

Natural Gas Vehicle Maintenance Facilities

RIDE
WITH US.



Objective

Create a Safe, Code Compliant Environment

- Understand the hazards
- Evaluate the functions needed
- Determine the number of bays needed
- Consult a Professional
- Check the applicable Codes

Applicable Codes

- National Fire Protection Association (NFPA)
 - *NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages*
 - *NFPA 70 National Electric Code (NEC)*
 - *NFPA 52 Vehicular Gaseous Fuel Systems Code*



National Fire Protection Association
The authority on fire, electrical, and building safety

- Texas Railroad Commission
 - [TX Admin Code \(TAC\), Title 16, Chapter 13 – Regulations for Compressed Natural Gas](#)

Applicable Codes

RIDE
WITH US.

- International Codes
 - *International Building Code*
 - *International Mechanical Code*
 - *International Fire Code*
 - *International Existing Building Code*
- Municipal / Local requirements and amendments
 - *Local Building Codes*
 - *Local Fire Inspector*





MAJOR vs. MINOR REPAIR GARAGE

RIDE
WITH US.

- MAJOR REPAIR GARAGE *engine overhauls, painting, body and fender work, and repairs that require draining of the motor vehicle fuel tank* Defined in NFPA 30A
- MINOR REPAIR GARAGE *lubrication, inspection, and minor maintenance work, such as engine tune-ups, replacement of parts, fluid changes, brake system repairs, tire rotation, and similar maintenance* Defined in NFPA 30A
- IFC - informal Minor definition *work is not performed on the fuel system and is limited to exchange of parts and maintenance requiring no open flame or welding.*

MAJOR REPAIR GARAGE ISSUES

- 1) Ventilation
- 2) Gas Detection
- 3) Heating Systems
- 4) Electrical Systems and Components
- 5) Other Considerations
 - *Migration of Gas*
 - *Existing Conditions and Code Triggers*
 - *LNG Venting and Spill Mitigation*



NGV MAINTENANCE FACILITY VENTILATION

RIDE
WITH US.

- Systems Approved Include:
 - 5 Air Changes per hour
 - Continuous operation or interlocked to gas detection
 - Interlocked systems reduce energy costs
 - Ventilation interlocked to lights is also compliant
 - Airflow from inlets at floor level - exhaust at high point

NGV MAINTENANCE FACILITY VENTILATION

RIDE
WITH US.

- IMC 502.16 - Venting
- *“Repair garages for the repair of vehicles which use CNG, LNG or other lighter-than-air motor fuels shall be provided with an approved mechanical ventilation system.”*



Gas Detection

- Required for non-odorized gases such as LNG NFPA 30A-7.4.7
- Required for pits and below grade work areas
- Must be calibrated and activate at 25% of LEL (Lower Explosive Level)
- Operation:
 - Distinct audible and visual alarm signals
 - Deactivation of all heating systems
 - Activation of mechanical ventilation system

Heating Systems

- *“Where major repairs are conducted on NGVs, open flame heaters or heating equipment with surface temperatures in excess of 750° F shall not be permitted in areas subject to ignitable concentrations of gas.” NFPA 30-A 7.6.6*
 - *Remove appliances with pilot or open flames*
 - *Remove other ignition sources – pressure washers, oil burners, and other heat producing appliances*
 - *Replace with forced air HVAC*

Electrical Systems

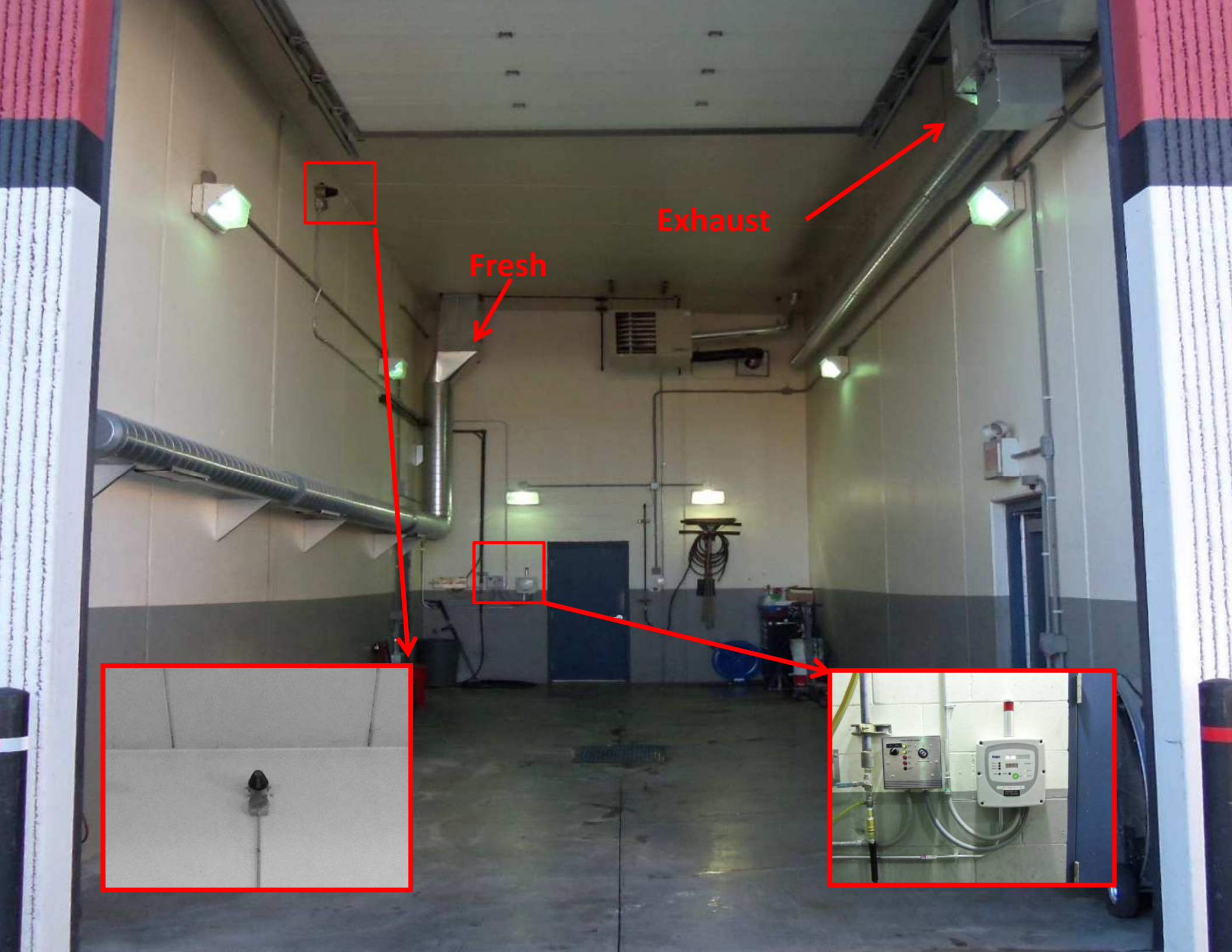
- *“In major repair garages where NGVs are repaired or stored, the area with 18” of the ceiling shall be designated a Class 1, Division 2 hazardous location NFPA 30-A 8.2.1*
- *“Electrical wiring and electrical utilization equipment shall be of a type specified by and shall be installed in accordance with NFPA 70, National Electrical Code.”*



RIDE
WITH US.

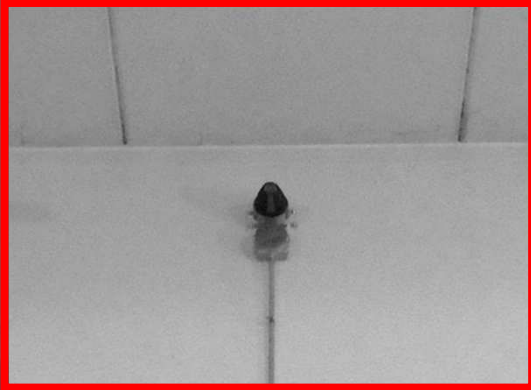
Modified Bay





Exhaust

Fresh



Adjacent Facilities

- Classification of Adjacent Areas.
- *“Areas adjacent to classified locations aren’t classified if mechanically ventilated at a rate of four or more air changes per hour, or when walls or partitions effectively cut off the adjacent area” NFPA 70 – 511.3 (E)*



• Summary

RIDE
WITH US.

Either

- 1 Defuel the vehicle and render it inert with Nitrogen prior to shop entry
- 2 Issue a Shop entry Permit
- 3 Identify the vehicle as inert
- 4 Complete the repairs
- 5 Remove the unit from shop
- 6 Fuel and return to service

**No Shop Modifications
Required**



RIDE
WITH US.

OR

Required Shop Modifications

- 1 Pull vehicle into work bay
 - 2 Complete work
 - 3 Remove from shop and return to service
- Methane Detection
 - Changed Heating Source and Ventilation System
 - Both are Latched to Methane Detection
 - Lowered Garage Door Opener
 - Lowered/Changed Lighting

RIDE
WITH US.

Results in a Compliant Garage



Thank You for Your Attention
Dennis Foose
972-742-1214



RIDE
WITH US.

Locations:

- Houston, Texas
- San Antonio, Texas
- Shreveport, Louisiana

888-925-6284

