engine reset
- The DPF icon is visible to the driver when seated during activation
- The high exhaust system temperature icon is visible to the driver when seated



# Chapter 12: Chassis and Vehicle Components

## Exhaust temperatures

- Exhaust temperature shall not exceed 851° F when measured at the exit of the exhaust pipe during normal DPF regeneration
  - **Will require a diffuser on exhaust**





# Chapter 13: Low Voltage Electrical Systems and Warning Devices

## Continuous electrical load requirements:

- For apparatus equipped to tow a trailer, an additional 45 amps shall be added to the minimum continuous electrical load
  - May require larger sized alternators, and additional components for load management





# Chapter 13: Low Voltage Electrical Systems and Warning Devices

## Compartment, work and step surfaces, and walkway lighting requirements:

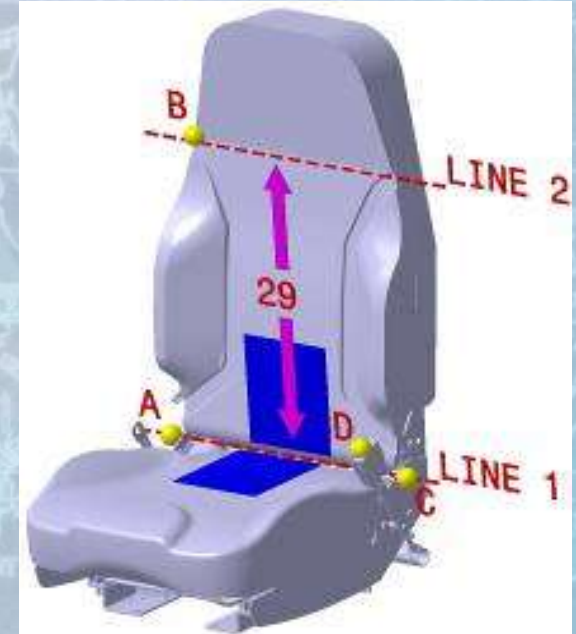
- Increased from 1 fc to 2 fc requirement



# Chapter 14: Driving and Crew Areas

## Seat belt web length requirements:

- Type 2 pelvic and upper torso restraint shall be a minimum of 110 inches
- Type 1 lap belt for pelvic restraint shall be a minimum of 60 inches





# Chapter 14: Driving and Crew Areas

## Seat belt color requirements

- Seat belt webbing shall be either:
  - Bright red
  - Bright orange



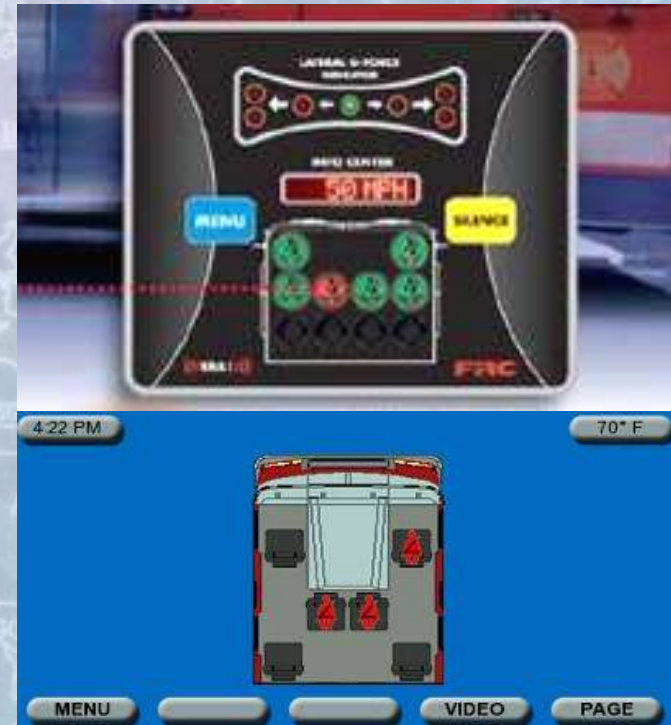


# Chapter 14: Driving and Crew Areas

## Seat belt warning system

– Shall consist of both an audible and visual warning device **visible** from driver and officer position indicating:

- Buckled and senses occupant
- Buckled and no occupant
- Unbuckled and senses occupant
- Unbuckled and no occupant



# Chapter 14: Driving and Crew Areas

## Reflective striping

- Retro reflective material (96 sq. in) required for **any** door of apparatus designed to allow persons to enter or exit





# Chapter 14: Driving and Crew Areas

## Fire helmet restraints:

- A location for helmet storage shall be provided
- If stored in driving or crew compartment, helmets must be secured in compliance with 9G restraint requirements

**A label stating “DO NOT WEAR HELMET WHILE SEATED” shall be visible from each seating position**





# Chapter 14: Driving and Crew Areas

## Cab integrity testing

- All cabs with GVWR greater than 26,000 lbs. shall meet either:
  - SAE J2420 regulations
  - ECE Regulation 29



# Chapter 14: Driving and Crew Areas

## Cab rear view mirrors

- All primary rear view mirrors used by driver shall be adjustable from the driver's position.





# Chapter 15: Body, Compartments, & Equipment Mounting

## Access ladders

- All access ladders shall have **at least eight (8) inches** clearance between the rung and body or obstruction





# Chapter 15: Body, Compartments, & Equipment Mounting

## Handrails and hand holds:

- Constructed so that three (3) points of contact can be maintained at all times while ascending and descending



# Chapter 15: Body, Compartments, & Equipment Mounting

## Reflective striping

- **At least 50% of the rear** of the apparatus shall be equipped with **retroreflective** striping
  - Stripe shall be **six (6) inches** in width
  - Colors **shall be** red and either
    - yellow
    - fluorescent yellow
    - fluorescent yellow green





# Chapter 15: Body, Compartments, & Equipment Mounting

## Ground ladder protection

- Ground ladders shall not be subject to exposure to heat sources of 212 °F or greater
  - May have to have ladders protected when storing in pump areas or near exhaust piping





# Chapter 15: Body, Compartments, & Equipment Mounting

## Receiver and anchors for rope and removable winches:

- Receivers for removable winches shall be designed to provide a 2.0 to 1 straight line pull no-yield safety factor
- Receivers or anchors installed for use with rope operations shall be designed to provide at least 9,000 lbs. no-yield condition



# Chapter 16: Fire Pumps & Associated Equipment

## Combined NFPA 1901-2003

## Chapter 16 and Chapter 18

### – Pumping system rated into 2 categories:

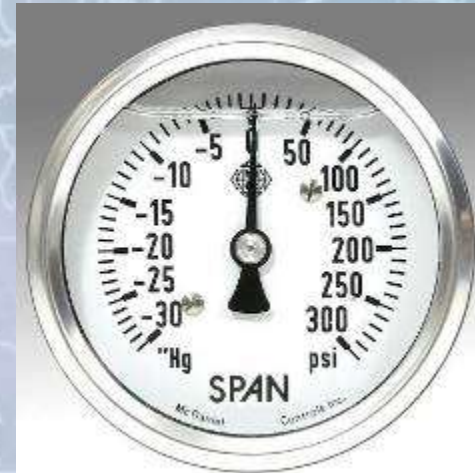
- 3000 gpm or less
- Over 3000 gpm



# Chapter 16: Fire Pumps & Associated Equipment

## New analog intake pressure gauge requirements:

- Intake pressure gauge shall read from 30 in. Hg vacuum to at least a gauge pressure of 300 psi
  - Gauge graduation lines on vacuum side every 1 in. Hg with major and intermediate lines emphasized and figures at least every 10 in. Hg





# Chapter 16: Fire Pumps & Associated Equipment

## Caps or closures for intake/outlet connections:

- Caps or closures for 4.0" or smaller intake/outlet must remain secured to apparatus



# Chapter 19: Aerial Devices

## Horizontal and vertical height ratings

- Rated horizontal reach of the aerial **may be less** than the extended length of the aerial that is used to determine the rated vertical height
- The minimum rated capacity shall remain constant throughout the entire operating envelope of the aerial device





# Chapter 19: Aerial Devices

## Envelope control technology

- Utilized with Aerial Apparatus in other countries
- Allows for aerial operational window to be controlled by system
- Aerial weight reductions with shorter horizontal reach
- Allows aerials to be packaged with smaller chassis



# Chapter 19: Aerial Devices

## Stabilizer position and aerial operation

- Aerial devices **can be operated over the side with the stabilizers not fully deployed, if:**

- An indicator is present at operators position indicating maximum extension in relation to angle of operation based on position of stabilizers





# Chapter 22: Line Voltage Electrical Systems

- The neutral conductor shall be colored white or gray
- The neutral conductor shall be bonded to the vehicle frame



# Chapter 24: Air Systems

- The breathing air compressor compartment shall be equipped with a temperature sensing device that actuates an audible and visual alarm when ambient temperature exceeds 140 °F





# Chapter 24: Air Systems

- The breathing air compressor shall have an air quality monitoring system



# Chapter 25: Winches

## Winch shall be equipped with:

- Clutch assembly to permit free spooling and quick removal of the wire or synthetic rope
- Free spooling clutch shall be accessible without reaching under apparatus





# Chapter 26: Trailers

## Three classifications of trailers:

- Type I
  - Trailers designed to remain connected throughout the response event and are dependent on each other for electrical power and conspicuity



# Chapter 26: Trailers

## Three classifications of trailers:

- Type II
  - Trailers designed to allow separation after arrival at the response and are not dependent on each other for electrical power and conspicuity





# Chapter 26: Trailers

## Three classifications of trailers:

- Type III
  - Open trailers designed to transport other vehicles, equipment, or containers that will be removed from the trailer after arrival



# Chapter 26: Trailers

## Low voltage warning devices for Type I and Type II trailers:

- It shall be connected to the red hazard light in the driving compartment





# Chapter 26: Trailers

## Optical warning devices for trailers:

- Type I trailer shall meet all requirements of NFPA considering combined vehicle and trailer as a single unit
- Type II trailer shall meet all requirements of NFPA considering the trailer as a single unit
- Type III trailer shall meet all requirements of NFPA for lower sides and rear zones (B,C,D)



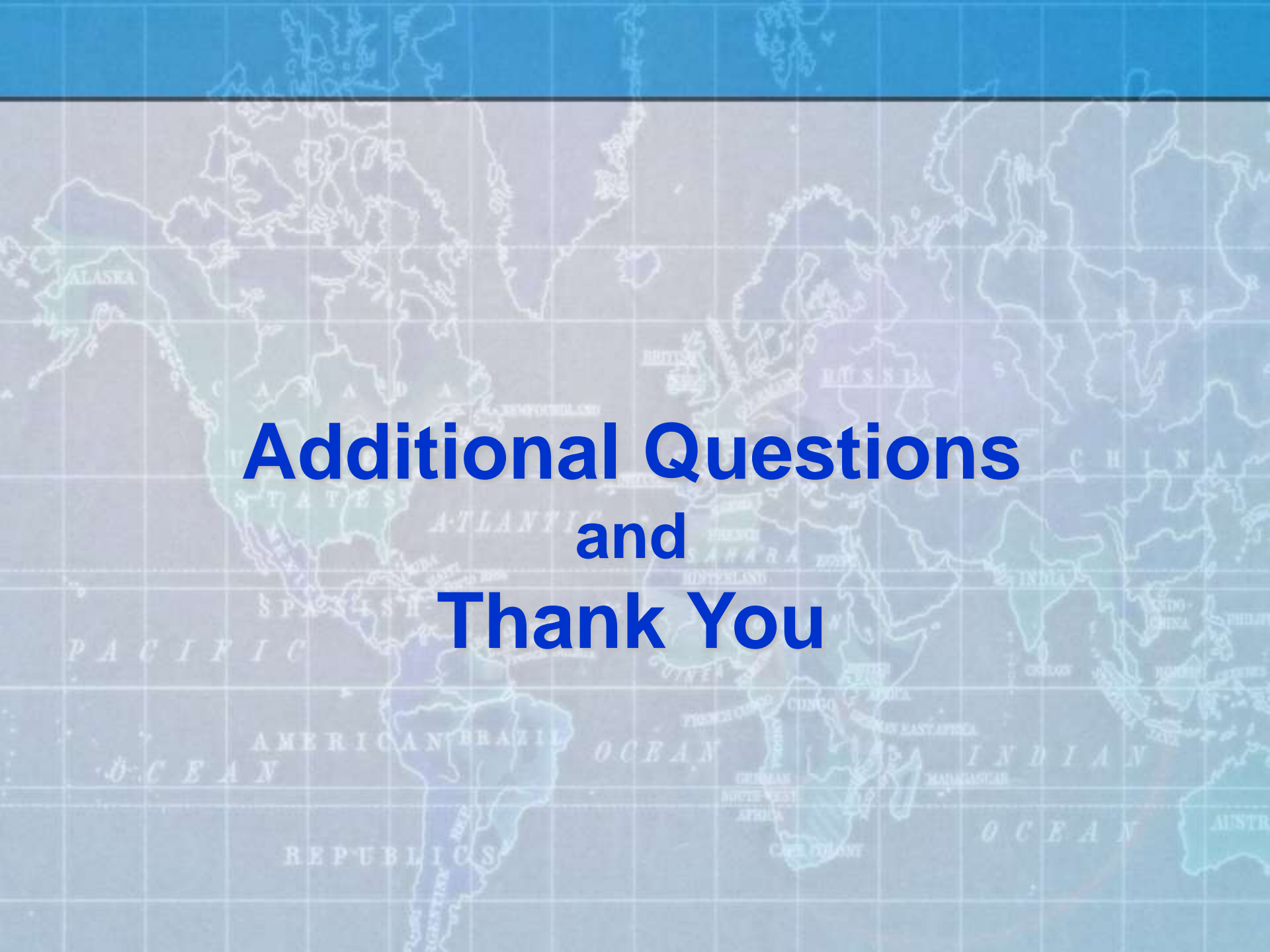
# Chapter 26: Trailers

## Reflective Markings for trailers:

- Type I trailer shall meet all requirements of NFPA considering combined vehicle and trailer as a single unit
- Type II trailer shall meet all requirements of NFPA considering the trailer as a single unit







**Additional Questions  
and  
Thank You**