NuStar, LP Tank Terminal
EMERGENCY OPERATIONS GUIDELINES

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NuStar Energy
Tank Terminals
On-Call Emergency
Contact List

1) Danny McCrory, Manager
   a) Home 719-545-1777 (Pueblo)
   b) Mobile 650-0390

2) John Butts
   a) Home 594-4668
   b) Mobile 650-1061

3) NuStar Pipeline Control Center
   800-481-0038

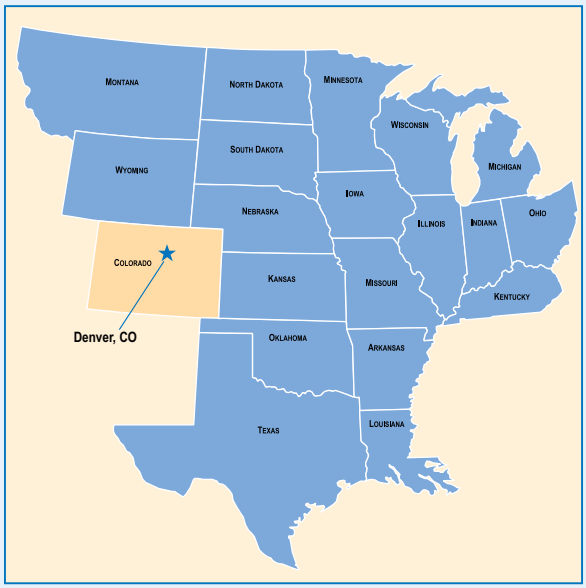
Colorado Springs, CO

Colorado Springs, CO
Marketing Contact: Greg Schmidt (210) 345-4334
e-mail: gregory.schmidt@nustarenergy.com
Manager: Danny McCrory (719)391-0942
e-mail: danny.mccrory@nustarenergy.com

NuStar
7810 Drennan Road, Colorado Springs, CO, 80925
Tel: (719)391-0942 Fax: (719)391-0945

Terminal Specifications

Tanks	8 tanks. Capacity: 324,000 barrels.
Products/Materials	Gasoline & Diesel
Modes Served	Pipeline. Truck.
Modes of Receipt	Pipeline



EMERGENCY RESPONSE		
ADDRESS:	7810 Drennan Road	**MAP #:** F-33
OCCUPANT:	NuStar Energy	
RESPONSIBLE PARTY:	See emergency contact sheet	
BUILDING DESCRIPTION:	Petroleum bulk station and terminal	
ACCESS TO BUILDING:	Drennan Road west from Marksheffel. Interior service loop around facility.	
FIRE ALARM PANEL:	Office building at main entry. Adjacent to west exterior door.	**KNOX BOX LOCATION:** Main entry and exit gates.
WATER SUPPLY LOCATION:	12-inch fire hydrant loop around tank farm.	
STANDPIPE CONNECTIONS:	6-inch dry foam line through tank farm. See site plan.	
SPRINKLER CONNECTIONS:	Deluge system serving the loading rack. FDC at concrete deluge valve pit. See site plan.	

HAZARDOUS MATERIALS		
PRODUCTS	Combustible Liquids Flammable Liquids	**40M – 1** Diesel = 1.7 million gallons **30M – 2** Jet/A Turbine fuel = 1.3 million gallons **30M – 3** Jet/A Turbine Fuel= 1.3 million gallons **4M – 1** Slop = 180,000 gallons **30M – 1** Alcohol (Ethanol)= 1.3 million gallons **55M – 1** Unleaded = 2.3 million gallons **55M – 2** Unleaded premium = 2.3 million gallons **80M – 1** Unleaded gasoline = 3.4 million gallons
QUANTITY	Combustible Liquids: Flammable Liquids:	4,300,000 total gallons maximum inventory 9,480,000 total gallons maximum inventory
LOCATION	Combustible Liquids (COM) Flammable Liquids (FLA)	See Site Plan

UTILITIES SHUT OFF LOCATIONS		
GAS: Natural gas at main office building.	**ELECTRIC:** Main disconnects at sub transformer.	**WATER:** Two locations on Drennan Road.
NUMBER OF OCCUPANTS: Day – 3 Night – 0 50-70 drivers during any given day.		
ADDITIONAL CONSIDERATIONS: 2,500 gallons of ATC foam stored at pump skid		
PLOT PLANS: See attached site plan.		

INCIDENT COMMAND			
ADDRESS:	7810 Drennan Road	**MAP #:**	F-33
OCCUPANT:	NuStar Energy		
RESPONSIBLE PARTY:	See emergency contact sheet		

BUILDING CONSTRUCTION			
TYPE: V-N	**STORIES:** 1	**ROOF TYPE:** ¼-inch steel	**TRUSS TYPE:** Metal bar joists
ROOF ACCESS: N/A	**BASEMENT ACCESS:** N/A	**FIRE CONTROL ELEVATOR:** N/A	

WATER SUPPLY		
PRESSURE REDUCING VALVES: N/A	**LOCATION:** 12-inch hydrant loop on site. See site plan.	
CAPABILITY: 3000gpm at 20psi at most remote hydrant		
STANDPIPE CONNECTIONS: Dry foam line and fixed monitors	**AREAS SERVED:** Tank area	**VALVE LOCATIONS:** See site plan
SPRINKLER CONNECTIONS: Deluge valve pit	**AREA SERVED:** Terminal loading rack	**VALVE LOCATIONS:** See site plan
ELEVATOR LOCATIONS: N/A	**KEY LOCATION:** Entry and exit gates	**STAIRWELL LOCATIONS:** N/A

HAZARDOUS MATERIALS		
PRODUCTS	Combustible Liquids Flammable Liquids	**40M – 1** Diesel = 1.7 million gallons **30M – 2** Jet/A Turbine fuel = 1.3 million gallons **30M – 3** Jet/A Turbine Fuel= 1.3 million gallons **4M – 1** Slop = 180,000 gallons **30M – 1** Alcohol (Ethanol)= 1.3 million gallons **55M – 1** Unleaded = 2.3 million gallons **55M – 2** Unleaded premium = 2.3 million gallons **80M – 1** Unleaded gasoline = 3.4 million gallons
QUANTITY	Combustible Liquids: Flammable Liquids:	4,300,000 total gallons maximum inventory 9,480,000 total gallons maximum inventory
LOCATION	Combustible Liquids (COM) Flammable Liquids (FLA)	See Site Plan

EXPOSURES	
INTERIOR: N/A	**EXTERIOR:** Miscellaneous buildings and storage tanks
OCCUPANT ESCAPE ROUTES: From site, east on Drennan then north or south on Marksheffel	
EVACUATION OBSTACLES: N/A	
VENTILATION CONSIDERATIONS: N/A	
SALVAGE AND OVERHAUL CONSIDERATIONS: On site containment dikes and pond	
MUTUAL AID: Peterson Air Force Base FD	**INTERIOR DIVISIONS**
STAGING AREAS: Adjacent open field areas	

TANK OVER FILL WITH FIRE

EN-ROUTE

1. Request Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar. (approximate amount overfill, last known fill rate etc.).
3. Request response from Responsible Party (RP)

ON-SCENE

1. Rescue.
2. Record the following:
   - Tank I.D.
   - Tank contents
   - Tank level (obvious overfill if pool fire/demarcation down the side of tank)
   - Tank condition
3. Shutdown process. See Emergency Shutdown (ESD) on **HazMat Map.**
4. Assign Exposure Division; Exposure Protection.
5. Assign Safety Officer and P.I.O.
6. Cool Foam Chambers with hand lines and monitors.
7. Cool any piping, motors, pumps or exposed flanges.
8. Consider additional alarm assignments.
9. Assign Foam Division; Verify foam skid is operational with foam in tank.
10. Monitor skid and pressure performance throughout operation.
11. Assign ReHab Division.
12. Activate OEM
13. Assign Tank Level Division.
    - Establish a method to down-load (transfer) fuel from fire tank and report to command.
    - The approximate amount of product to be transferred out of the tank can be determined by the amount of solution to be applied. (**See Flow Information Chart**)
14. Monitor tank level throughout the incident and advise when foam can be applied.
15. Initiate pool fire extinguishment by using Peterson AFB Crash Trucks.
16. Initiate facility equipment check to facilitate product transfer.
17. If product is flowing from piping or flanges as a result of heat exposure see section **FLANGE / PIPING FIRE**.
18. Consult with Valero RPs to determine course of action:
    - Free burn product to appropriate level for foam induction.
    - Transfer of product to another tank, resulting in contamination prior to foam induction.
19. Once tank level is low enough to apply foam, begin foam application.
    - Refer to **FOAM APPLICATION FOR TANK FIRES**.
    - Maintain communication with Tank Level Division.

20. Fire conditions should be visibly diminished within 50 minutes. If not, begin considering alternate application methods (keep in mind, it may take up to one hour to extinguish).
    - Additional topside application with monitors.
    - Subsurface injection (will need special High Back Pressure Nozzle.
    - Foam Wand application.
21. If extinguishment is not completed within two attempts, product should be continually transferred with consultation as to controlled burn or additional attempts. This should be Valero's decision unless extenuating public hazard is present.
22. If fire is controlled and once confirmed out:
    - STOP foam application
    - RECORD tank level.
    - Begin investigation.
    - Flush ALL foam lines
    - Restock foam supply to FULL.

SEAL FIRE

EN-ROUTE

1. Request from Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar.
3. Request response from Responsible Parties (RP).

ON SCENE

1. Rescue.
2. Record the following:
   - Tank I.D.
   - Tank contents
   - Tank level
   - Tank condition
3. Shutdown process. See Emergency Shutdown (ESD) on HazMat Map.
4. Assign Exposure Division; Exposure Protection.
   - Cool Foam Chambers with hand lines / monitors.
5. Assign Safety Officer and P.I.O.
6. Consider additional alarm assignments.
7. Consider trying to extinguish the seal fire with hand extinguishers (2 or 3) applied at the top manhole cover by lifting the cover about 2 inches and cut off the oxygen supply.
8. Assign Foam Division; Verify foam skid is operational with foam in tank.
9. Assign ReHab Division.
10. Activate O.E.M.
11. Assign Tank Level Division.
    - Determine foam application feasibility.
    - Monitor tank level throughout incident.
12. Begin foam application.
    - Refer to **FOAM APPLICATION FOR TANK FIRES**.
    - Monitor time of flow so as not to sink roof (**See Flow Times in the Flow Information Chart**).
13. If tank extinguishment is not accomplished after two attempts, then product should be transferred as quickly as possible.
14. Once fire confirmed out:
    - STOP foam application
    - RECORD tank level
    - Begin investigation
    - Flush ALL foam lines
    - Restock foam supply to FULL

TILTED FLOATING ROOF FIRE

EN-ROUTE

1. Request from Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar.
3. Request response from Responsible Parties (RP).

ON SCENE

1. Rescue.
2. Record the following:
   - Tank I.D.
   - Tank contents
   - Tank level
   - Tank condition
3. Shutdown process. See Emergency Shutdown (ESD) on **HazMat Map.**
4. Assign Exposure Division; Exposure Protection.
   - Cool foam chambers with hand lines / monitors.
5. Assign Safety Officer and P.I.O.
6. Consider additional alarm assignments.
7. Assign Foam Division; Verify foam skid is operational with foam in tank.
8. Assign ReHab Division.
9. Activate O.E.M.
10. Assign Tank Level Division.
    - Determine foam application feasibility.
    - Monitor tank level throughout incident.
11. Begin foam application.
    - Refer to **FOAM APPLICATION FOR TANK FIRES**.
12. If after application time of 50 minutes with no success, consider alternate application methods (keep in mind, it may take up to one hour to extinguish).
    - Additional topside application with monitors.
    - Subsurface injection (will need special High Back Pressure Nozzle.
    - Foam Wand application.
13. If tank extinguishment is not accomplished after two attempts, then product should be transferred as quickly as possible.
14. If after additional attempts and no extinguishment, consider filing the tank with water to raise the roof or product level.
15. Once fire confirmed out:
    - STOP foam application
    - RECORD tank level
    - Begin investigation
    - Flush ALL foam lines
    - Restock foam supply to FULL

SUBMERGED ROOF WITH FIRE

EN-ROUTE

1. Request from Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar.
3. Request response from Responsible Parties (RP).

ON SCENE

1. Rescue.
2. Record the following:
   - Tank I.D.
   - Tank contents
   - Tank level
   - Tank condition
3. Shutdown process. See Emergency Shutdown (ESD) on HazMat Map.
4. Assign Exposure Division; Exposure Protection.
   - Cool foam chambers with hand lines / monitors.
5. Assign Safety Officer and P.I.O.
6. Consider additional alarm assignments.
7. Assign Foam Division; Verify foam skid is operational with foam in tank.
8. Assign ReHab Division.
9. Activate O.E.M.
10. Assign Tank Level Division.
    - Determine foam application feasibility.
    - Monitor tank level throughout incident.
11. Begin foam application.
    - Refer to **FOAM APPLICATION FOR TANK FIRES**.
    - Maintain communication with Tank Level Division.
12. Fire conditions should be visibly diminished within 50 minutes. If not, consider alternate application methods (keep in mind, it may take up to one hour to extinguish).
    - Additional topside application with monitors.
    - Subsurface injection (will need special High Back Pressure Nozzle.
    - Foam Wand application.
13. If extinguishment is not accomplished after two attempts, product should be transferred as quickly as possible.
14. Once fire confirmed out:
    - STOP foam application
    - RECORD tank level
    - Begin investigation
    - Flush ALL foam lines
    - Restock foam supply to FULL

FLANGE/PIPING FIRE

EN-ROUTE

1. Request from Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar.
3. Request response from Responsible Parties (RP).

ON SCENE

1. Rescue.
2. Confirm location and product flow(s) involved.
3. Assign Exposure Division; Exposure Protection.
   - Cool operations on all exposed piping and flanges.
4. Assign Safety Valve Division.
   - Identify proper isolation valves.
   - Close all relevant isolation valves to stop (Block In) the flow.
5. Determine if flows have stopped or are continuing. If continuing, see **FLOWING** section.
6. Once flows have stopped, see **STOPPED** section.

FLOWING FLANGE/PIPING FIRE

EN-ROUTE

1. Request from Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar.
3. Request response from Responsible Parties (RP).

ON SCENE

1. Responsible party to de-pressure pipes at a remote location if a valve is available and can be performed safely and to determine which valve(s) would need to be operated to isolate leaking flange/pipe.
2. Assign Logistics Division.
   - Dry chemical extinguisher procurement and capabilities.
   - Foam availability and procurement.
3. Assign Drainage Division.
   - Provide drainage control from diked areas.
   - Monitor remote impound area volume.
   - Monitor or control any possible fire involvement along drain paths.
   - Consider use of Street Department for additional containment construction
4. Stage a minimum of two (2) foam hand lines for foam delivery and extinguishment.
5. Stage sufficient hand lines for backup protection and support.
   - These may be water or foam but keep in mind that foam is limited and required for extinguishment lines. Minimum of two (2).
   - If possible, stage a crash truck for turret use for crew protection.
6. Assign HazMat as Flange Division.
   - HazMat should procure sufficient tools and materials to repair piping as necessary to control or stop the flow of product.
   - HazMat will be in control of operations when approaching the fire.
7. Coordinate the staging of dry chemical fire extinguishers for use on fire.
   - Minimum of one (1) wheeled unit and/or two (2) 20# hand-helds
8. Approach the fire with appropriate foam lines, providing the “cone of protection”.
9. Once approach is made on the pipe flange, discharge the dry chemical extinguisher to extinguish the fire.
10. HazMat is to stop the flow of product by tightening the flange or patching the pipe.
    - Foam and cooling lines are to be used in a manner sufficient to cool off hot steel and provide a sufficient vapor blanket to prevent re-ignition during the operation.
11. Once the flange/pipe is secured, do what is necessary to secure the site.
    - Remove product from the tank of pipe to reduce possible flow again.
    - Repair isolation valves to adequately stop (Block In) the point of failure.
    - Begin investigation.
    - Replace dry chemical extinguishers ASAP.
    - Restock the foam supply ASAP (within 24 hours).

STOPPED FLANGE/PIPING FIRE

1. Position Peterson AFB crash truck and additional foam handlines so that appropriate appliances can be brought to bear on entire pool fire area.
   - This may include the use of the dry monitors in the center of the dike. Make certain that appropriate quantities of foam are carried to the selected monitor(s) prior to use.
2. Once fire confirmed out:
   - Secure the site of hazards
   - Begin the investigation

PUMP MOTOR FIRE

EN-ROUTE

1. Request Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar (approximate amount overfill, last known fill rate etc.).
3. Request response from Responsible Party (RP).

ON-SCENE

1. Determine if fuel is leaking or has leaked.
   - If product is flowing see **FLOWING FLANGE/PIPING FIRE** section.
   - If product is contained, close appropriate valves to isolate.
2. Assign Exposure Division; Exposure Protection.
   - Cool the pump and piping assembly immediately.
3. Determine if motor or pump is involved.
   - Switch pump breaker to “off” position at the electronic building.
   - If motor is involved, use appropriate dry chemical or CO_2 extinguishers.
   - If pump is involved, use dual agent attack (dry chemical and water).
4. Once fire is confirmed out:
   - Monitor the pump/motor to ensure no leaks occur
   - Apply vapor suppression agent as necessary

TANK EXPLOSION WITH FIRE

EN-ROUTE

1. Request Peterson AFB for crash truck and foam supply (buckets).
2. Confirm Amarillo shut down and request any additional information from NuStar (what caused explosion, etc.).
3. Request response from Responsible Party (RP).

ON-SCENE

1. Rescue.
2. Record the following:
   - Tank I.D.
   - Tank contents
   - Tank level (obvious overfill if pool fire/demarcation down the side of tank)
   - Tank condition
3. Shutdown process. See Emergency Shutdown (ESD) on **HazMat Map.**
4. Assign Exposure Division; Exposure Protection.
   - Cool Foam Chambers with hand lines and monitors.
5. Assign Safety Officer and P.I.O.
6. Consider additional alarm assignments.
7. Assign Foam Division; Verify foam skid is operational with foam in tank.
8. Assign ReHab Division.
9. Activate O.E.M.
10. Assign Tank Level Division.
    - Determine foam application feasibility.
    - Monitor tank level throughout the incident and advise when foam can be applied.
11. Begin foam application.
    - Refer to **FOAM APPLICATION FOR TANK FIRES**.
    - Maintain communication with tank level division.
    - Topside application can be initiated if any of the roof is dislodged from the shell. This can be done in combination with the foam chambers.

NOTE: Any explosion could incapacitate or destroy the foam chambers, which would require alternate means of foam application.

12. Fire conditions should visibly diminish within 50 minutes. If not, consider alternate application methods (keep in mind it may take up to one hour to extinguish).
    - Additional topside application with monitors.
    - Subsurface injection (will need special high back pressure nozzle).
    - Foam application wand.
13. If control cannot be obtained by foam application within two tries, begin transferring product as quickly as possible.
14. If fire is controlled and confirmed out:
    - STOP foam application

- RECORD tank level.
- Begin investigation.
- Flush ALL foam lines
- Restock foam supply to FULL.

BOOSTING PRESSURE ACROSS FOAM SKID

1. Use this procedure **ONLY** if the pressures required for adequate foam concentration from Table 1 - Flow Information Chart are not being met.
2. **SHUT** Foam System Isolation Valve #1 as shown in Figures 1 and 2.
3. **SHUT** Foam System Isolation Valve #2 as shown in Figures 3 and 4.
4. Lay Suction line from Suction Hydrant to Engine.
5. Lay Discharge line from Engine to Discharge Hydrant.
6. Pump **INTO** Discharge Hydrant at pressures required to achieve pressure readings within the pump house.
7. See Boosting Pressure Across Foam Skid Set-up Diagram for additional.

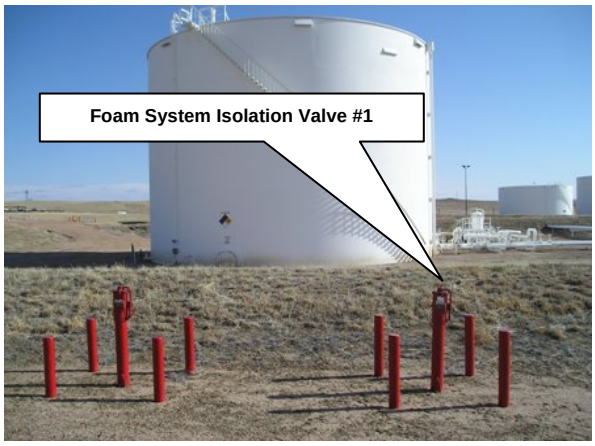


Figure 1 Foam System Isolation Valve #1 Location

Figure 2 Foam Isolation Valve #1 Close-up

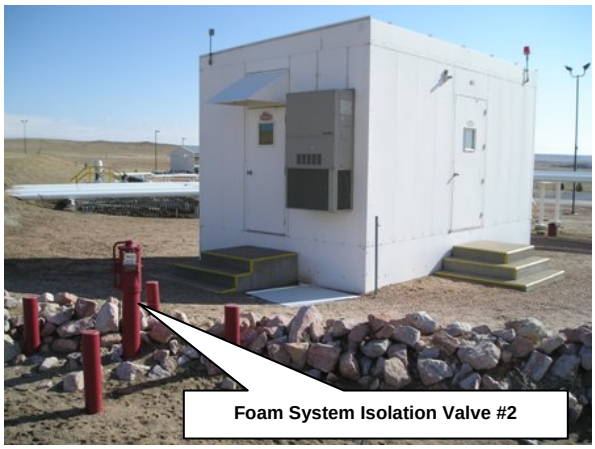
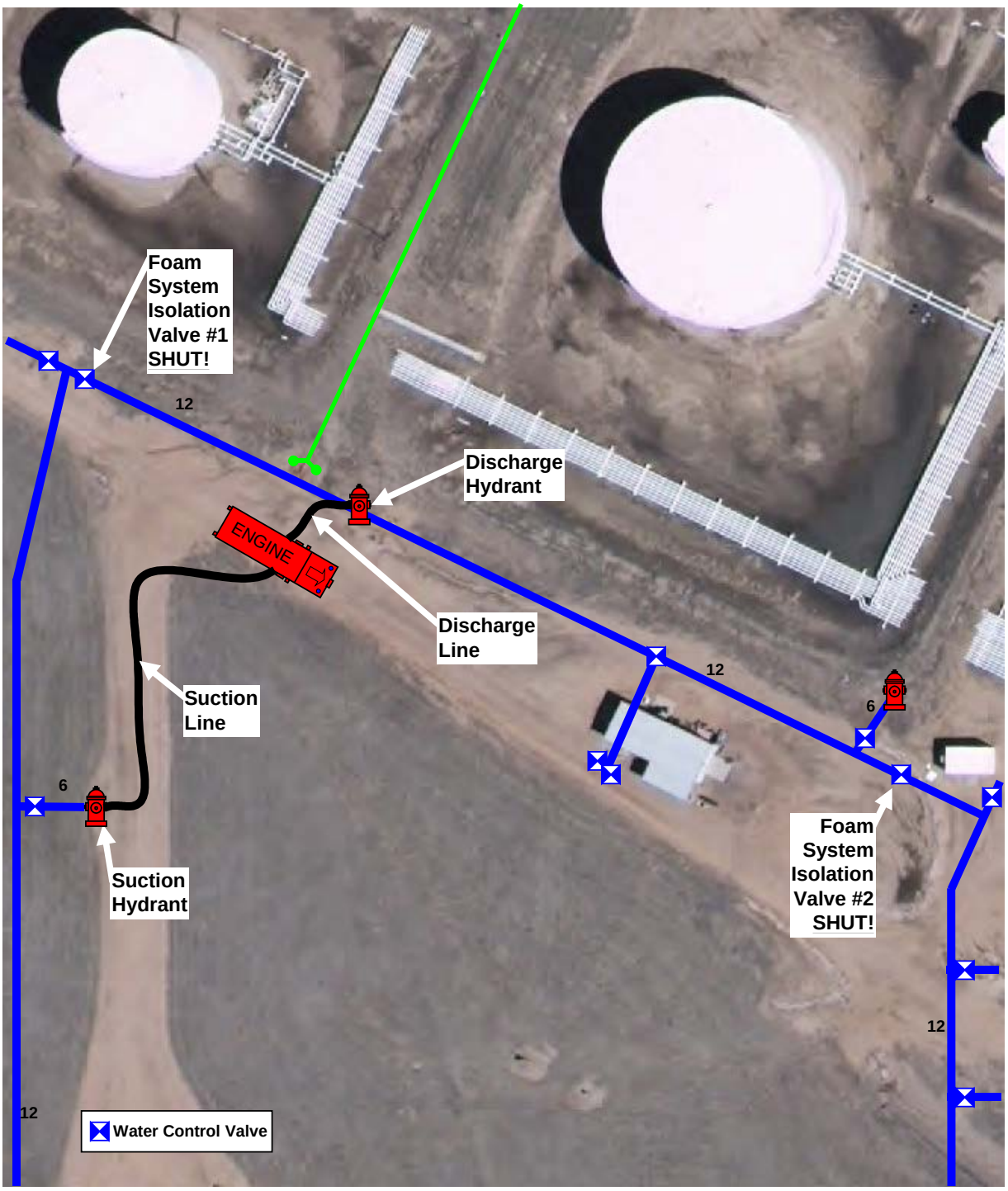


Figure 3 Foam System Isolation Valve #2 Location

Figure 4 Foam Isolation Valve #2 Close-up

Boosting Pressure Across Foam Skid Set-up Diagram



FOAM TANK FILL OPERATIONS

Depending upon the fire involved, the type of foam concentrate used will vary.

Make certain that the correct concentrate is being used.

PLACING FOAM CONCENTRATE IN TANK

1) **Automatic Fill Using Concentrate Pump**
   a) Stage as many buckets as possible near skid.
   b) Open buckets.
   c) Valve control sequence for **TANK FILL**
      i) Open upper tank (INTAKE) valve. (Figure 1)
      ii) Close lower tank (DISCHARGE) valve. (Figure 1)

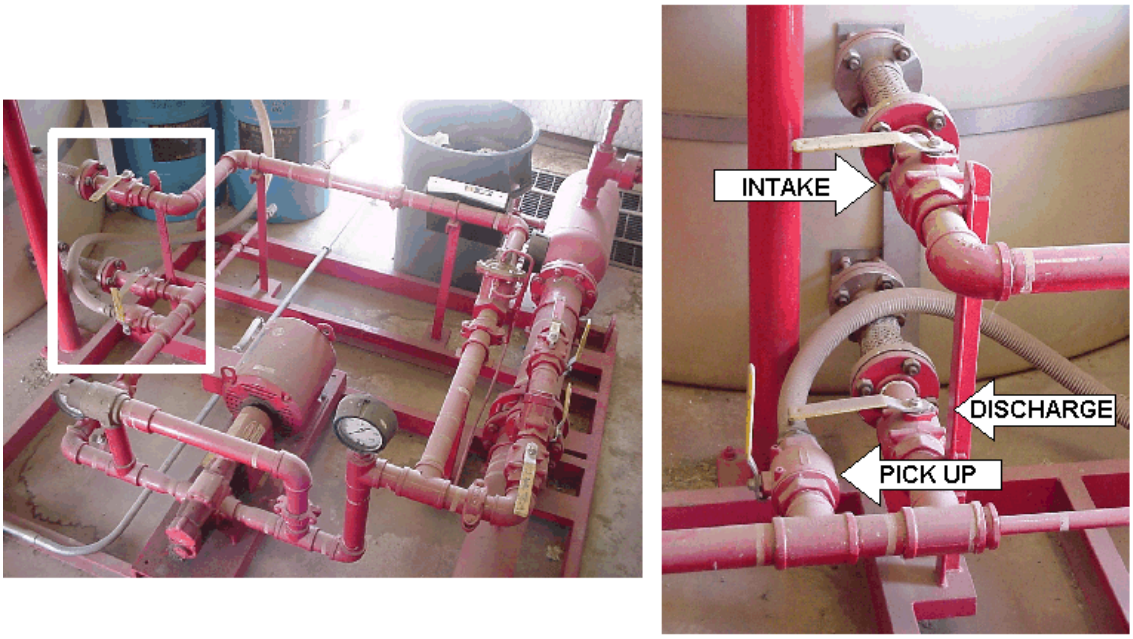


Figure 1 - Foam Tank Valves

   d) Insert pick-up tube into bucket and open bucket pick-up tube valve. (Figure 1).
   e) Turn on pump by activating controller. (Figure 2)
   f) Continue bucket relay until tank is full.
   g) Consolidate residual foam from buckets into one.

2) **Manual Fill by Dumping Buckets**
   a) Open top hatch on tank.
   b) Stage buckets as close as possible to tank.
   c) Open buckets.
   d) Pour through hatch.

NOTE: Manual fill and pump fill can be performed simultaneously!

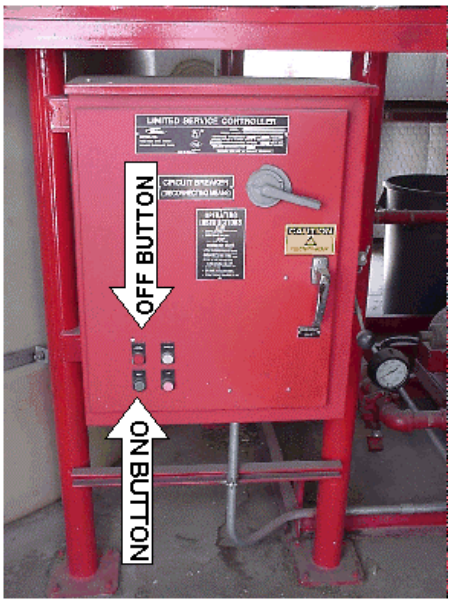


Figure 2 - Foam Pump Controller

FOAM APPLICATION FOR TANK FIRES

1. OPEN THE FOAM VALVE FOR THE INVOLVED TANK

Figure 1 - Closed Foam Valve Pit (TYP)

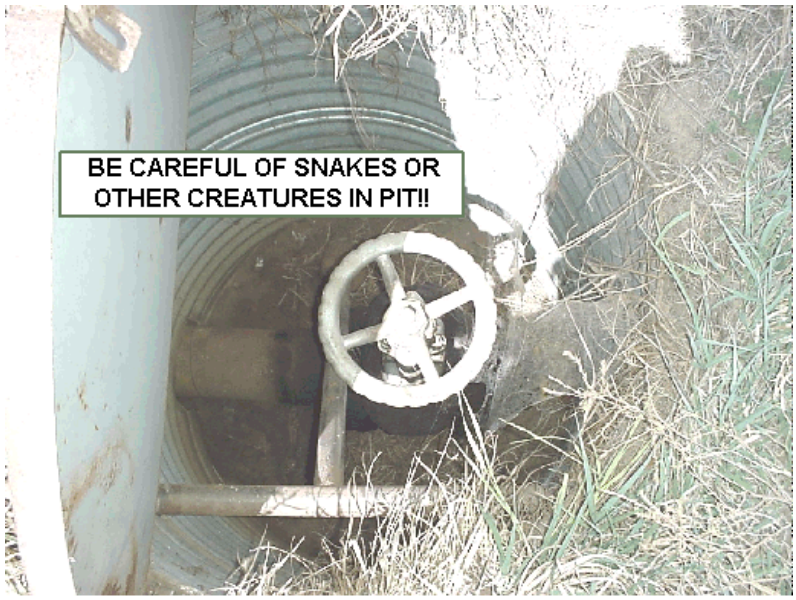


Figure 2 - Open Foam Valve Pit (TYP)

2. OPEN THE PRIMARY FOAM WATER SUPPLY POST INDICATOR VALVE (PIV).

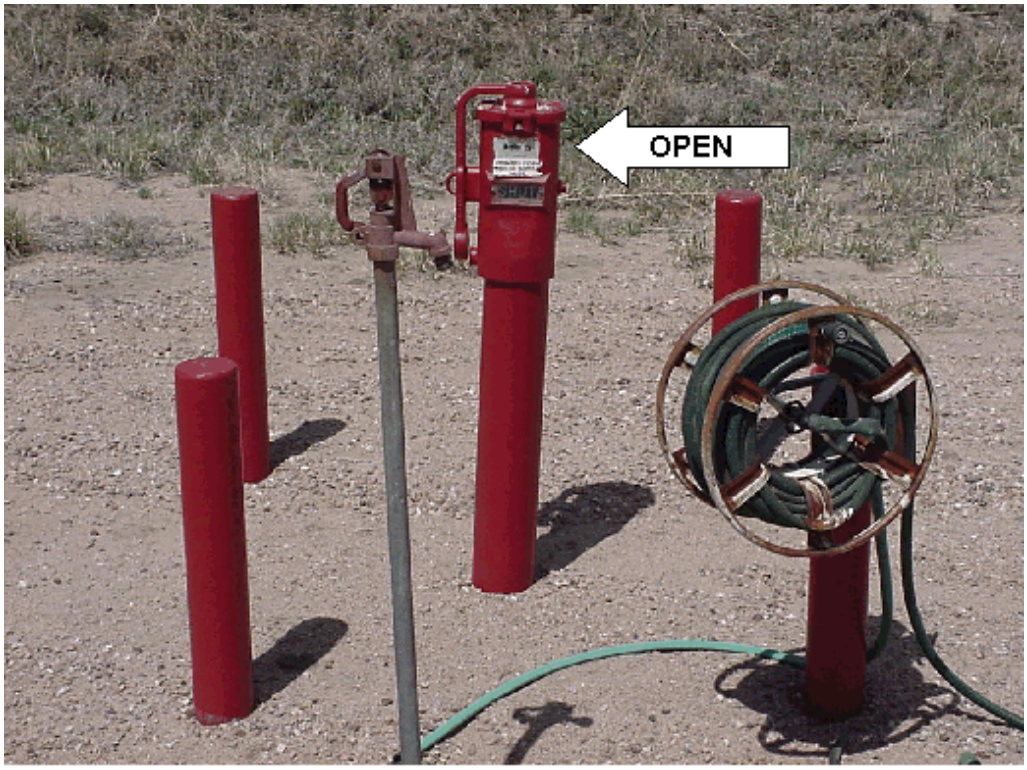


Figure 3 - Primary Foam Water Supply PIV (North Side of Foam Pump Building.)

3. OPEN UPPER (INTAKE) AND LOWER (DISCHARGE) VALVES.

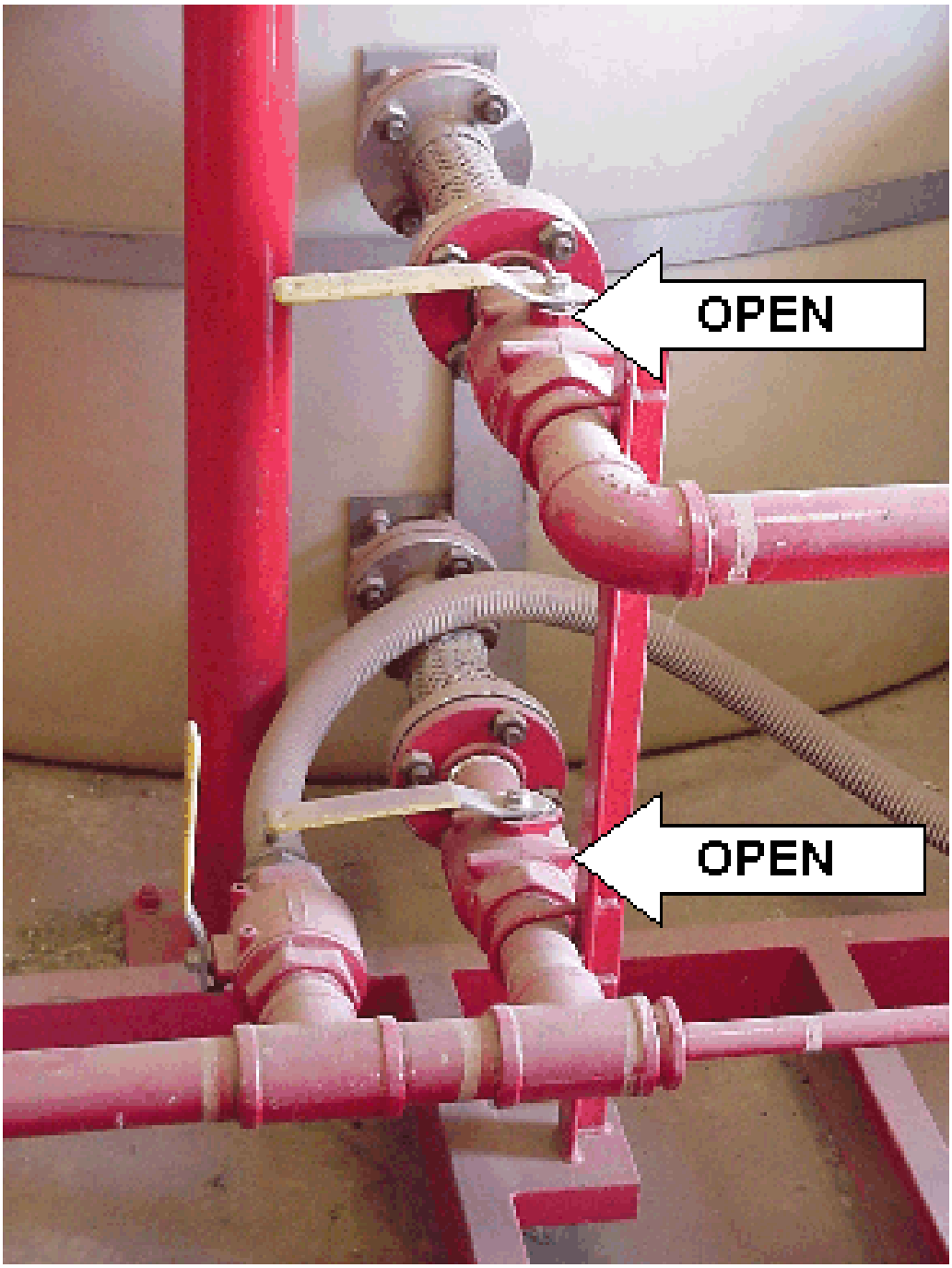


Figure 4 - Upper and Lower Foam Tank Valves

4. **DETERMINE PROPER FOAM CONCENTRATE AND TYPE.**
   (6% ATC, 3% ATC, OR 3% ARFF)

   Valve settings for ATC 6% (For Alcohol)
   - Open ATC Valve
   - Position Concentrate Selection Valve to 6% setting
   - Close AFFF Valve

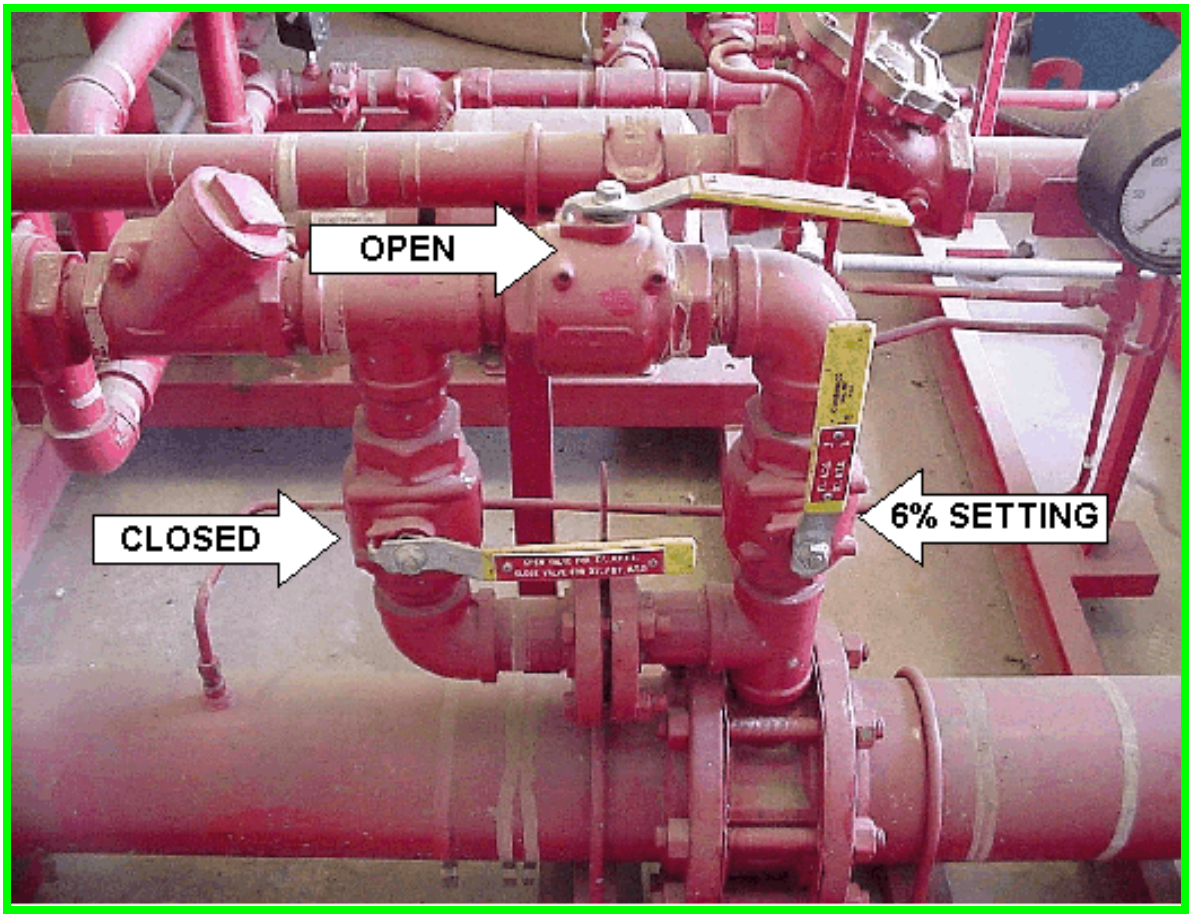


Figure 5 - Valve Configuration for 6% ATC Foam Concentration

Valve setting for ATC 3% (Gasoline, Diesel, Jet A, SLOP):

- Open ATC Valve
- Position Concentrate Selection Valve to 3% setting
- Close AFFF Valve

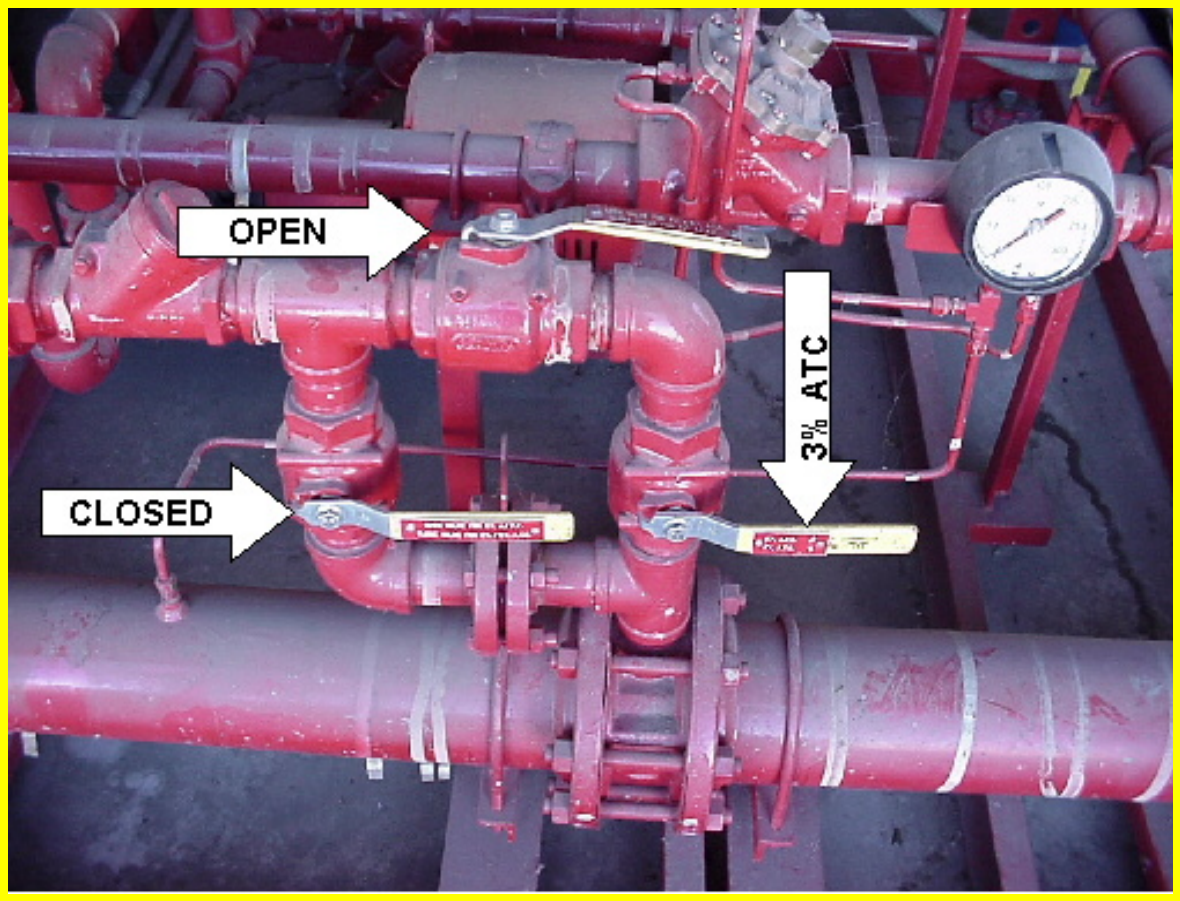


Figure 6 - Valve Configuration for 3% ATC Foam Concentration

Valve settings for 3% AFFF:

- Close ATC Valve
- Open AFFF Valve

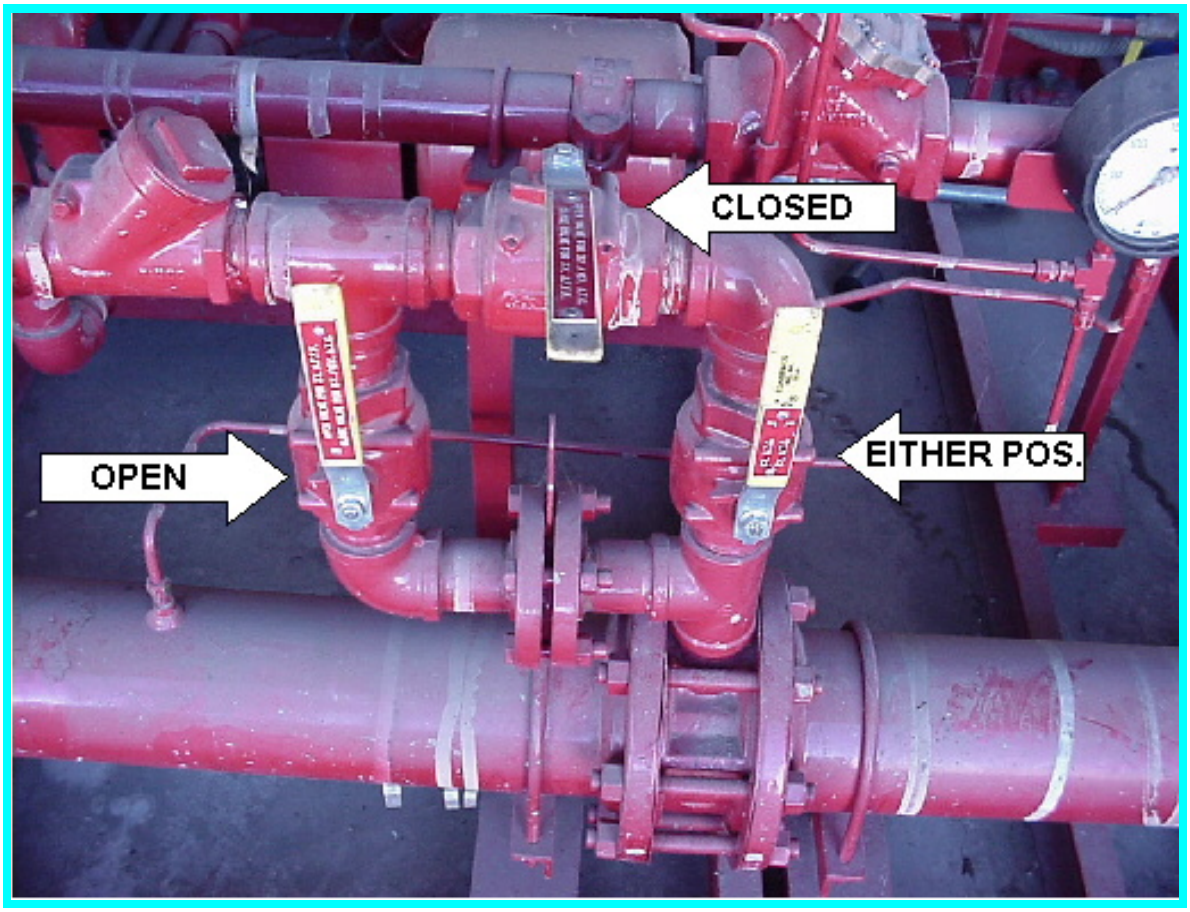


Figure 7 - Valve Configuration for 3% AFFF

5. ACTIVATE FOAM PUMP CONTROLLER:

Figure 8 - Foam Pump Controller

6. OPEN FOAM CONCENTRATE CONTROL VALVE

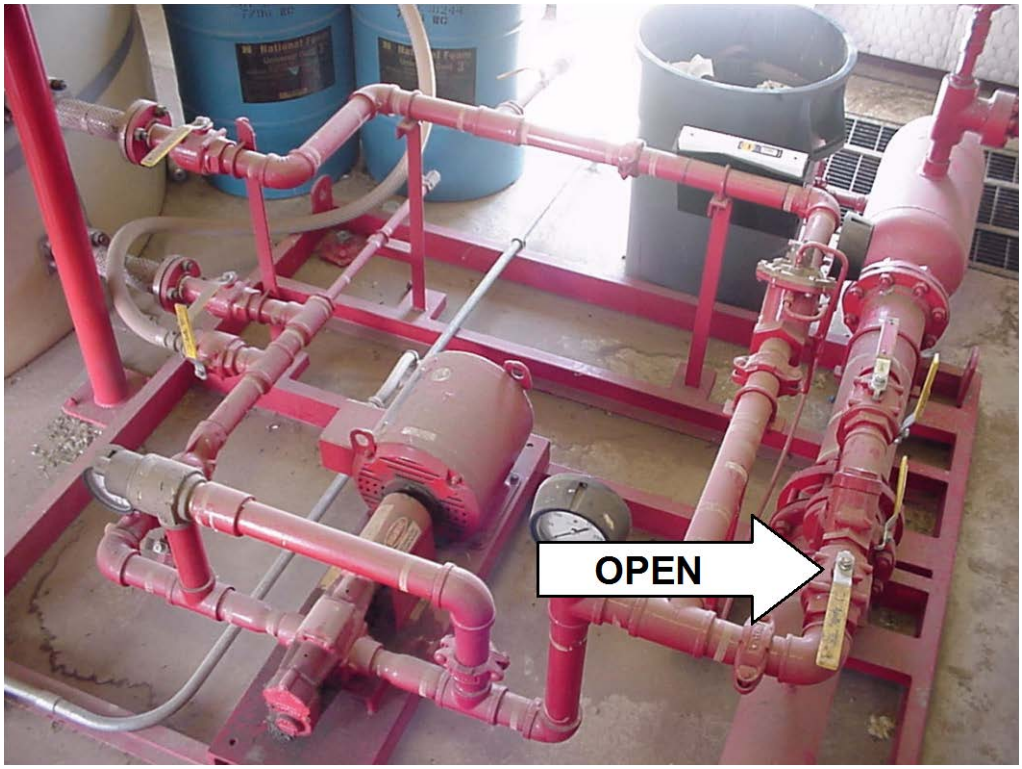


Figure 9 - Foam Concentrate Control Valve

7. OPEN TANKS MASTER FOAM LINE POST INDICATOR VALVE (PIV)

Figure 10 - Tank Foam System PIV (South Side of Foam Pump Building)

8. **RECORD TIME.**

9. **MONITOR PRESSURE AT DISCHARGE GAUGE AS <u>PER FLOW INFORMATION CHART.</u>**

10. **MONITOR FOAM CONCENTRATION PRESSURE: (THIS SHOULD EQUAL THE DISCHARGE PRESSURE)**

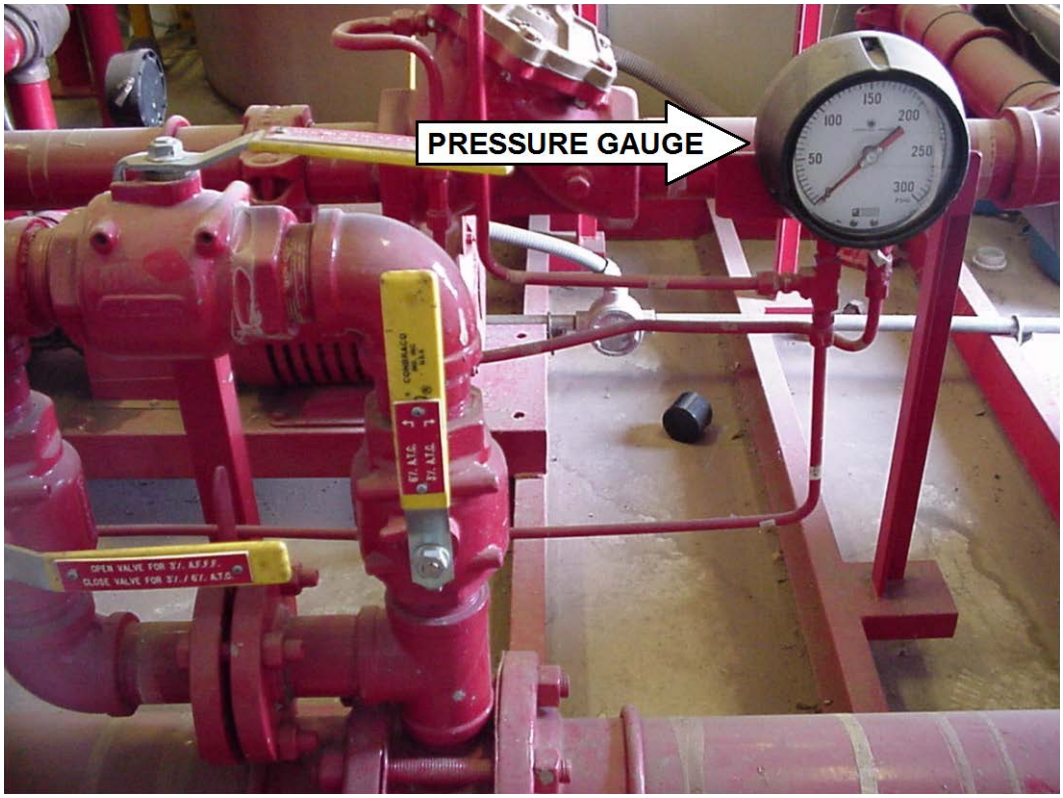


Figure 11 - Foam Pressure Gauge

FOAM APPLICATION FOR LOADING RACK FIRES

1. OPEN THE PRIMARY FOAM WATER SUPPLY POST INDICATOR VALVE (PIV).

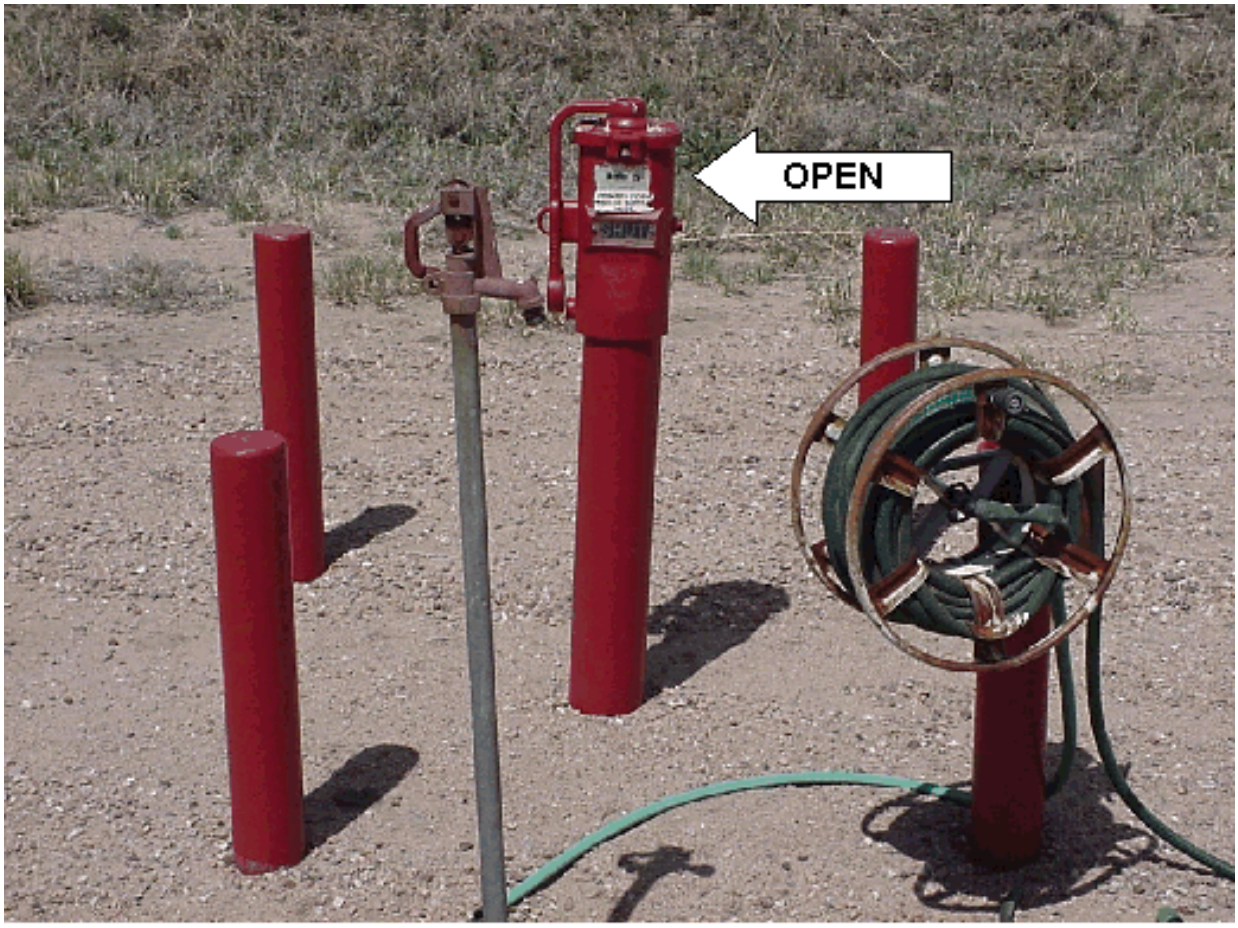


Figure 1 - Primary Foam Water Supply PIV (North Side of Foam Pump Building.)

2. OPEN UPPER (INTAKE) AND LOWER (DISCHARGE) VALVES.

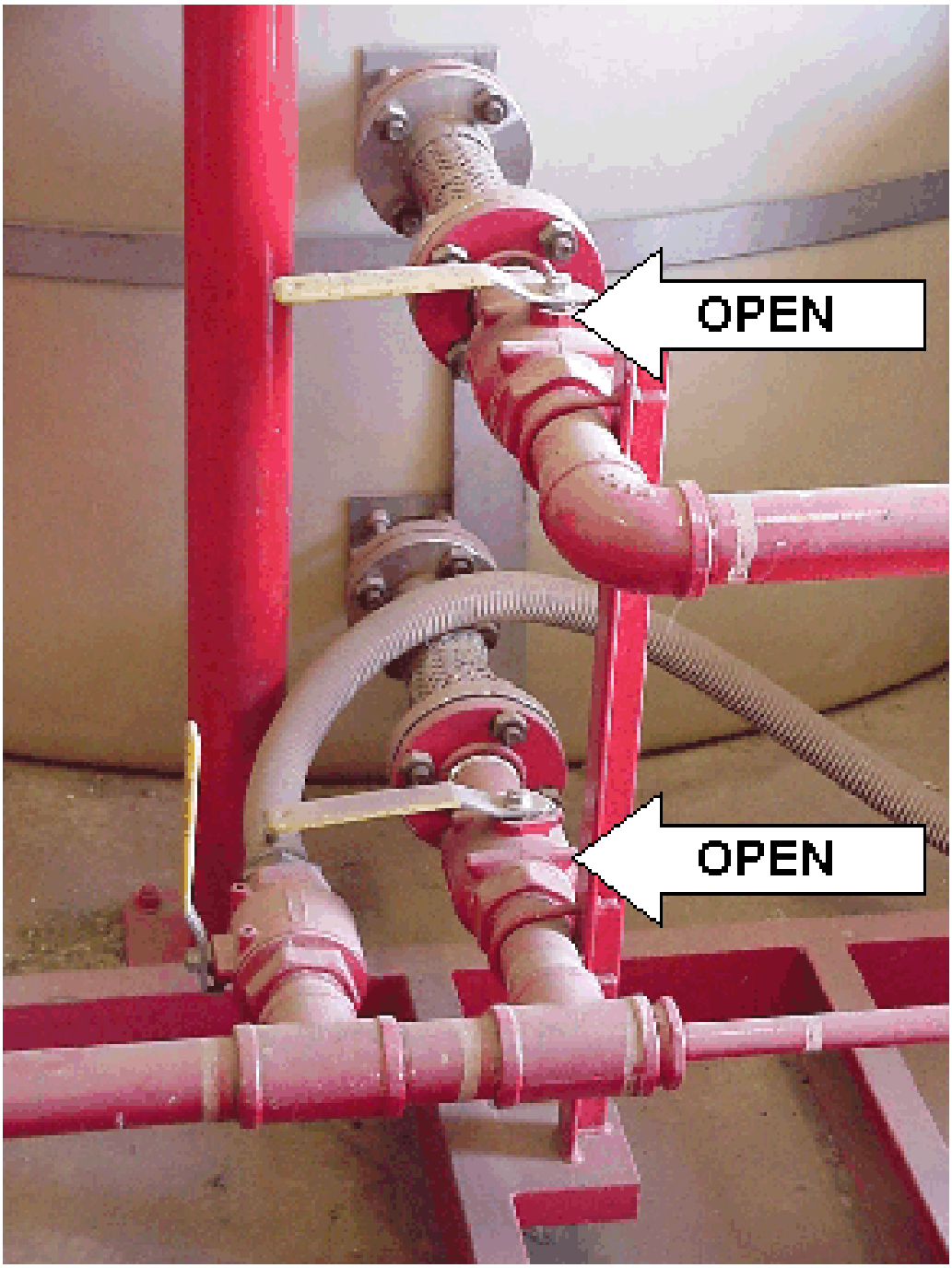


Figure 2 - Upper and Lower Foam Tank Valves

3. SET VALVES FOR 3% ATC.

Valve setting for ATC 3% (Gasoline, Diesel, Jet A, SLOP):

- Open ATC Valve
- Position Concentrate Selection Valve to 3% setting
- Close AFFF Valve

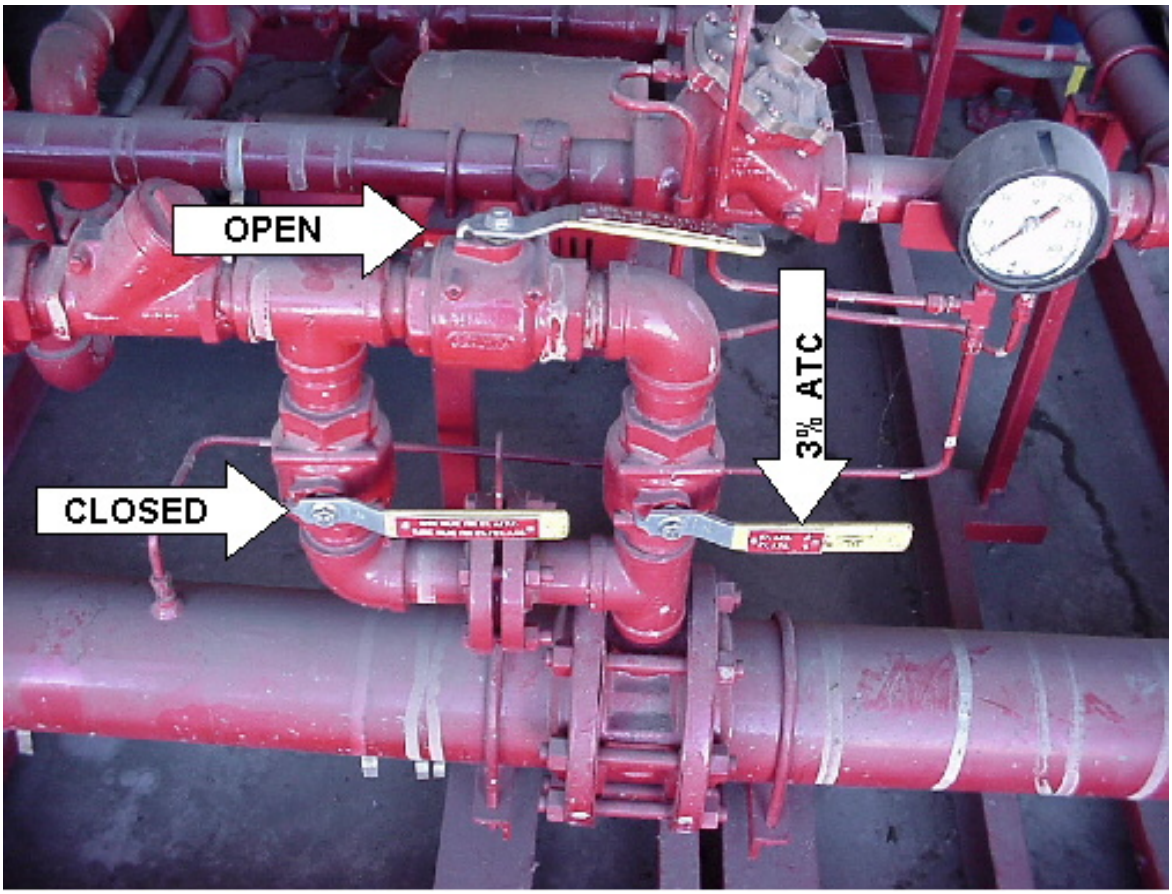


Figure 3 - Valve Configuration for 3% ATC Foam Concentration

4. ACTIVATE FOAM PUMP CONTROLLER:

Figure 4 - Foam Pump Controller

5. OPEN FOAM CONCENTRATE CONTROL VALVE

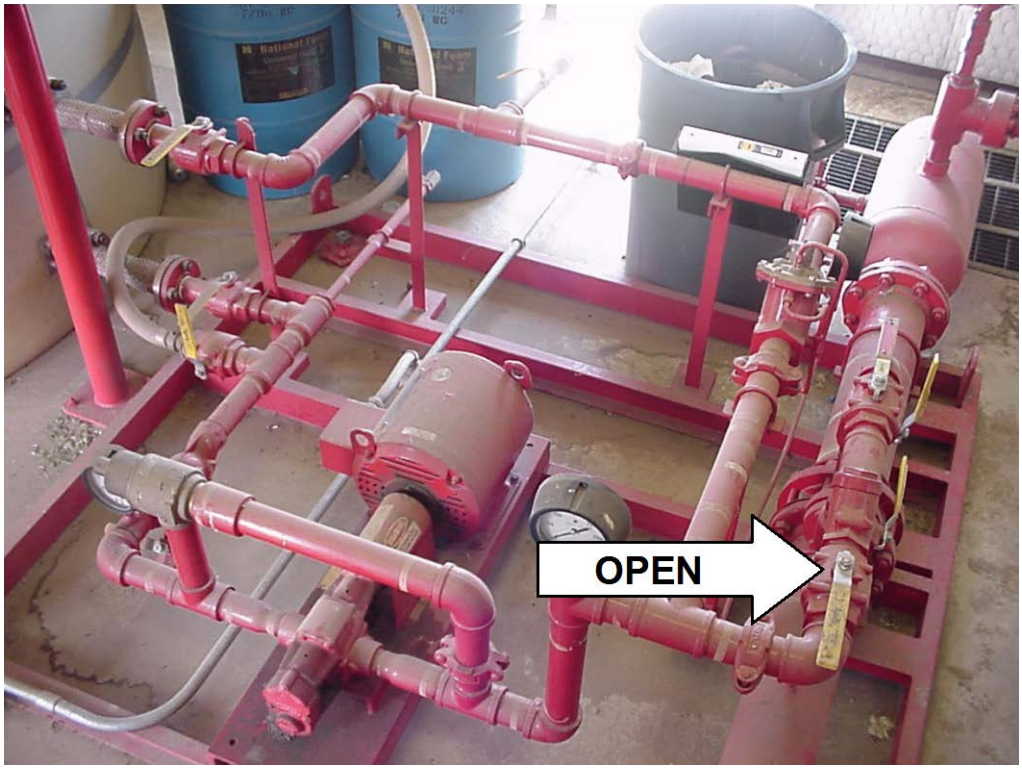


Figure 5 - Foam Concentrate Control Valve

6. OPEN LOADING RACK MASTER FOAM LINE POST INDICATOR VALVE (PIV)

Figure 6 - Rack Foam System PIV (South Side of Foam Pump Building)

7. CLOSE LOADING RACK *WATER PIV*

Figure 7 - Loading Rack Water PIV (Looking east towards loading rack)

8. RECORD TIME.

9. MONITOR PRESSURE AT DISCHARGE GAUGE AS <u>PER FLOW INFORMATION CHART.</u>

10. MONITOR FOAM CONCENTRATION PRESSURE: (THIS SHOULD EQUAL THE DISCHARGE PRESSURE)

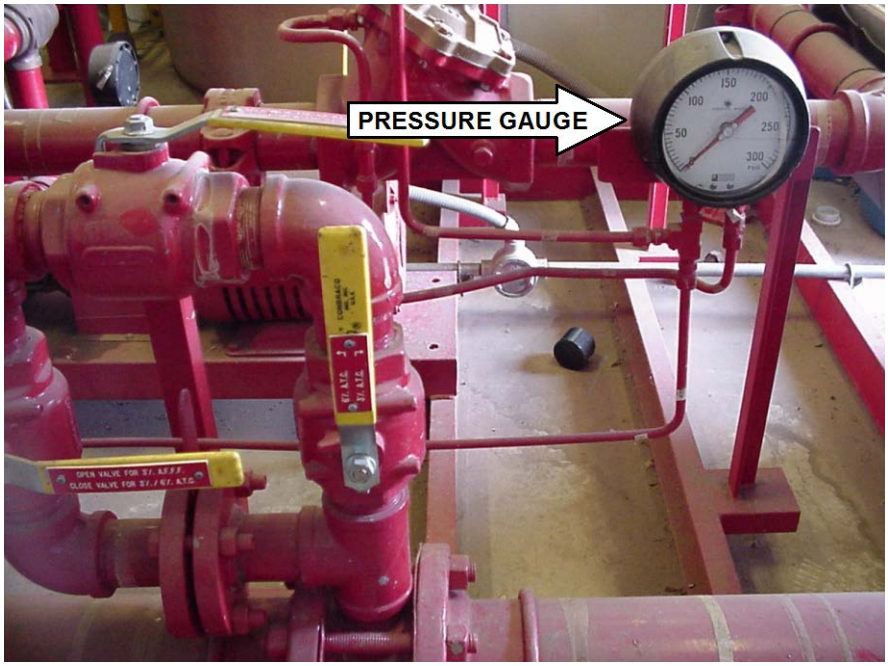


Figure 8 - Foam Pressure Gauge

LOADING RACK FIRE WITH DAMAGED TRANSPORT RIG

EN-ROUTE

1. Request Peterson AFB for crash truck and foam supply (buckets)
2. Confirm Amarillo shut down and request any additional information from NuStar (approximate amount overfill, last known fill rate etc.).
3. Request response from Responsible Party (RP)

ON-SCENE

1. Rescue
2. Confirm activation of Emergency Shut-Down (ESD).
3. Confirm adequate water discharge from Water Deluge system. This should already be operating upon arrival. If not, activate the Manual Deluge switch located at the southwest exterior corner of the office building.

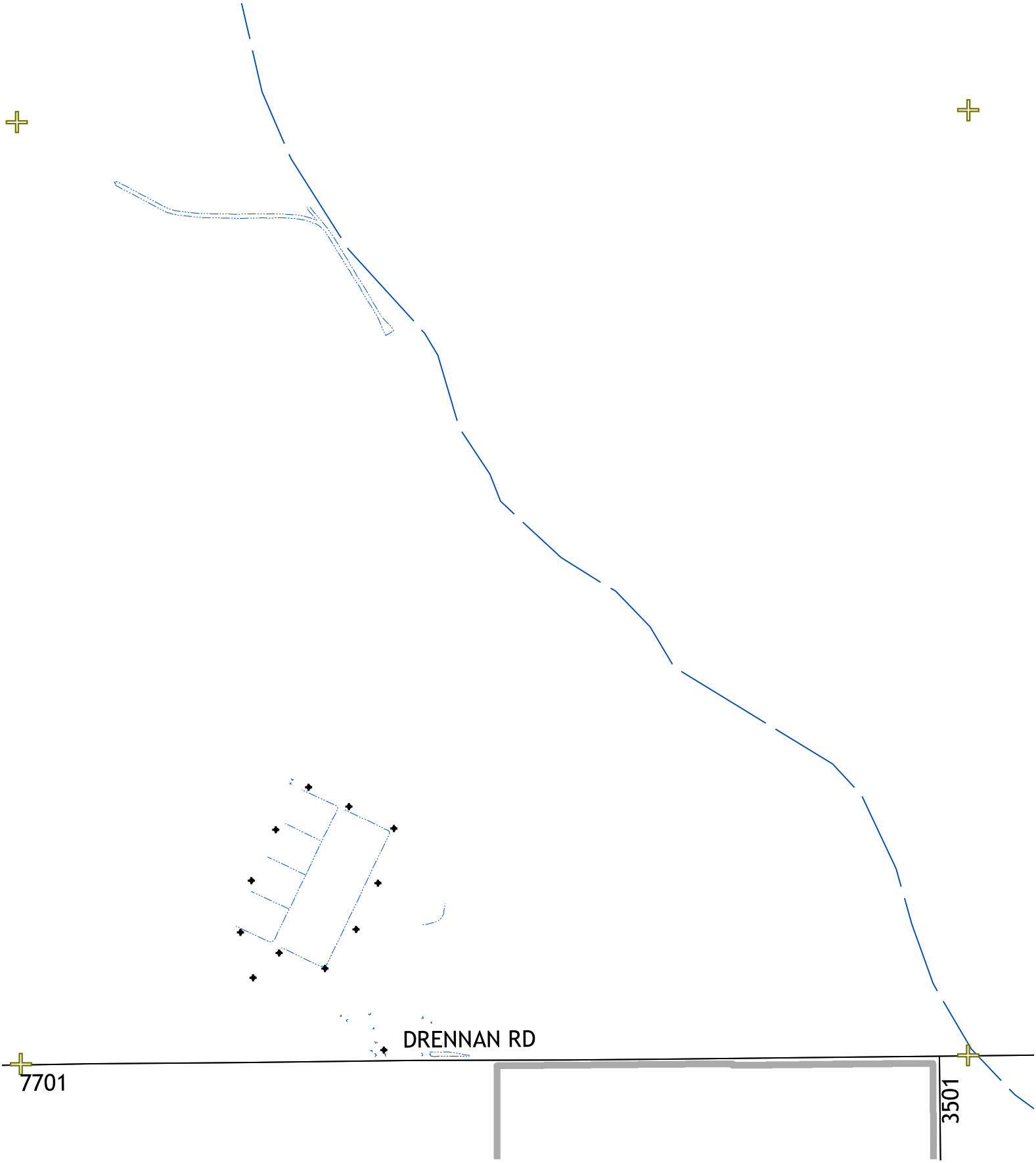
   NOTE: If the fire is out, proceed with normal spill procedures and shut down Deluge System only after ignition sources are secure.
4. Evaluate the water discharge from the Deluge system.
   - Is the tanker and piping within the loading rack being cooled sufficiently by the water discharge?
   - By examining the unaffected areas of the loading rack, do the Deluge spray patterns appear to be adequate?
   - If the answer to either of these is NO, then connect an engine to the FDC located between the PIV and the loading rack, on the concrete Deluge valve pit. Provide pressure sufficient to provide adequate water spray.
5. Assign Drainage Division
6. Evaluate drainage condition from the loading rack.
   - There are drains on the interior of the loading rack that will be hidden until it flows to the remote impound basin.
   - There is a partially exposed drain channel on the East side of the loading rack which will handle excess flow from fire water discharge to the remote impound basin. Make sure this is being accomplished. Any fires in this channel are okay but protect the structure.
7. If additional cooling water is required, either or both of the monitors on the South side may be used to supplement the Deluge system.
   - Keep in mind, the Foam Deluge system is the most demanding system on our water supply. Once foam is started, the monitors should be shut down to save water and not dilute the foam solution.
8. Assign Exposure Division

9. Evaluate exposures such as piping, structure, vehicle etc.
    - Make certain that all flame-exposed piping entering the Loading Rack is protected by water.
    - Make certain that the structure's integrity is being maintained so as not to damage the Deluge piping.
    - Make certain that all fire-exposed portions of the tank truck are protected by water spray.
10. Evaluate compartments of the transport as to levels and types of fuels are involved.
11. After the type and amount of fuel has been determined, select the type of foam concentration to use (3% or 6%).
12. Assign Foam Division
    - Verify foam skid condition and foam level.
    - Monitor skid and pressure performance throughout.
13. Begin foam application
    - Refer to Foam Application Sheet.
    - Once foam is observed discharging from the Deluge system, then shut off the Deluge Water Supply. (See site plan to locate appropriate PIV)
14. Monitor foam discharge progress.
15. Residual fire may persist or three-dimensional fire could be present. Use the large on-site wheeled Dry Chemical extinguisher to complete the extinguishment or use Peterson AFB as necessary.
    - Foam system supply will last approximately 20 minutes without resupply. Watch the time!
16. If foam supply is dwindling without success, be prepared to open the water supply PIV to the Deluge system again.
17. If the fire is controlled and once confirmed out:
    - STOP foam application
    - Begin investigation
    - Flush all foam lines
    - Refill foam storage tank to full level.
    - Contact RP to reset Deluge Valve and service the entire system prior to any operation.

Table 1 FLOW INFORMATION CHART

Tank #	Volume (Million Gallons)	Hazard Type	Tank Diameter (Feet)	Foam Mixture (%)	Flow Time for Rim Fill (Minutes)	Solution Flow Rate (GPM)	Foam Concentration Flow Rate (GPM)	Total Foam Concentration (Gallons)	Minimum Foam Pressure (PSI)	Remove Product Below Vent Before Applying Foam For 1 Hour (Feet)	Maximum Depth Gauge Reading Prior To Foam Application (Feet)
80M-1	3.4	Unleaded	110	3	8	1520	46	2530	105	1.5	41
55M-2	2.3	Unleaded	90	3	9	1030	31	1705	116	2	40.5
55M-1	2.3	Unleaded	90	3	9	1030	31	1705	116	2	40.5
30M-3	1.3	Jet/A	65	3	9	750	23	1265	100	4	
40M-1	1.7	Diesel	78	3	11	750	23	1265	100	3	
30M-2	1.3	Jet/A	65	3	9	750	23	1265	100	4	
30M-1	1.3	Alcohol	65	6	10	750	45	2475	100	4	
4M-1	0.18	Slop	30	3	4	750	23	1265	100	10	

Shaded areas indicate Combustible Liquids *Density = .0.12 gpm/sq. ft. for 60 minutes.*



F29	F28	F27
F32	F33	F34
I5	I4	I3

F33

Dec 15, 2003

fddzb CSFD FISP - stations/Map_Book/Map_page.mxd

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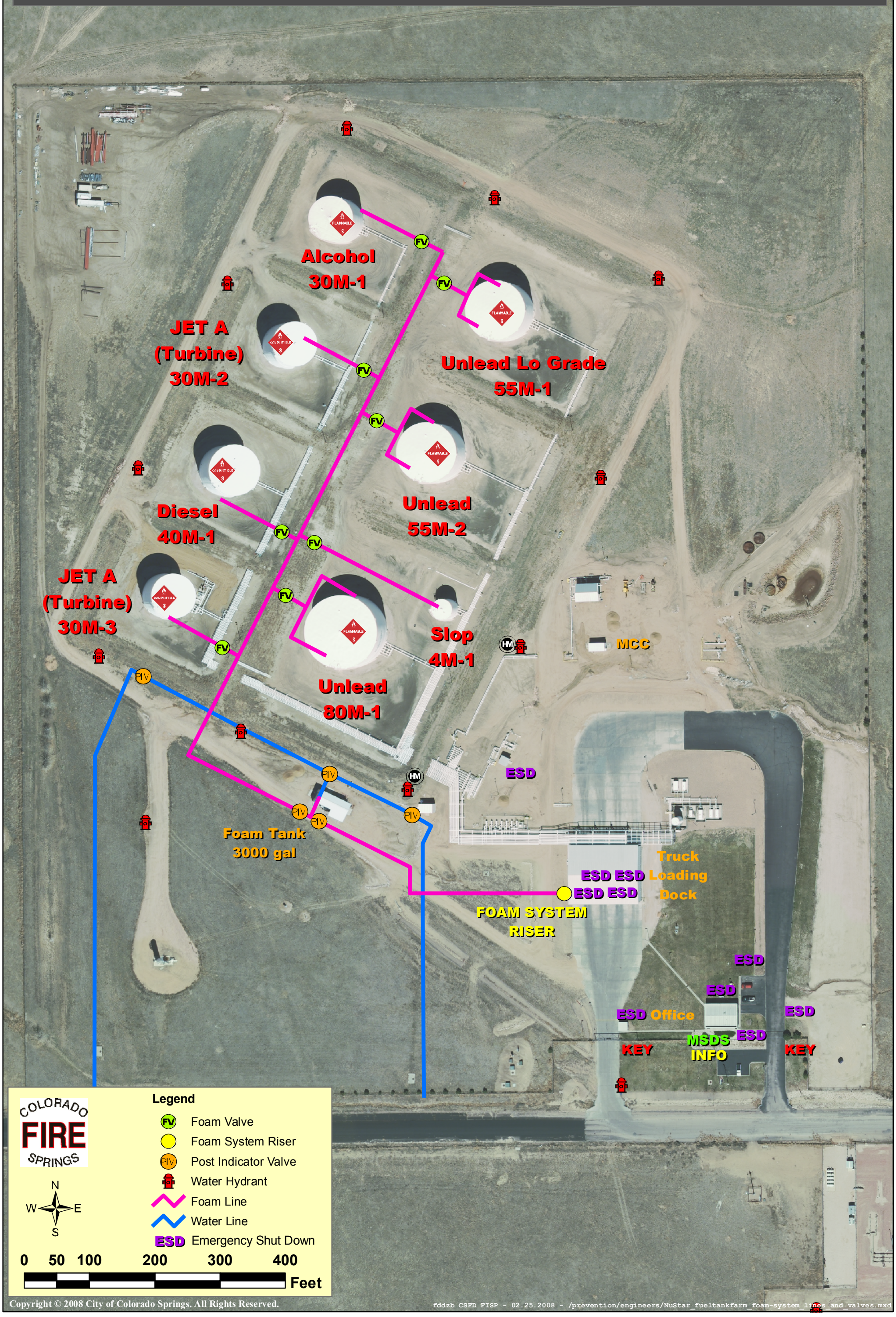
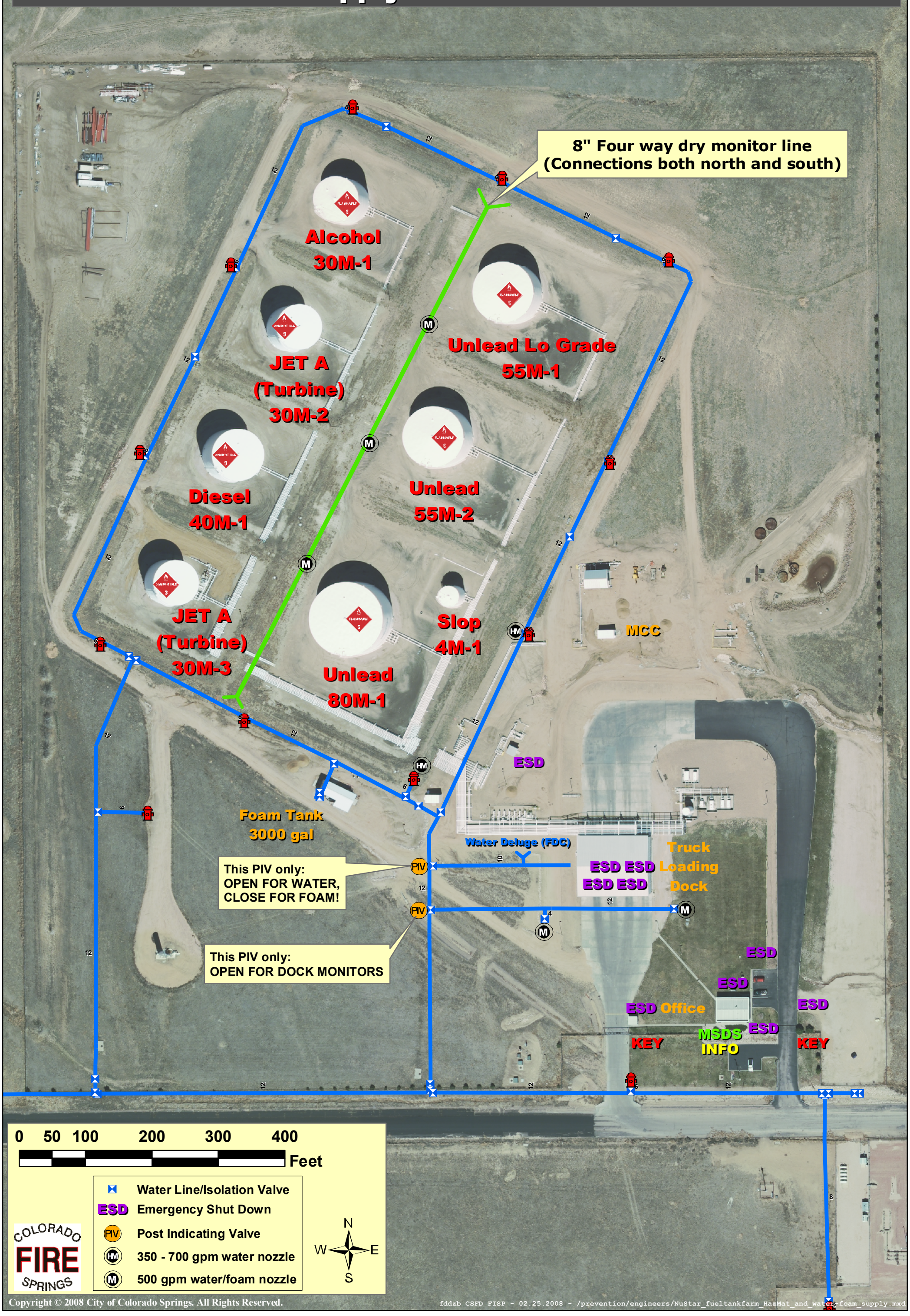
NuStar Fuel Tank Farm - Foam System: Lines and Valves



NuStar Fuel Tank Farm - Hazardous Materials Site Map with Water Supply and Fire Monitor Nozzles



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fddzb CSFD FISP - 02.25.2008 - /prevention/engineers/NuStar_fueltankfarm_HazMat_and_water_foam_supply.mxd

HEAVY CONSTRUCTION WELDING SERVICES IN COLORADO (12/2006)

Anderson Welding Service
(720) 890-2971

B & H Welding Trailer Service
(303) 772-3114

Bennefield's Mobile Welding Service
(303) 816-1797

Bill Carey's Welding Services
(719) 632-9353

Bill's Portable Welding Service
(303) 344-5351

Bill's Quality Welding Service Inc
(303) 289-7844

Compton's Welding Service Inc
(303) 366-1113

D C R Welding Service
(303) 466-8019

Don's Welding Services
(970) 226-4773

Donaldson's Welding Field Service
(303) 794-6877

Fish Welding Service
(970) 245-4279

G & J Welding Service
(303) 659-1362

Hi Ball Crane Service & Welding
(303) 944-4692

Hi Ball Crane Service & Welding
(303) 906-1930

Hodge's Welding Service
(719) 784-6545

Hupp Welding Portable Service
(970) 218-9976

Jim's Mobile Welding Service
(303) 288-7078

Jim's Mobile Welding Service
(719) 647-0765

Jim's Mobile Welding Service
(303) 287-3210

Jim's Mobile Welding Service
(303) 288-7078

Lambrecht Welding Service Inc Office
(970) 522-4324

MCR Mobile Welding Service
(303) 364-0404

Miller Welding Service
(719) 324-5633

Milt's Welding Service Inc
(719) 962-3319

Myron's Welding Service
(970) 241-4580

Portable Welding Service
(970) 867-2964

Quest Star Welding Services LLC
(970) 302-5858

Rittel Welding Service
(970) 454-2627

RK Welding & Services
(970) 522-5052

Sam's Welding Service
(303) 458-9100

Shoup's Welding Service
(970) 625-8164

Signature Welding Service LLC
(970) 213-3808

Superior Welding Service
(970) 668-5054

TC's Welding Service Inc
(303) 567-2500

Wagy Welding & Services
(303) 678-0923

Weld Tex Welding Services
(303) 816-6420

Welding Service & Fabrication
(970) 524-7173

Welding Services & Fabrication
(970) 524-7173

Woody's Welding Service Inc
(303) 777-8074

MOBILE WELDING SERVICES IN COLORADO

Bennefield Mobile Welding Service & Fabrication
(303) 816-1797

Bennefield's Mobile Welding Service
(303) 816-1797

Jim's Mobile Welding Service
(303) 288-7078

Jim's Mobile Welding Service
(719) 647-0765

Jim's Mobile Welding Service
(303) 287-3210

Jim's Mobile Welding Service
(303) 288-7078

MCR Mobile Welding Service
(303) 364-0404

ADDITIONAL FOAM SOURCES (12/2006)

NuStar Facility, 8710 Drennan Road

In addition to the 2300 gallons available in the existing system, the facility has an additional (15) gallons on hand. If more foam is required, delivery from NuStar's ERT Team in Commerce City can be coordinated through the facility's representative on site. Please see NuStar Emergency Contacts.

Peterson AFB

Peterson AFB is on automatic response for this facility. Available resources include 1790 gallons on (6) apparatus plus (1) x 1000 gallon foam trailer. Also in stock is and additional 935 gallons in drums for re-supplying apparatus. All AFFF.

Peterson AFB also stores an additional 3135 gallons (in drums) that does not belong to the FD.

Fort Carson Fire

Fort Carson has approximately 200 gallons available.

CSU Birdsall Power Plant, 221 E. Nichols

Just East of the 2.4 Million Gallon Fuel Tank on the Birdsall Power Plant site is a small wood shed that houses barrels of foam for their tank's protection system. As of 12/2006 there is approximately 1000 gallons of AFFF foam in this shed in 55-gallon drums.

Contacts:
Brent Richardson, Plant Superintendent. 668-9155 (Office) or 641-4540 (Cell)
Dan Tadie, Energy Services Manager. 668-3939 (Office) or 641-0329 (Cell)