Aviation Fuel Equipment Inspections… Why, Who, What & How…

Presented by:

Fred A. Cnota
President,
Aviation Fire Safety Consultants, Inc.

Why are we doing inspections?

- Airfield Safety
- Aircraft Safety
- Passenger Safety
- FAA Requirements

Why are we doing inspections?

Airfield Safety:

- Protection of environment:
  - spill prevention
  - spill control
- Fire Prevention
- Protection of employees
- Protection of equipment
- Protection of facilities

Why are we doing inspections?

- Aircraft Safety:
  - Prevent damage to fueling system
  - Prevent damage to aircraft systems:
    - engines
    - electrical systems
      - flight surfaces
- Fire Prevention

Why are we doing inspections?

Passenger safety:

Fuel properly loaded into aircraft
Proper actions in event of a spill
Proper actions in event of fire

Why are we doing inspections?

FAA 139 requires it!

139.321 states, in part….

(a) Each certificate holder who acts as a cargo handling agent must establish and maintain procedures for the protection of persons and property on the airport during the handling and storing of any material regulated by the Hazardous Materials Regulations (49 CFR 171 through 180) that is, or is intended to be, transported by air.

Why are we doing inspections?

Each certificate holder must, as a fueling agent, comply with, and require all other fueling agents operating on the airport to comply with, the standards established under paragraph (b) of this section and must perform reasonable surveillance of all fueling activities on the airport with respect to those standards.

(d) Each certificate holder must inspect the physical facilities of each airport tenant fueling agent at least once every 3 consecutive months for compliance with paragraph (b) of this section and maintain a record of that inspection for at least 12 consecutive calendar months.

Why are we doing inspections?

SAFETY

Who is doing inspections?

- Airfield Operations
- Airfield Security
- Airfield ARFF Departments
- Outside Consulting Companies

Who is doing inspections?

Each has their own strong points for doing the inspections. Airfield Operations, Security and ARFF are available 24/7. All know the airfield they work at. All are already on the airport payroll. Outside Consultants may not know the fuelers they are inspecting.

Each has a weakness as well. Operations may be tied up with weather events, construction, or any number of airside issues. Security has its hands full with perimeter fencing, gate control, TSA. Outside consultants may only be there one or two days of every ninety and they are an additional cost.

Who is doing inspections?

More and more, FAA Certification Inspectors and turning to ARFF Departments to handle the task of Refueling Equipment Inspections.

WHY??

- ARFF Departments usually have enough personnel to handle the inspections. They may already have a Fire Inspector.
- ARFF departments are not tied to any airline, fuel handler, or fueling company.
- Firefighters are used to dealing with requirements and know how to say "NO".

How are we going to get this done?

- Research other programs
  - See how other airports are getting it done
  - Checkout your options
- Work with other authorities
  - FAA
  - Airfield Ops
  - Security
  - Fuel Handling Companies/FBO's

How are we going to get this done?

Get your inspector trained!!

- Regardless of which agency is doing the inspecting, the inspector MUST know what they are looking at. Different equipment has different requirements. A Train the Trainer Inspector course or, at minimum, a FAA Approved Supervisory Fuel Handling is a good starting point.
- Where can you find this training?
  - Outside Training Companies
    - Approved companies are listed in AC 5230-4B
  - On Field Fuel Handling Companies
    - Get the fuelers view
    - Get the same training the fuelers get

How are we going to get this done?

Irrespective of where the inspector gets their training, they should be well versed in the following documents:

- FAA 139.321
- FAA AC5230-4
  Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports
- NFPA 407 (2017 edition)
  Standard for Aircraft Fuel Servicing
- ATA 103 (2017 edition)
  Standards for Jet Fuel Quality Control at Airports
- Local Requirements
  These are where all the requirements for airfield fuel handling come from.

How are we going to get this done?

After your inspector has initial training, you need to set up an inspection program. The bigger the airport, the more complex the program. Records must be kept, reviewed, and stored for the annual inspection by the FAA. Most FAA Inspectors do not visit the fuel handling company, they go to the inspecting agency and want everything there. It is the inspectors responsibility to have everything accurate and ready.

How are we going to get this done?

You need to decide how your program will work….

- Just required inspections?
  - Once every 90 days?
  - Random spot inspections?
  - Monitoring fuelers?

How are we going to get this done?

- Equipment coming to you?
  - Single location
  - Easy for inspector
  - Might be out of the elements
  - Hardship for FBO
    - Requires equipment to be driven to a possible remote location tying up a fueling employee for an extended period of time.

How are we going to get this done?

- Are you going to the equipment?
  - All over the airfield
  - See the unit in use
  - Able to monitor the fueling process
  - Element of surprise
  - May have to hunt the equipment down
  - May have to call a supervisor if issues are found
  - Out in the elements

Record Keeping

- Fuel Farms
- Mobile Fuel Equipment
- Fixed Fuel equipment
- Fueler Training

Fuel Farms

Fuel farms are the specific area that aviation fuels are received, stored and dispensed. They can be fed by pipeline, tanker trucks, or a combination of the two.

Mobile Fuel Equipment

- Tankers
- Hydrant Trucks

Mobile Fuel Equipment

- Ground Service Equipment Refuelers

Fixed Fuel Equipment

- Hydrant Carts
- Hydrant Stands

Fueler Training

The inspector is NOT responsible to do the fueler training, that is done by each fuel handling company, but the inspector IS responsible to verify that…

- Each fuel handling company has appropriately trained supervisors
- Each fueler receives approved initial training and refresher training as required
- Each fueler receives initial fire safety training and recurrent training

Record Keeping

Now that we know what needs to be inspected, how are we going to keep track?

- Paper Inspection forms
  - Cheap
  - Easy
  - Take up space
  - They get lost
- Computer based records
  - Easy to store
  - Multiple copies can be made
  - Can be costly

CHICAGO AIRPORT SYSTEM
FUEL SITE INSPECTION REPORT

❑ Midway ❑ O'Hare International

Date:	Firm:	Inspector:

INSPECTION TYPE: ❑ Spot ❑ Quarterly

EMERGENCY FUEL SHUT OFFS
NFPA 407 2-4.5

	Pass	Fail
1. Located outside probable spill area	❑	❑
2. Near route that would normally be used to exit spill area or to reach fire extinguishers	❑	❑
3. At least one shutoff conveniently accessible to each fueling position	❑	❑
4. Must shut off fuel flow to **all** hydrants that have a common exposure	❑	❑
5. Access to shutoffs must be kept clear **at all times**	❑	❑
6. Must be operationally checked quarterly	❑	❑
7. Are in addition to deadman controls	❑	❑
8. Deadman controls in working order and not tampered with	❑	❑

PLACARDS
NFPA 407 2-4.5.7

1. EMERGENCY FUEL SHUTOFF lettering at least 2" high	❑	❑
2. Method of operation indicated by arrow or word "PUSH" or "PULL"	❑	❑
3. Lettering to be sharply contrasting from background	❑	❑
4. Can be seen from a distance of 25 feet	❑	❑
5. Located at least 7 feet above grade	❑	❑

PIPING
NFPA 407 2-4.6

1. Piping properly labeled with product name	❑	❑
2. Buried flanges or valves not permitted	❑	❑
3. No leaks allowed	❑	❑

NOTES:

FIRE EXTINGUISHERS
NFPA 10 3-3

	Pass	Fail
1. One required at each loading station. Additional extinguishers as required.	❑	❑
2. Extinguishers adequately mounted with contrasting background	❑	❑
3. Weatherproof tag attached. Tamper devices intact. Tag current	❑	❑
4. Extinguishers protected from weather	❑	❑
5. Unrestricted access to each extinguisher	❑	❑

BONDING
NFPA 407 2-1.2, 3-4

1. Bonding wires kept on a reel or properly stored	❑	❑
2. Bonding wires in good condition	❑	❑
3. Clamps in good working order	❑	❑

HOSES
NFPA 407 2-2

1. Hoses shall be free of cracks and excessive wear	❑	❑
2. Hoses must be properly stored	❑	❑
3. Nozzles covered or capped	❑	❑
4. No banded clamps	❑	❑

SIGNAGE
UFC ARTICLE 79

1. **"FLAMMABLE"** and **"NO SMOKING"** signs required and are at least 3" high	❑	❑
2. Type of fuel required on piping and at dispensing site, **"JET A"** and **"AVGAS"**	❑	❑

STORAGE
NFPA 407, UFC ARTICLE 79

1. No Open trash containers	❑	❑
2. Grounds kept free weeds, trash or other combustibles	❑	❑
3. No open fuel containers	❑	❑
4. All containers properly marked	❑	❑

INSPECTOR

Signature

Print Name

Fuel Vehicle Inspection Report

Vehicle Number:	10		
Location:	Ohare-FuelSatellite		
Firm:	Ohare-SignatureFlightSupport		
Vehicle Type:	HydrantTruck	**Fuel Type:**	Jet A
Date of Inspection:	May 28, 2004	**Inspection Type:**	Spot
Inspector ID:	15493		
Operator:	Jim R	**Operator ID:**	7747
Capacity (gal):	800		
Inspection Tag Type:	Quarterly	**Inspection Tag #:**	*None
Remarks:	No problems		

Emergency Cutoff System NFPA 407 2-3.14

Pass	1. "EMERGENCY FUEL SHUTOFF" sign is at least 2" high, contrasting color.
Pass	2. Method of operation "PUSH" or "PULL" or indicated by an arrow.
Pass	3. Two cutoffs required, one on each side of the vehicle.
Pass	4. Quick acting, remote from fill openings and discharge outlets.
Pass	5. Must be operable from ground or any elevated platform.
Pass	6. Checked for proper operation during fueling operation.

Hoses, Nozzles, and Piping NFPA 407 2-2

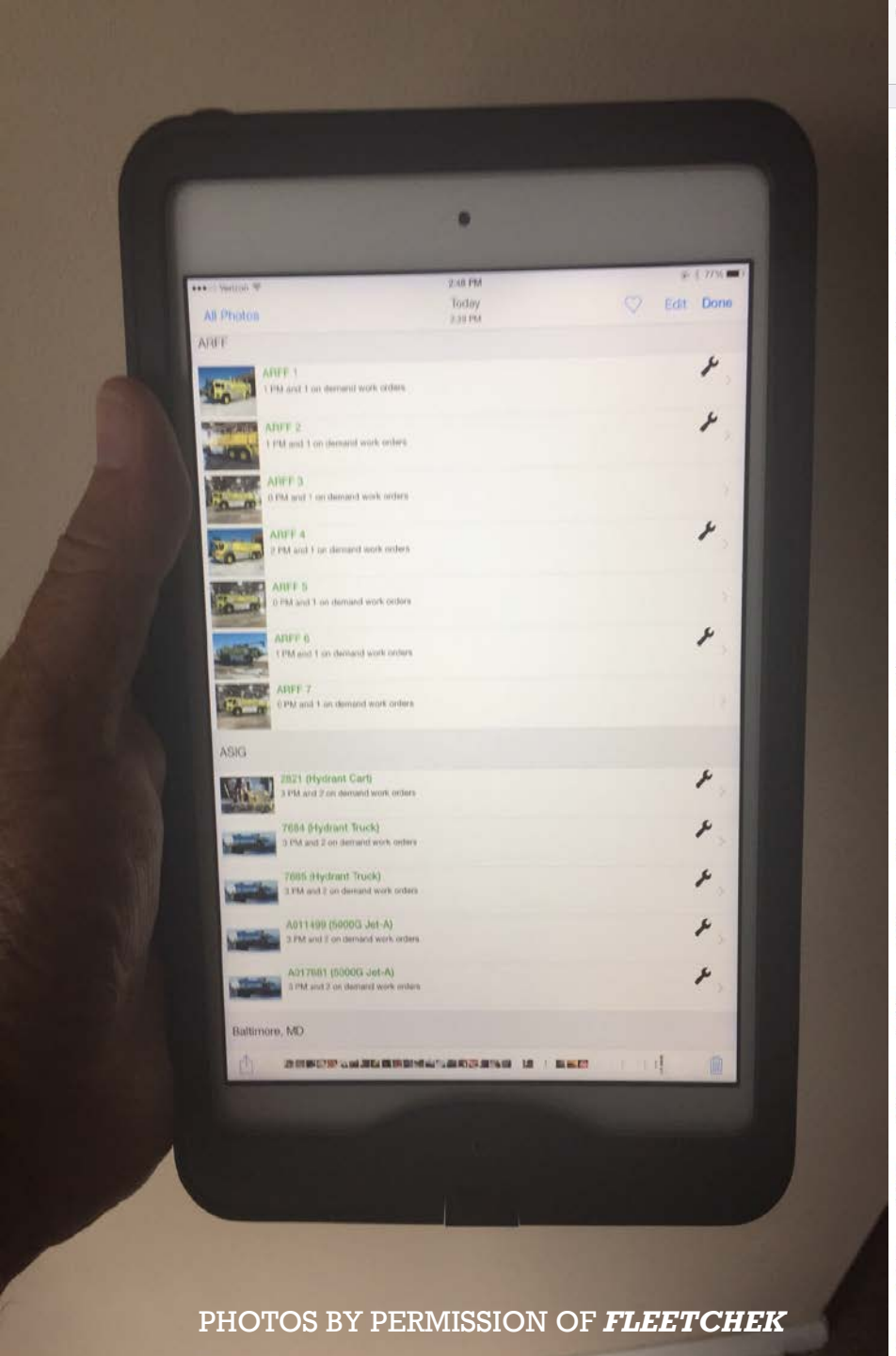
Pass	1. Dust caps and nozzles stored properly.
Pass	2. Extend hose, check for leaks using working pressure.
Pass	3. Check nozzle screen for hose particles.
Pass	4. Check for kinked, crushed, soft, or severely worn hoses.
Pass	5. Deadman controls required, may be part of nozzle for overwing filling.
Pass	6. No leaks from any piping, fittings, joints, hose, or nozzle at ANY time.

Bonding NFPA 407 2-1.2, 3-4

Pass	1. Cables to be free of kinks, damage, or paint.
Pass	2. Clamps to be free of paint, properly attached to vehicle, and in good working order.
Pass	3. Both clamps and cables stored properly to prevent damage.

Lights NFPA 407 2-3.6 5

Pass	1. Head, brake, tail, and marker lights operational.
Pass	2. No cracked or missing lenses. Must be fully enclosed and gasketed.



PHOTOS BY PERMISSION OF ***FLEETCHEK***

●●●○○ Verizon 2:37 PM 80%

Sign out **Fleet Overview**

1221 (10000 Jet A)
3 PM and 2 on demand work orders

1278 (Hyd Truck)
3 PM and 2 on demand work orders

1279 (Hyd Truck)
3 PM and 2 on demand work orders

1280 (Hyd Truck)
3 PM and 2 on demand work orders

1281 (Hyd Truck)
3 PM and 2 on demand work orders

1282 (Hyd Truck)
3 PM and 2 on demand work orders

1286 (Hyd Truck)
3 PM and 2 on demand work orders

1303 (1200 Diesel)
3 PM and 2 on demand work orders

1306 (1000 Gas)
3 PM and 2 on demand work orders

1307 (1200)
3 PM and 2 on demand work orders

1308 (400 Gas 800 Diesel)
3 PM and 2 on demand work orders

1309 (300 Gas 1200 Diesel)
3 PM and 2 on demand work orders

1662 (900 Gal)
3 PM and 2 on demand work orders

1663 (Sump Truck)
3 PM and 2 on demand work orders

1664 (Sump Truck)
3 PM and 2 on demand work orders

Record Keeping

Once you decide *how* you will keep your records, you must decide *what* items will be inspected. For example…

- Tires
- Signage
- Electrical systems
- Hoses
- Nozzles
- Local requirements

Record Keeping

NFPA 407 is a extensive document that spells out requirements in detail. You need to condense these requirements on your inspection form. You need to inspect all the required items, but you many not have to list each one separately.

CHICAGO AIRPORT SYSTEM
FUEL SERVICE VEHICLE INSPECTION REPORT

☐ Midway ☐ O'Hare International

Date:	Firm:	Operator:	Operator ID #
Vehicle Type: ☐ Tanker ☐ Hydrant Cart ☐ Other:		Type of fuel: ☐ Jet A ☐ AvGas ☐ Auto Fuel	Capacity: gals

INSPECTION TYPE: ☐ Spot ☐ Quarterly

EMERGENCY CUTOFF SYSTEM
NFPA 407 2-3.14

	Pass	Fail
1. **"EMERGENCY FUEL SHUTOFF"** sign at least 2" high ,contrasting color	☐	☐
2. Method of operation "PUSH" or "PULL" or indicated by an arrow	☐	☐
3. Two cutoffs required, one on each side of the vehicle	☐	☐
4. Quick acting,remote from fill openings and discharge outlets	☐	☐
5. Must be operable from ground or any elevated platform	☐	☐
6. Checked for proper operation during fueling operation	☐	☐

HOSES AND NOZZLES
NFPA 407 2-2

1. Dust caps and nozzles stored properly	☐	☐
2. Extend hose, check for leaks using working pressure	☐	☐
3. Check nozzle screen for hose particles	☐	☐
4. Check for kinked, crushed, soft, or severely worn hoses.	☐	☐
5. Deadman controls required, may be part of nozzle for overwing filling.	☐	☐

BONDING and GROUNDING
NFPA 407 2-1.2

1. Cables to be free of kinks, damage or paint	☐	☐
2. Clamps to be free of paint, properly attached to vehicle, and in good working	☐	☐
3. Both clamps and cables stored properly to prevent damage	☐	☐

LIGHTS
NFPA 407 2-3.6.5

1. Head, brake, tail, and marker lights operational	☐	☐
2. No cracked or missing lenses, Must be fully enclosed and gasketed	☐	☐

NOTES:

INSPECTOR

Signature

Print Name

SIGNAGE
NFPA 407 2-3.17

	Pass	Fail
1. The word **"FLAMMABLE"** on each side and rear in 3" high letters.	☐	☐
2. Product name **"AVGAS"** or **"JET A"** on each side and rear in 3"high letters	☐	☐
3. **"NO SMOKING"** on all sides, front, rear, and cab of vehicle	☐	☐
4. Signs must be unobstructed	☐	☐

FIRE EXTINGUISHERS
NFPA 407 2-3.8, NFPA 10

1. Tankers: two 20# B/C rated extinguishers, one on each side with current inspection Hydrant carts: at least one 20# B/C rated extinguisher	☐	☐
2. Readily accessible from the ground.	☐	☐
3. Area adjacent to or behind extinguisher contrasting color	☐	☐
4. Extinguisher to be kept clear of ice, snow, or equipment	☐	☐

GENERAL VEHICLE
NFPA 407 2-3.5, 2-3.6, 2-3.7, CFD Requirements

1. Exhaust not to discharge near fueling pumping equipment. No leaks allowed. Must be secured to vehicle.	☐	☐
2. Electrical equiptment located outside the cab must be rated for hazardous locations	☐	☐
3. All compartments to have open floor for adequate ventilation	☐	☐
4. Batteries to be covered and secured	☐	☐
5. Tire condition: ☐ Good ☐ Fair ☐ Poor		
6. Operating parking brake or two wheel chocks	☐	☐
7. Windshield wipers/washers operating	☐	☐
8. Windshield defroster and blower operating	☐	☐
9. No fluid leaks from engine	☐	☐

VEHICLE CAB
NFPA 2-3.10.1.2

1. **"NO SMOKING"** sign in 3" letters conspicuously posted	☐	☐
2. Ashtray and lighter removed, rendered inoperable, or sealed shut	☐	☐
3. Cab free of trash,rags, or other combustible materials	☐	☐

OPERATOR (IF VIOLATIONS ARE FOUND)

Signature

Record Keeping

- Any forms you want to develop and use must be approved by the FAA certification inspector and placed in the airport ACM.

CHICAGO FIRE DEPARTMENT
BUREAU OF OPERATIONS
DISTRICT 3 - AIRPORT OPERATIONS
Office: 773-686-4814 Fax: 773-686-4813

Notification of Fueling Equipment Out of Service

The following Fueling Equipment has been placed out of service by Maintence or Supervisory personnel. This piece of equipment will remain out of service and off the AOA, until re-inspected by The Chicago Fire Department and deemed in compliance. This information MUST be faxed to the Chicago Fire Department Inspector at the same time the vehicle is placed out of service.

Date: _____

Company Name: _____

Contact Number: _____

Vehicle Number: _____

Vehicle Type: _____

Reason:

_____

_____

_____

Estimated Duration: _____

Name of person placing Vehicle out of service: _____(print)

_____(Signature)

To be faxed to: Chicago Fire Department
Fueling Equipment Inspector
773-894-7159

Original Date: December 9, 2004
Revision Date: 31 JUL 2009

FAA Approval: 3 AUG 2009 Micia Halpin

Record Keeping

- There are certain forms the FAA *requires*:
  - Supervisory Fuel Handling Certificate
    - Obtained from the Fuel Handling Trainer/Supervisor
    - MUST be from a FAA Approved Training company (AC 5230-4B)
    - MUST have the proper wording (AC 5230-4)
  - Supervisory Fuel Handling Confirmation
    - Downloadable from the FAA
    - Attaches to the certificate
  - Line Service Fuel Safety Training Form
    - What the Trainer uses to document his classes
    - Downloadable from the FAA

Record Keeping

- Inspection records
  - Fixed and mobile equipment must be inspected at least every 90 consecutive days.
    - If something fails, both the failure and re-inspection must be available
  - Inspection records must be kept for at least 12 months (24 months suggested)
  - Records can be either paper or electronic
    - There are companies that specialize in electronic recording programs that are acceptable to the FAA
  - Fueler training records must be kept for 12 months
    - Obtained from each fuel handling company

Starting the Inspection Program

Before you actually go out to inspect, some things to consider:

- Make sure your inspector is prepared
  - Training complete?
  - Forms ready?
  - Everything properly approved?
  - Equipment ready?
  - Dress for the weather
- Inter-agency cooperation
  - Introduce yourself
  - Explain the program
  - Explain the form

Starting the Inspection Program

- Allow ample time to accomplish your task
  - Don't have unrealistic time lines
- Take a FBO Supervisor with you
  - Finding equipment
  - Unfamiliarity with the equipment
  - Questions either of you may have
  - Spirit of cooperation

Starting the Inspection Program

Remember why we are doing these inspections, PUBLIC SAFETY. The fuel handling company is *NOT* the enemy. Everyone *working together* to maintain a safe travel and working environment is the goal. An iron fist *does not benefit anyone.*

Inspecting 101

As with all inspections, some items are more critical then others. The inspector must be knowledgeable enough about aircraft fuel servicing to be able to decide which items can be delayed and which items require a piece of equipment to be placed Out of Service.

Inspecting 101

Some items that require an Out of Service designation…..

- Leaks
- INOP safety devices
- Missing Safety Equipment
- Damaged Equipment
- Unsealed interlock override

Inspecting 101

Items that need repair, but not necessarily be placed Out of Service….

- Worn tires
- Faded, damaged decals
- Dirty equipment
- A broken bonding cable
  - You only need 1!

GOOD

FAIR

ARE YOU KIDDING ME??


REMEMBER
PRIOR TO MOVING THIS VEHICLE,
MAKE SURE ALL HOSES AND
CABLES HAVE BEEN DISCONNECTED
FROM THE AIRCRAFT AND THE
AIRCRAFT'S SERVICE PANEL
DOOR(S) SECURED.
♦ ♦ ♦ THINK SAFETY ♦ ♦ ♦
22 11:18AM


FLAMMABLE
JET A
NO SMOKING
1863
3
20 2:12PM


TRUCK
TRACTOR
PROTECTION
NORMAL
EMERGENCY
NOT FOR PARKING
NOTE
SEAL


Signature
FLIGHT SUPPORT


TUG
CG1076
DAVCO

Inspecting 101

Reserve your Our of Service powers for only the severe violations. A fueling vehicle that is Out of Service is costly in many ways to the fuel handling company…..

- The repair itself
- The loss of revenue
- The employees loss of income
- The loss of revenue to the airport

Inspecting 101

A high quality inspection program is not determined by how many violations you can find. A high quality program has cooperation between agencies, respect between all parties, approachability and understanding. Everyone on the airfield relies on one another.

Inspecting 101

You will find that as your program matures, you will see less and less equipment violations. The dreaded inspector will become someone who is not feared, but look upon as someone who is looking out for people and approachable. Remember, these are machines, and machines sometimes break……

Questions?

This has been a very brief introduction into inspections of Airfield Refueling Equipment Inspections. There is much that was not covered due to time limitations. Are there any general questions I can answer?

Assistance

If you require a Train the Trainer Inspector Course, a FAA Approved Train the Trainer Supervisory Fuel Handling Course, help setting up your inspection program, or help navigating NFPA 407 please feel free to contact me.

Fred A. Cnota
Aviation Fire Safety Consultants, Inc.
fcnota@avfiresafety.com
1(773)507-6324

Training to make your airport safer

fcnota@avfiresafety.com **1(773)507-6324**