Revised 03/28/2016

FIRE DEPARTMENT • CITY OF NEW YORK

STUDY MATERIAL FOR THE

CERTIFICATE OF FITNESS EXAMINATION

P-13

SUPERVISION OF BULK OIL STORAGE FACILITY

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NOTICE OF EXAMINATION

Title: **Examination for Certificate of Fitness for Supervision of Bulk Oil Storage Facility (P-13).**

Date of Exam: Written tests are administered Monday through Friday (except legal holidays) at **2:45 PM**: by **appointment only**. Starting processing time for a test is **2:45 PM**. No test will be administered to applicants who arrive after the **3:00 P.M**. To schedule an individual or group appointment, please use this link below:

http://www.nyc.gov/html/fdny/html/c_of_f/cof_online_scheduling.shtml

P-13 can only be obtained by passing both a written and verbal exams.

ATTENTION:

P-13 CERTIFICATE OF FITNESS IS FOR STORAGE OF BULK OIL ONLY. APPLICANTS SCHEDULING THE P-13 VERBAL EXAM MUST KNOW THEIR EMPLOYERS BULK OIL TERMINAL 100% AS THEY WILL BE ASKED TERMINAL SPECIFIC QUESTIONS.

Anyone renewing P-12 COF will be receiving P-13 COF, which alone does NOT cover supervision of Sprinkler or Standpipe Fire Protection Systems.

IN ADDITION TO P-13 CERTIFICATE OF FITNESS:

1. If your facility has a **SPRINKLER SYSTEM** installed, it is your responsibility to obtain an S-12 Certificate of Fitness.

2. If your facility has a **STANDPIPE SYSTEM** installed, it is your responsibility to obtain an S-13/S-14 Certificate of Fitness.

REQUIREMENTS FOR WRITTEN EXAM

Applicants who need to take the exam must apply in person and bring the following documents:

Applicants who need to take the exam must apply in person and bring the following documents:

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicant must provide two forms of identifications; at least one form of identification must be government issued photo identification, such as a State-issued Drivers' License or Non Driver's License or a passport.
4. Applicants must present a letter of recommendation from his/her employer. The letter must be on official letterhead, and must state the applicant's full name, experience and the address where the applicant will work. If the applicants are self-employed or the principal of the company,

they must submit a notarized letter attesting to their qualifications. For more info:

- Sample of recommendation letter: http://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-samplerec-letter.pdf
- Sample of self-employed letter: http://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-sample-selfrec-letter.pdf

5. Applicants must present a completed application for certificate of fitness (A-20 Form). http://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-application-form.pdf
6. Applicants not currently employed may take the exam without the recommendation letter. If the applicants pass the exam, FDNY will issue a temporary letter with picture for the job seeking purpose. The C of F card will not be issued unless the applicants are employed and provide the recommendation letter from his/her employer.
7. Special requirement for the P-13 Certificate of Fitness: P-13 can only be obtained by passing both a written and verbal exams.

8. **APPLICATION FEE:**

Pay the **$25** application fee in person by one of the following methods:

- Cash
- Credit card (*American Express, Discover, MasterCard, or Visa*)
- Debit card (*MasterCard or Visa*)
- Personal or company check or money order (*made payable to the New York City Fire Department)*

For fee waivers submit: ***(Only government employees who will use their C of F for their work- related responsibilities are eligible for fee waivers.)***

- A letter requesting fee wavier on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency

A convenience fee of 2.49% will be applied to all credit card payments.

9. **WRITTEN EXAM INFORMATION**

The **P-13** written exam will consist of **75** multiple-choice questions, administered on a "touch screen" computer monitor. It is a time-limit exam. Based on the amount of the questions, you will have 113 minutes to complete the test. A passing score of at least 70% is required in order to secure a temporary N-12 letter will be issued the same day. Applicant who fails the exam will receive a failure report. To retake the exam applicants will need to submit a new application and payment.

Call (718) 999-1988 for additional information and forms.

Please always check for the latest revised booklet at FDNY website before you take the exam.

http://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-p13-noe-study-materials.pdf

10. **VERBAL EXAM INFORMATION**

The second part of certification is the **VERBAL EXAM** for the particular bulk oil terminal where the applicant is employed. A verbal exam must be taken and passed within 6 months of **WORKING** at a terminal.

- Applicant must have passed the Written Exam and obtained a temporary N-12 letter, or be a current P-13 C of F holder applying to change his/her working location.
- Prior to the actual verbal exam, the applicants must submit the blueprint of the current Bulk Oil Facility to the Bulk Oil Unit division of the FDNY.

Applicants **must** schedule an appointment for the verbal exam. To schedule the verbal exam please call (718) 999-2460 or email to BFSU@fdny.nyc.gov

- Applicants will be permitted to take the verbal exam up to (3) times, the 2nd and 3rd attempt must be within 1 year of working at the particular terminal.
- If the applicants do not pass the examination after the 3rd attempt, the applicants will be required to retake the written exam. To retake the exam applicants will need to submit a new application and payment.
- Individuals who wish to have the Certificate of Fitness for more than one terminal will need to pass a separate verbal exam for each terminal. For example if an individual has a current P-12/P-13 Certificate of Fitness and leaves one terminal to work for another he/she must pass verbal section for the new terminal.

RENEWAL REQUIREMENTS

This Certificate of Fitness must be renewed every ***THREE YEARS***. The renewal fee is **$15**. FDNY also reserves the right to require the applicants to take a re-examination upon submission of renewal applications.

You will receive a courtesy notice of renewal 90 days before the expiration date. However, it is your responsibility to renew your Certificate. It is very important to renew your C of F before it expires. Renewals submitted 90 days (up to one year) after the expiration date will incur a $25 penalty in addition to the renewal fee. Certificates expired over one year past expiration date will not be renewed. New exams will be required.

To change a mailing address:

- Submit a letter requesting the change of mailing address and a copy of your C of F with $5.00 fee.

To change a work location,

- Submit a letter from your current employer (on company letterhead) confirming that you are an employee and stating your new work location with a copy of your C of F and a $5.00 fee

To request a replacement certificate:

- Submit a driver's license or passport, social security number, mailing address and a $5.00 fee.

The certificate can be renewed On-line, by Mail or in Person.

- **Renewal online**

If you are an individual, make sure you have your 12 digit Certificate of Fitness Access ID. This can be found on your Renewal Notice. If you do not have your Renewal Notice, your Access ID is your 8 digit Certificate of Fitness number and the last four digits of your social security number. If you are submitting renewals on behalf of a company's employees, the company must be approved by FDNY and have an 8 digit Company Code. To request approval, email pubrenew@fdny.nyc.gov.

Renewal fee can be paid by one of the following methods:

- Credit card (American Express, Discover, MasterCard, or Visa)
- Debit card (MasterCard or Visa)
- E-check

A fee exempted applicants cannot renew online only by mail or in person.

If all the requirements are met, the certificate of fitness will be mailed out within 10 days.

For online renewal go to: **https://a836-citypay.nyc.gov/citypay/FDNYCOF**

- **Renewal by mail**

Mail your Renewal Notice (or if you did not receive a Renewal Notice, a copy of your certificate), along with your fee payment, Personal or company check or money order (made payable to the New York City Fire Department)
For fee waivers submit: ***(Only government employees who will use their C of F for their work- related responsibilities are eligible for fee waivers.)***

- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency and if applicable, supporting documents to:

NYC Fire Department (FDNY)
Cashier's Unit
9 MetroTech Center, 1st Floor
Brooklyn, NY 11201

If all the requirements are met, the certificate of fitness will be mailed out within four to six weeks.

- **Renewal in person**

Submit your Renewal Notice (or if you did not receive a Renewal Notice, a copy of your certificate), along with your fee payment by one of the following methods:

- Cash
- Credit card (*American Express, Discover, MasterCard, or Visa*)
- Debit card (*MasterCard or Visa*)
- Personal or company check or money order (*made payable to the New York City Fire Department)*

For fee waivers submit: ***(Only government employees who will use their C of F for his or her work-related responsibilities are eligible for fee waivers.)***

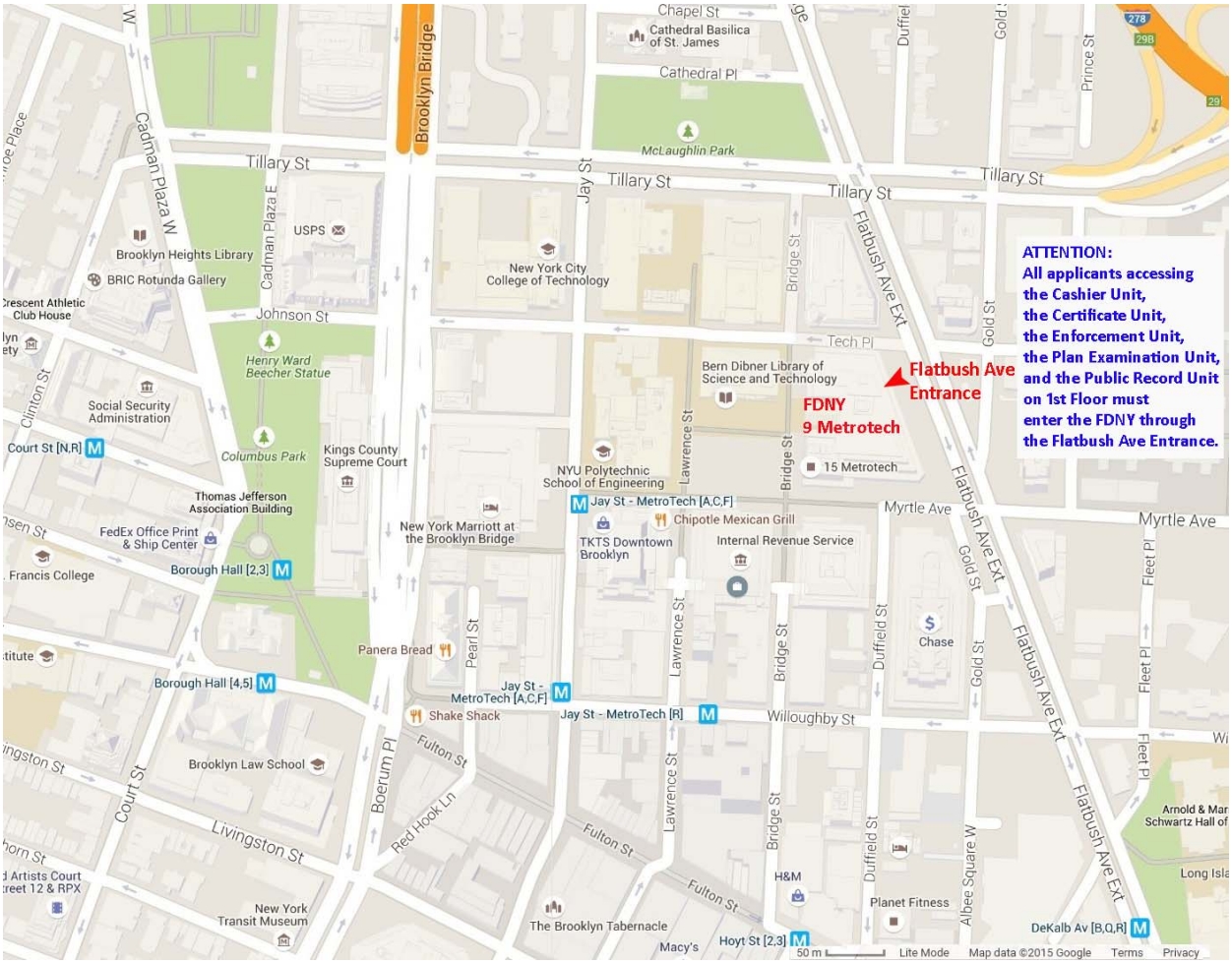
- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency and if applicable, your supporting documents to:

NYC Fire Department (FDNY)
Cashier's Unit
9 MetroTech Center, 1st Floor
Brooklyn, NY 11201

If all the requirements are met, the certificate of fitness will be issued the same day.

A convenience fee of 2.49% will be applied to all credit card payments for original or renewal certificates.

EXAM SITE: **FDNY Headquarters,** 9 MetroTech Center, Brooklyn, NY. Enter through the **Flatbush Avenue entrance (between Myrtle Avenue and Tech Place)**.



SAMPLE QUESTIONS

Which of the following are allowed to be used while taking a Certificate of Fitness examination at 9 Metro Tech Center?

I. cellular phone
II. study material booklet
III. reference material provided by the FDNY
IV. mp3 player

A. III only
B. I, II, and III
C. II and IV
D. I only

Only reference material provided by the FDNY is allowed to be used during Certificate of Fitness examinations. Therefore, the correct answer would be A. You would touch "A" on the computer terminal screen.

If the screen on your computer terminal freezes during your examination, who should you ask for help?

A. the person next to you
B. the firefighters
C. the examiner in the testing room
D. the computer help desk

If you have a computer related question, you should ask the examiner in the testing room. Therefore, the correct answer would be C. You would touch "C" on the computer terminal screen.

If you do not know the answer to a question while taking an examination, who should you ask for help?

A. the person next to you
B. the firefighters
C. the examiner in the testing room
D. you should not ask about test questions since FDNY staff can not assist applicants

You should not ask about examination questions or answers since FDNY staff cannot assist applicants with their tests. Therefore, the correct answer would be D. You would touch "D" on the computer terminal screen.

Definitions

BULK FACILITY OR TERMINAL Any premises upon which flammable or combustible liquids are received from marine vessel, pipeline, tank car or cargo tank and are stored or blended in bulk for the purpose of distributing such liquids by marine vessel, pipeline, tank car, cargo tank or container.

BULK TRANSFER The loading or unloading of flammable or combustible liquids from or between marine vessels, pipelines, tank cars, cargo tanks or storage tanks.

COMBUSTIBLE LIQUID For purposes of transportation, a combustible liquid, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point at or above 100°F (38°C), classified as follows:

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

Class IIIB. Liquids having closed cup flash points at or above 200°F (93°C).

FIRE DEPARTMENT CONNECTION A connection , normally on the exterior of the building, through which the Fire Department can pump supplemental water into the sprinkler system, standpipe, or other system furnishing water for fire extinguishment to supplement existing water supplies (**formerly known as a Siamese connection).**

FIRE HOSE A flexible conduit constructed with one or more reinforcements (jackets), with or without a coating or covering but with an approved non-permeable lining, or with an inner reinforcement between a protective cover and an approved non-permeable lining.

FIRE HYDRANT A valve connection on a water supply system having one or more outlets and that is used to supply hose and fire department pumps with water.

FIRE PUMP A pump that is a provider of liquid flow and pressure dedicated to fire protection. A fire pump is a part of a fire standpipe system's water supply and can be powered by electric, diesel or steam. The pump intake is either connected to the public underground water supply piping or a static water source (e.g., tank, reservoir, lake). The pump provides water flow at higher pressure and volume to the standpipe system risers and hose standpipes.

FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM A flammable or combustible liquid storage tank and all devices, equipment and systems associated with such tank, including the tank, piping, valves, fill connection, vent lines, pumps and any other ancillary equipment, except liquid motor fuel storage and dispensing systems and flammable and combustible liquid storage systems at a bulk facility or terminal used for bulk transfer operations.

FLAMMABLE LIQUID For purposes of transportation, a flammable liquid defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100°F (38°C), classified as follows:

Class IA. Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).

Class IB. Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

FLASH POINT The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

PRODUCT TRANSFER The transfer of flammable or combustible liquids between cargo tanks or tank cars and containers, tanks piping and other equipment that is to be used in process operations.

TANK, PROTECTED ABOVEGROUND An atmospheric aboveground tank listed in accordance with UL 2085 or equivalent standard that is provided with integral secondary containment, protection from physical damage, and an insulation system intended to reduce the heat transferred to the primary tank when the tank is exposed to a high intensity liquid pool fire.

Classification of Liquids

Classification of liquids (NFPA 30)

FLAMMABLE LIQUIDS, shall be classified as Class I liquids and shall be further sub classified in accordance with the following:

- **Class IA Liquid** — Any liquid that has a flash point below 73°F (22.8°C) and a boiling point below 100°F (37.8°C)
- **Class IB Liquid** — Any liquid that has a flash point below 73°F (22.8°C) and a boiling point at or above 100°F (37.8°C)
- **Class IC Liquid** — Any liquid that has a flash point at or above 73°F (22.8°C), but below 100°F (37.8°C)

COMBUSTIBLE LIQUIDS shall be classified in accordance with the following:

(1) **Class II Liquid** — Any liquid that has a flash point at or above 100°F (37.8°C) and below 140°F (60°C)

(2) **Class III Liquid** — Any liquid that has a flash point at or above 140°F (60°C)

- **Class IIIA Liquid** — Any liquid that has a flash point at or above 140°F (60°C), but below 200°F (93°C)
- **Class IIIB Liquid** — Any liquid that has a flash point at or above 200°F (93°C)

FLASHPOINT The flash point of any given product is defined as the minimum temperature at which the product releases enough vapor to form an ignitable mixture when mixed with oxygen. When ignited, these vapors will burn with explosive violence. When oxygen is not present the vapors cannot become combustible and therefore cannot be ignited. When the vapors are not combustible they are said to be in a "super saturated state". These vapors must be considered when the product is stored in a tank at temperatures above its flash point. Commonly a vapor recovery system is installed to draw these vapors out of cone-roof tanks. It is important that the Certificate of Fitness holder understand the relationship between temperature of the product, the vapors released by the product, and the amount of oxygen in the tank.

Generally, liquid petroleum products are stored in above ground storage tanks. These tanks are constructed of steel. Commonly, these tanks are painted with an aluminum or white paint. These colors reflect the heat of the sun and help keep the product within an acceptable temperature range.

IMPAIRMENT COORDINATOR A person responsible for ensuring that proper notification and safety precautions are taken when a fire protection system is out of service.

NOZZLES A device for use in applications requiring special water discharge patterns, directional spray, or other unusual discharge characteristics.
OUT OF SERVICE SYSTEM A fire protection system that is not fully functional; or whose operation is impaired or is otherwise not in good working order.
POUNDS PER SQUARE INCH (PSI) a unit of pressure measuring force per unit area.
PRESSURE CONTROL VALVE A pilot operated pressure reducing valve that may be used with a fire or booster pump designed for the purpose of preventing the incoming water supply pressure from dropping below a set pressure.
STANDPIPE SYSTEM An arrangement of piping, valves, hose connections, and allied equipment installed in a building or structure, with the hose connections located in such a manner that water can be discharged in streams or spray patterns through attached hose and nozzles, for the purpose of extinguishing a fire, thereby protecting a building or structure and its contents in addition to protecting the occupants. Piping installed in a building or structure that serves to transfer water from a water supply to hose connections at one or more locations in a building or structure used for firefighting purposes.

(I) Introduction

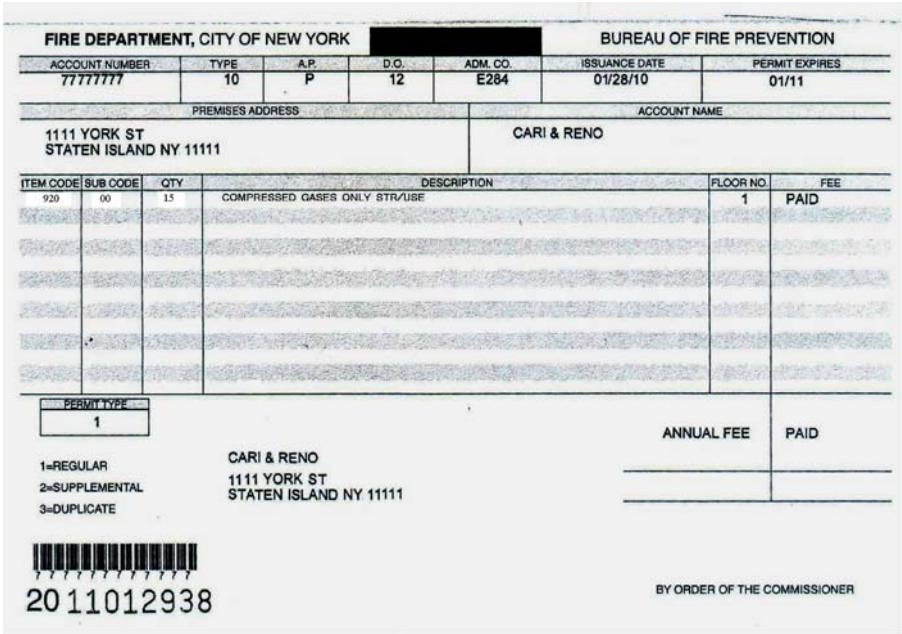
The P-13 Certificate of Fitness holder is required to operate a bulk facility or terminal or bulk transfer facility where flammable and combustible liquids are blended, produced, processed, transported, stored, dispensed or used.

(1.1) FDNY Licenses and Permits

Individuals that are interested in obtaining a P-13 Certificate of Fitness shall study the P-13 Study Material. After taking and passing the P-13 written test they will receive a Certification of Completion, this certification should serve as eligibility to work under the licensed P-13 Certificate of Fitness holder. The holder is NOT allowed to supervise the bulk facilitys/ terminals alone. Once the holder is confident that they are familiar enough with the bulk oil facility, they need to contact the Fire Department Bulk Oil Unit to schedule the 2nd part of the test. The second part of the exam must be completed within 6 months of working at a terminal. After passing the 2nd part of the P-13 exam, the P-13 Certificate of Fitness card will be issued. Bulk facilitys / terminals, including transfer operations, shall be continuously under the personal supervision of a person holding P-13 Certificate of Fitness.

Permanent Bulk Oil Facility FDNY Site-Specific Permit authorizes the permit holder (owner of premises) to store or handle motor fuels at a specific premises or location. A site-specific permit is valid for 12 months only. Every permit or renewal shall require an inspection and shall expire after twelve months. FDNY permits are **not** transferable, and any change in occupancy, operation, tenancy or ownership requires that a new permit be issued.

Temporary permit is similar to a permanent site-specific permit; however; it is be valid from one day to 12 months depending on the operation needs. For example, a one-week temporary permit may be issued to a construction job, which only takes one week. Normally, a "hot work" operation (e.g. construction site or hot work repair) is issued a temporary permit.



FIRE DEPARTMENT, CITY OF NEW YORK [redacted] BUREAU OF FIRE PREVENTION

ACCOUNT NUMBER	TYPE	A.P.	D.O.	ADM. CO.	ISSUANCE DATE	PERMIT EXPIRES
77777777	10	P	12	E284	01/28/10	01/11

PREMISES ADDRESS	ACCOUNT NAME
1111 YORK ST STATEN ISLAND NY 11111	CARI & RENO

ITEM CODE	SUB CODE	QTY	DESCRIPTION	FLOOR NO.	FEE
920	00	15	COMPRESSED GASES ONLY STR/USE	1	PAID

PERMIT TYPE: 1

1=REGULAR
2=SUPPLEMENTAL
3=DUPLICATE

CARI & RENO
1111 YORK ST
STATEN ISLAND NY 11111

ANNUAL FEE | PAID

20 11012938

BY ORDER OF THE COMMISSIONER

Example of a Permanent FDNY Permit

Hot Work Operation

- Certificate of Fitness (G-60) is needed for conducting torch operations :
- Certificate of Fitness (F-60) holder must be present to perform fire watch during hot work operations.
- FDNY temporary permits are required to conduct hot work:
  (1) using oxygen and a flammable gas; or
  (2) storing, using or handling any flammable gas (e.g. LPG or CNG or acetylene) in excess of 400 SCF
- Hot Work Authorization (**NOT a FDNY permit**) Requirements
  - A hot work authorizations are to be issued **daily** and are required at all times for any welding, brazing/soldering, torch cutting, and spark production. A hot works authorization should be prepared by the responsible person for the subcontractor. The P-13 holder may serve as the responsible person or should ensure that such person are designated and monitoring the hot work operations. The P-13 Certificate of Fitness holder should have copies of all FDNY hot work permits and hot work authorizations and shall be kept onsite by the P-13 holder. **Hot work permit is issued by the FDNY, it is different from hot work authorization.**
  - Hot works operations are limited to the area and time specified in the hot work authorization.
  - Subcontractors will identify their responsible person for hot work in their Subcontractor Site Specific Safety Plan.
  - A copy of the FDNY hot work temporary permit and hot work authorization are to be kept by the fire guard. Copies of completed permits will be maintained in the project files.
  - Hot work authorization must be posted in the area where the work is taking place. It must be available for inspection by any reprehensive of the FDNY during the performance of the work and for 48 hours after the work is complete.
  - **Pre-hot work check.** A pre-hot work check shall be conducted by the responsible person prior to work to ensure that all equipment is safe and hazards are recognized and protected. A report of the check shall be kept at the work site during the work and made available for inspection by any representative of the FDNY. The pre-hot work check shall be conducted at least once per day and shall verify the following:
    1. The hot work equipment is in good working order.
    2. The hot work area is clear of combustibles and flammable solids or that such materials present in the area are protected in accordance with Fire Code Section 2604.1.1.
    3. Exposed construction is of noncombustible materials or, if combustible, is protected.
    4. Openings are protected.
    5. Hot work area floors are clear of combustible waste accumulation.
    6. Reserved.
    7. Fire watch personnel, where required, are assigned.
    8. Approved actions have been taken to prevent accidental activation of extinguishing and detection equipment in accordance with Fire Code Sections 2604.1.8 and 2604.1.9.
    9. Portable fire extinguishers and fire hoses (where provided) are operable and available.
    10. All persons performing hot work possess certificates of fitness, where such certificates are required.

11. All persons performing hot work requiring a permit possess a site-specific permit or citywide permit, authorizing such work.

HOT WORK AUTHORIZATION PERMIT

GENERAL INFORMATION

Hot Work Performed By: ☐ Employee ☐ Contractor | ☐ Off-hours	Authorization #
Employee /	Contractors Name:
Supervisor / Foreman Name:	Supervisor / Foreman - On-site emergency contact phone number:
Location: Building address, room # and/or area of work . _____ _____ _____	Permit Start Date: _____ Permit Start Time: _____ Permit Stop Date: _____ Permit Stop Time: _____ Comments: _____ _____ _____

HOT WORK ACTIVITY

☐ ARC WELDING	☐ SOLDERING	☐ GRINDING	☐ BRAZING	☐ **USING OXYGEN AND A FLAMMABLE GAS (FDNY PERMIT)**
☐ MAPP WELDING	☐ WELDING	☐ CUTTING	☐ NON-FIRE WORK	☐ OTHER:_____

All hot work activities must be conducted by FDNY Certificate of Fitness holders. Certificate holders shall be responsible for keeping such certificate upon his/her person or otherwise readily available for inspection.

Torch Operator:	Certificate #:	Exp Date:
Fire Guard:	Certificate #:	Exp Date:

ACCEPTANCE BY THE RESPONSIBLE PERSON FOR HOT WORK

I certify that all applicable codes, procedures, regulations, rules, pre-checks and safety precautions will be followed for as long as the hot work authorization is effective.

Name: _____ ☐ Employee ☐ Contractor	Signature: _____	Date:

DESIGNATED TO AUTHORIZE THE PERFORMANCE OF HOT WORK

Name:	Signature:	Time:	Date:

Fire alarm precautions taken ☐ YES ☐ N/A Type: _____ _____	Pre-hot work check completed: ☐ YES FDNY permit required to conduct hot work? ☐ YES ☐ N/A

The example of the authorization form (that's seen on previous page) shall be available for inspection by any representative of the Fire Department during the performance of the work and for 48 hours after the work is completed.

(1.2) Certificate of Fitness Responsibilities and Duties
Bulk facilitys / terminals, including transfer operations, shall be continuously under the personal supervision of a person holding a P-13 Certificate of Fitness.

Certificates of Fitness shall be posted in a conspicuous location on the premises designated therein at all times and shall be readily available for inspection by any Fire Department representatives.

At least **1** Certificate of Fitness holder must be on duty at all times. It is recommended that there be at least **2** P-13 Certificate of Fitness holders on duty during the transfer operations. Transfer may include barge to tank, tank to barge or tank to tank transmissions. Transferring tank to loading rack requires only **1** P-13 Certificate of Fitness (COF) holder.

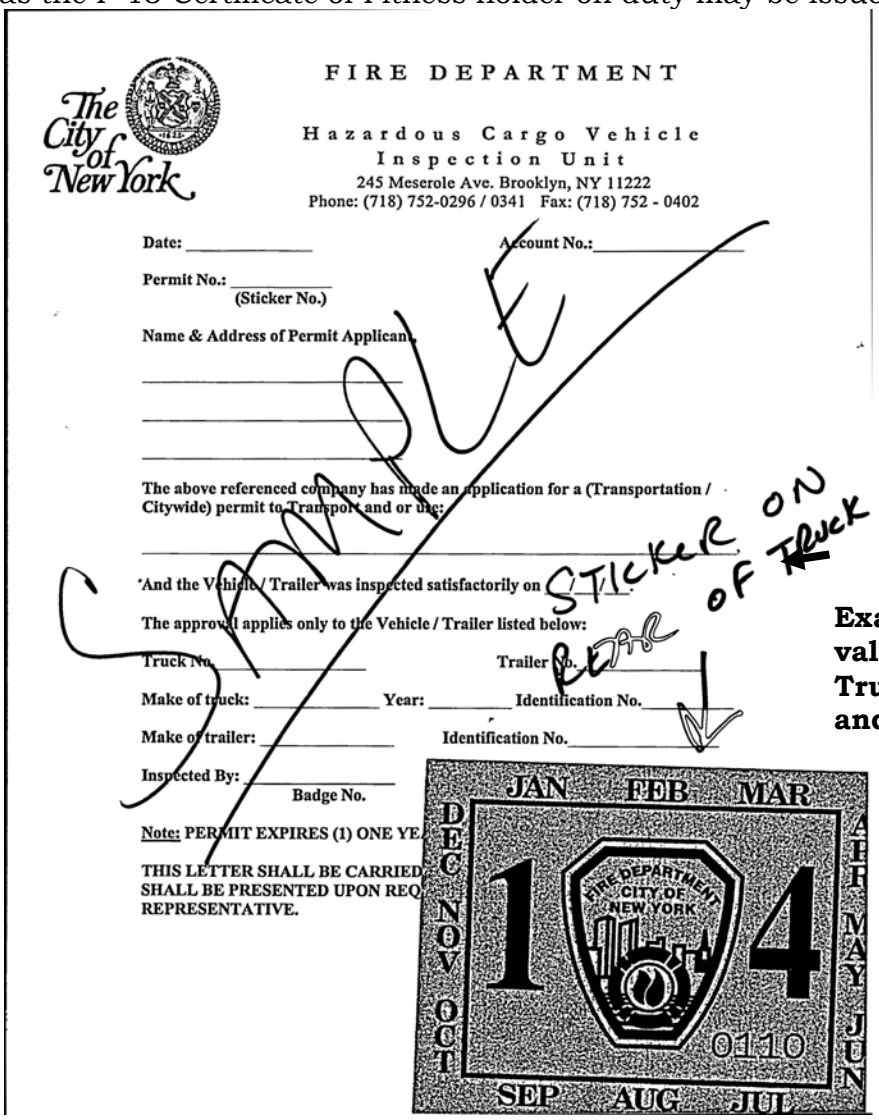
Bulk facilities and terminals, including transfer operations, shall be continuously under the personal supervision of a person holding a certificate of fitness for such facility. The P-13 Certificate of Fitness holder's supervision of the bulk oil terminal/facility shall satisfy the requirements of the NYC Fire Code for the fire protection systems including yard hydrant systems and foam systems at the facility. If your facility has sprinkler or standpipe systems you must obtain S-12 Certificate of Fitness for Citywide Sprinkler Systems or S-13/S-14 Certificate of Fitness for Standpipe Systems. The Certificate of Fitness holders must ensure that the fire protection systems are maintained in good working order.

When a fire protection system is out-of-service, the P-13 Certificate of Fitness holder must notify the management. Management may then notify the Fire Department at its own discretion. The Fire Department must also be notified when any part of the fire protection system is shut down. This will allow the Fire Department to modify its fire-fighting strategies for the facility in case of an emergency. Also, in case of any malfunctions, the Certificate of Fitness holder must notify the management of the terminal/facility and the management must make arrangements to have the Fire Protection System repaired or replaced. A violation will be issued to the Certificate of Fitness holder when the Fire Department rules and regulations are not followed at the facility. In serious cases, the Certificate of Fitness may be revoked and summonses may be served.

The Certificate of Fitness holder should conduct regular inspections of the entire yard system. The Certificate of Fitness holder should sign and date all the records.

The P-13 COF holder must ensure that trucks that are entering the terminal to load or unload have a valid FDNY permit. That permit is issued by the FDNY after the truck passes the inspection. Inspection of the truck focus on DOT regulations for such items as proper tires, lights, wipers, portable fire extinguishers and more. If the truck does not have a valid FDNY permit sticker or the truck driver does not have the proper

documentation, the truck driver will be issued a violation; furthermore, the terminal owner as well as the P-13 Certificate of Fitness holder on duty may be issued a violation.



FIRE DEPARTMENT

Hazardous Cargo Vehicle Inspection Unit
245 Meserole Ave. Brooklyn, NY 11222
Phone: (718) 752-0296 / 0341 Fax: (718) 752 - 0402

Date: _____ Account No.: _____

Permit No.: _____ (Sticker No.)

Name & Address of Permit Applicant:

The above referenced company has made an application for a (Transportation / Citywide) permit to Transport and or use:

And the Vehicle / Trailer was inspected satisfactorily on _____.

The approval applies only to the Vehicle / Trailer listed below:

Truck No. _____ Trailer No. _____

Make of truck: _____ Year: _____ Identification No. _____

Make of trailer: _____ Identification No. _____

Inspected By: _____ Badge No.

Note: PERMIT EXPIRES (1) ONE YE

THIS LETTER SHALL BE CARRIED
SHALL BE PRESENTED UPON REQ
REPRESENTATIVE.

Example of a valid FDNY Truck Permit and sticker.

In addition, handling packaged cargo of liquids, including full and empty drums during cargo transfer shall be subject to the approval and under the personal supervision of the bulk facility or terminal Certificate of Fitness holder and the senior deck officer on duty.

***NOTE: The Certificate of Fitness holder is responsible for making sure that all fire safety regulations and procedures are obeyed on the premises at all times.**

Terminal management shall keep a record of **all** inspections. All tests and inspections of the fire protection systems at the facility must be recorded in the facility's logbook. These records should be kept for at least **5 years**. Upon request, the records should be made available to any representative of the Fire Department.

(II) Bulk Oil Facilitys/Terminals

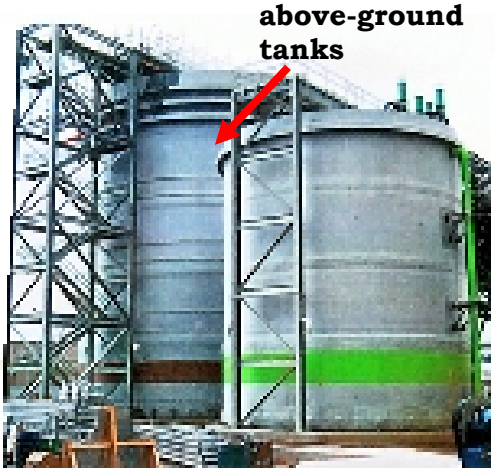
Premises must be designed, installed, operated and maintained consistent with the NYC Fire Code where flammable and combustible liquids are received by marine vessels, pipelines, tank cars or cargo tanks and which are stored or blended in bulk for the purpose of using or distributing such liquids by marine vessels, pipelines, tank cars or cargo tanks. Storage of flammable and combustible liquids in bulk facilitys and terminals shall be in compliance with the applicable requirements of Chapter 34 of the NYC Fire Code.

(2.1) Tanks

Product tanks shall be inspected, repaired, altered and reconstructed as according to API standard 653 and its regulations. Depending on the product service the interior of tanks shall be inspected every **10 years.**

NOTE: COF holders on duty are required to inspect the tank farm daily.

ABOVE-GROUND TANKS



Example of an above-ground tanks

Cone Roof tanks may be used to store products with high flash points (e.g., # 2 oil, 4 oil, 6 heating oil and diesel fuel). When #6 heating oil is stored, it must be heated to keep it in a fluid state to facilitate easy transfer to and from the storage tank; however, the Certificate of Fitness holder must ensure that the heating oil is maintained at a temperature below its flash point.

A **vapor recovery system** may be installed when a cone roof tank is used to store products with a low flashpoint. This system is designed to capture and remove vapors from the storage tanks through piping. This piping is connected to a manifold, which directs the vapors to a vapor recovery unit. The vapor recovery unit is used to process the vapors before they are returned to a storage tank, or are burned off. A vapor recovery system may be installed to draw combustible vapors from the storage tanks. Under normal conditions, this vapor is super saturated; however, this vapor may become combustible when the temperature of the product drops suddenly. For example, the vapor may become combustible when the tank is cooled by a rainstorm on a hot day. It may also be cooled when transferring product from the tank.

The vapor recovery units must be inspected at least once every **6 months**. These inspections must be conducted by an authorized representative of the manufacturer and recorded in the facility inspection log.

Floating Roof tanks are used to store gasoline and other low flash point materials. Floating roof tanks simply have a roof that rests on top of the product and prevents the release of the vapors. There are two types of floating roof tanks: **Open-Top** and **Covered Top tanks**.

Open-Top Floating Roofs rest upon the product and moves up and down as the product level increases or decreases. The floating roof tanks are used to store products with lower flash point (e.g., gasoline and certain types of aviation jet fuels).

Covered Floating Roof tanks have a pan-type floating-roof installed inside the tank. The pan roof consists of a single level roof, which floats on the product. There are no compartments installed on the pan roof to aid floating. When gasoline is stored, care must be taken to ensure that the vapors given off by the gasoline are not ignited by static electricity. To prevent accidental ignition because of static electricity each tank must be electrically grounded.

A vent of a tank with product which has a floating roof is located at the area between the floating roof and the actual roof.

Mounded Over tanks have flat roofs and are installed either partially or completely underground. These tanks must be completely enclosed with steel, earth or reinforced concrete.

Mounded Over Tank (example)

(2.1.1) Tank Requirements

Maximum Capacity for Aboveground Tanks that are used for storage of a flammable liquid shall not exceed 500,000 gallons, while storage of combustible liquid shall not exceed 6,000,000 gallons.

Maximum Capacity of Underground Tanks used for storage of a flammable liquid shall not exceed 500,000 gallons, except where the commissioner may approve the installation of underground tanks with a capacity not to exceed 6,000,000 gallons.

Underground storage tanks used for storage of a combustible liquid shall not exceed 6,000,000 gallons. Such tanks may be compartmented; however, in no case shall any compartment exceed 4,000,000 gallons.

THE MAXIMUM **HEIGHT OF AN ABOVEGROUND FLAMMABLE AND COMBUSTIBLE TANK SHALL NOT EXCEED 40 FEET**.
EXCEPTION: Aboveground **vertical cylindrical tanks** storing combustible liquids shall not exceed 48 feet in height.
***NOTE: Tanks built earlier may be grandfathered in terms of sizing requirements.**

It is important that the foam chambers are installed high enough on the tank wall, so that liquid content does not contaminate it, and chambers are able to function properly.

(2.1.2) Tank Tests
Any time a tank is altered or repaired it is subject to **24-hour standing water** test, unless other arrangements have been made with terminal management and FDNY officials. This test is at the owner's risk, and is conducted by his or her representative before a representative of the Fire Department.

Varec shall be tested **every year** for accuracy and freedom of movement.

***NOTE:** Varec is a device that is often used to measure how much liquid is inside the storage tank in addition to manual gauging.

(2.2) Vents in Tanks
Normal and emergency vents shall be maintained in good working order at all times. Each tank must be fitted with vents to permit normal venting during the transfer of product to and from the tank. These vents are required to prevent distortion of the tank during product transfer. Tanks used for the storage of products with a flash point below 100 degrees Fahrenheit may have venting devices that remain closed under normal conditions. Continuous mechanical ventilation shall be provided and shall comply with the requirements of the construction codes, including the NYC Building Code and the Mechanical Code.

Flushing and Drainage
Manual drainage-control valves shall be located at approved locations remote from the tanks, diked area, drainage system and impounding basin to ensure their operation in a fire condition. The area surrounding a tank or group of tanks shall be provided with drainage control or shall be diked to control a spill and prevent accidental discharge of liquid from endangering adjacent tanks, adjoining property or reaching waterways. The area shall be in compliance with the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Section 613.3(c)(6).

(2.3) Tank Field must be inspected on a daily basis for the following items:
- The area is free of combustible storage, trash, debris, brush, or material that could present a fire exposure hazard.
- The area is free of the accumulation of material on or near parts that could result in accelerated corrosion or rot.
- The tank and support are free of ice buildup.

- The exterior sides and top of embankments supporting coated fabric tanks are free of erosion.
- Ensure that all the valves, flanges, oil structures and pipe connections are free of leaks and corrosion or potential hazards.

(2.4) Overfill Protection
Each tank shall be equipped with an approved electrically operated overfill protection system, to prevent an overfill during the transfer of flammable or combustible liquid from a marine vessel, pipeline, tank car, cargo tank or storage tank.

Overfill Alarms
Audible and visible alarms shall be activated automatically when the liquid level in the tank approaches 95% of tank capacity and again when it attains a level of 98% of tank capacity. This alarm shall be connected to the marine vessel, pipeline, tank car or cargo tank receiving point, as applicable, **AND** to the facility dispatcher's office. Tanks filled by any pipeline shall be provided with a shutoff valve **(Brodie Valve also known as Broady Valve)** in the in-bound line which will automatically shut-off the flow to the tank when the liquid level in the tank approaches 95%. Alarms are designed to automatically send a signal to an annunciation panel inside the supervised office when the product level inside the tank approaches a predetermined level. The first alarm is called the **HIGH-ALARM (Hi)**. The Fire Department requires the high-alarm to be calibrated to signal when the **tank is filled to 95%** of its total capacity. The second alarm is called the **HIGH-HIGH ALARM (Hi-Hi)**. The Fire Department requires the high-high alarm to be calibrated to signal when the tank is filled to **98% of its total capacity**. (The HIGH and HIGH-HIGH alarms in some storage tanks may be calibrated to signal when the tank is filled to levels less than 95% and 98% total capacity. For example, the HIGH and HIGH-HIGH alarms may be calibrated to signal when the tank is filled to 90% and 95% total capacity respectively.
The HIGH and HIGH-HIGH alarms must NOT be calibrated to signal when the tank is filled to levels greater than 95% and 98% total capacity respectively.

NOTE: When the product is delivered by a pipeline company, a special safety mechanism is installed. It is designed to automatically shut down the product transfer when the Hi alarm sounds. The product level must be measured using manual gauging. A tank that is not being moved is gauged according to terminal guidelines.

Dikes / Secondary Containment
Dikes are designed to prevent the flow of the product to other property and waterways in case of a spill. They shall be constructed of steel or other approved noncombustible material. Each dike must be liquid tight and capable of withstanding full static pressure. Dikes must be installed around all above ground storage tanks. Some dikes are constructed so that they form a steel enclosure around each tank. Other dikes are designed to form a concrete of earth wall around several tanks.

Above Ground Tank and Dike

Each single dike wall enclosure shall have a capacity equal to **110 percent** of the tank's capacity. **Tanks arranged in groups with a total capacity not exceeding 500,000 gallons may be enclosed in a single dike wall enclosure.**

Each diked area containing two or more tanks shall be subdivided, preferably by drainage channels or at least by intermediate dikes, in order to prevent minor spills from a tank which may endanger adjacent tanks within the diked area. The drainage channels or intermediate dikes shall be located between tanks so as to take full advantage of the space with due regard for the individual tank capacities. Intermediate dikes shall be not less than 18 in. in height.

NOTE: There should be no automatic drainage for the dikes. Each dike should be manually inspected before discharge of storm water.

Whenever two or more tanks storing Class I liquids, any one of which is over 150 ft in diameter, are located in a common diked area, intermediate dikes shall be provided between adjacent tanks to hold at least **10 percent** of the capacity of the tank. Piping **SHALL NOT** pass through adjacent diked areas or impounding basins, unless provided with a sealed sleeve or otherwise protected from exposure to fire. Diked areas shall be kept free from combustible materials, drums and barrels.

(2.5) Product Piping Components

Product piping shall be **hydrostatically tested** to **150 percent** of the maximum anticipated operating pressure of the system. For a minimum of **60 minutes**, there shall be no leakage or permanent distortion **(applies for new installation or reconstruction only).**

Underground product piping shall be tested **once every 10 years** before a representative of the Fire Department. Such test shall be made at 100 pounds per square inch or 150 percent of the maximum operating pressure, whichever is greater, for 30 minutes. Piping system tests shall be conducted at the owner's risk by his or her representative before a representative of the Fire Department.
***NOTE**: Storage tanks shall be tested independently from the piping.

Valves shall be properly maintained, the Certificate of Fitness holder should ensure there are no leaks and valves are easily operable. The purpose of valves is to isolate a pipe section or tank and/or to control product flow.

The following images are of a Butterfly Valve

Approved **automatically** or **manually** activated shutoff valves shall be provided where the transfer hose/piping/pumps connect to the process piping, and on both sides of any exterior fire-resistance-rated wall through which the piping passes. Manual shutoff valves shall be arranged such that they are readily accessible from grade. Depending on the type of valve, they can be locked in varies positions.

Pressure Relief Valves shall be tested **every year** with a calibrated gauge in accordance with the manufacturer's instructions.

***NOTE:** Gauges not accurate to within 3% of the scale of the gauge being tested shall be recalibrated or replaced.

Hydrostatic Relief
Hydrostatic pressure-limiting or relief devices shall be provided where pressure buildup in trapped sections of the system could exceed the design pressure of the components of the system.

Backflow Protectors (Terminal Specific)
Connections to pipelines or piping by which tank cars, cargo tanks, or marine vessels or other equipment discharge liquids into storage tanks shall be provided with **check valves** or **block valves** for automatic protection against backflow where the piping arrangement is such that backflow from the system is possible. Where loading and unloading occurs through a common pipe system, a check valve is not required except as required by the applicable provisions of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Section 613.3(c)(4); however, a block valve (gate valve) shall be provided which is located so as to be readily accessible or remotely operable.

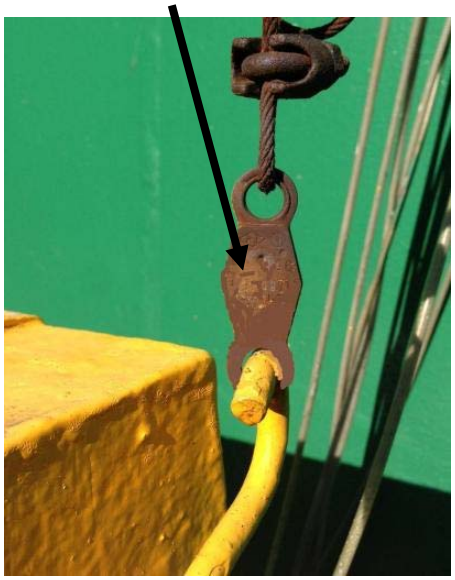
Brodie Valve (also known as a Broady Valve is a motor operated valve) is a main valve which controls the flow of the product being delivered into a tank. It can be operated manually, automatically or by a facility operator. It automatically closes at when the tank is 95% full or sooner.

Brodie valve CANNOT be operated by a product truck driver.

Emergency Shut-Off Valves and Levers

A single emergency shut-off valve must be installed for some mounded-over tanks. It must be installed close to the tank just outside the earth or concrete enclosure. It is important to note that this valve must contain a **fusible link**. A fusible link permits the valve to close automatically when exposed to a predetermined temperature, approximately 212°. For example, when exposed to a fire, the fusible link will melt and cause the valve to close automatically. A fusible link ensures that in emergency procedures, such as when fire is ignited a fusible link breaks and closes the valve. It is made from two pieces of raided metal welded together with lead. The link has a stamp of the melting temperature on it. Fusible links can be installed in different locations, and they are considered extremely important mechanism in terminating the spread of fire.

Example of a Fusible Link



Approved automatically or manually activated shutoff valves shall be provided where the transfer hose connects to the process piping, and on both sides of any exterior fire-resistance-rated wall through which the piping passes. Manual shutoff valves shall be arranged such that they are readily accessible from grade.

(2.6) Docks and Berths

Wharf is a structure on the shore of a harbor where ships/barges may dock to load and unload cargo. Such a structure includes one or more berths (mooring locations), and may also include piers, cells, docks, warehouses, or other facilities necessary for handling the ships.

Cell

Dock

Transferring Equipment

Loading pumps capable of building up pressures in excess of the safe working pressure of cargo hose or loading arms shall be provided with bypasses, relief valves or other arrangements to protect the loading facilities against excessive pressure. Relief devices shall be tested at least **annually** to determine that they function satisfactorily at their set pressure.

Transferring Location

Decking shall be constructed of durable and flexible materials that will withstand all the following conditions:

- **RESISTANCE TO SHOCK**
- **EXCESS MOVEMENT**
- **FIRE RESISTANCE**

(IIV) Product Transfer

Bulk transfer operations shall be conducted in approved locations. Product can be transferred from vessels/barges, trucks, pipelines and other tanks. The Certificate of Fitness holder must determine the level of product in a given storage tank before any product may be transferred to that tank. Then the Certificate of Fitness holder must calculate the amount of product that can be safely transferred into the tank.

(3.1) Loading and Unloading Vessels/Barges

(FC 3406.4.7.7) Loading or unloading shall not commence until the P-13 Certificate of Fitness holder and PIC (person in charge) of the marine vessel agree that the marine vessel has been properly moored, pre-transfer paperwork is completed, connections have been properly made and the vessel has been properly grounded. It is the P-13 holder's responsibility to ensure proper fire-fighting equipment (hoses, nozzles, wrenches, extinguishers etc.) is in place and in working order.

Communication should be maintained by all parties involved with the product movement between the vessel and the dock. The field personnel must use safe (explosion proof) radios.

Once all of the above requirements have been met, and all authorized parties involved agree, commencement of the product movement can begin.

Wharves shall be kept in such a manner that there would be unobstructed access pertaining to firefighting apparatus, equipment, important pipeline or other delivery control valves. When the product is transferred from a marine vessel the Certificate of Fitness holder must report to and follow the instructions issued by the **Coast Guard.**

***NOTE:** Coast Guard approved Declaration of Inspection must be completed prior to product movement. The piping from the dock manifold to first tank valve is tested to meet U.S. Coast Guard requirements.

***NOTE:** When the product is transferred from a marine vessel, the Certificate of Fitness holder must follow the approved Coast Guard operations manual. If for any reason smoke or any unusual occurrence happens during any transfer the CoF holder should immediately shut down the equipment.

(3.2) Transferring of Product via a Pipeline

Product may be transferred to a tank through a company's pipeline or through an intra-facility pipeline system. The P-13 Certificate of Fitness holder is responsible for the product transfer and must supervise all transfer operations. The product level must be physically gauged periodically (it may be as often as hourly - depends on the company policy) during the transfer and all safety regulations must be followed.

***NOTE:** It must be kept in mind that product may be transferred between the tanks, as well as product that comes through the pipeline from another terminal.

(3.3) Transfer of Product from Tank to Tank

All tanks shall be connected by a system of steel pipes in a manner that the contents of each tank may be transferred to another tank without resulting in product

contamination, or flash point reduction of the stored liquid. This system may be used to transfer product from one tank to another when a leak is discovered.
NOTE: Several liquid products must not be mixed with other products, for instance, diesel may only be transferred to other diesel tanks.

(3.4) Transfer of Product from Tanks to Trucks (via the loading rack):

NO FUEL OIL TRUCK SHALL BE LOADED UNLESS IT HAS:

- A current Fire Department Permit and sticker for the type and amount of oil listed.
- The driver with a current commercial driver's license with Haz Mat Endorsement.
- Capacity of compartments shown on tank.

***NOTE: No tank truck may be filled to exceed USDOT requirements.**

While loading, motors of cargo tanks and tank cars shall be shut off. That includes, during the making and breaking of hose connections and during the unloading operations.

Chute for Bottom Loading

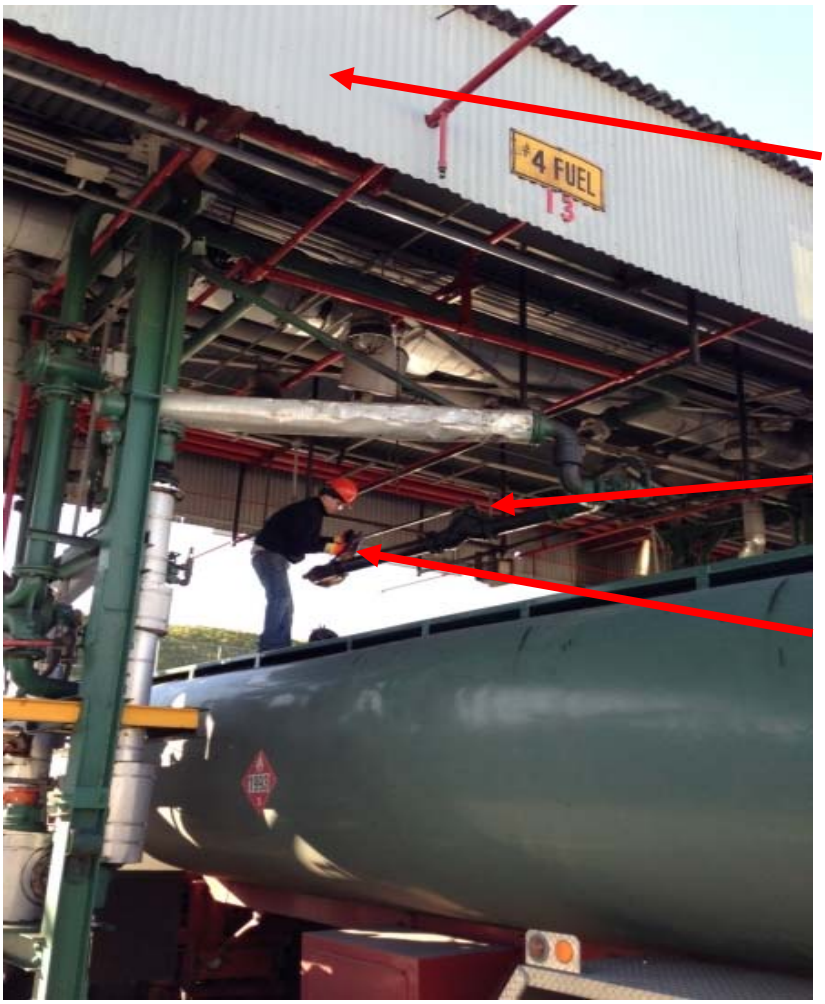
Cargo Tank / Tank Truck Stability
Tanks and tank trucks shall be stabilized against movement during loading and unloading. When a cargo tank is parked for loading or unloading, such cargo tank shall be secured in a manner that will prevent unintentional movement. At least two chock blocks not less than 5 inches by 5 inches by 12 inches in size and dished to fit the contour of the tires shall be used during transfer operations of cargo tanks. Brakes shall be set and it is recommended that the wheels be blocked to prevent rolling.

Wet Hose is a practice of fueling from one truck to another. IT IS NOT ALLOWED!
Wet Hose is sometimes permissible on a construction site from the truck to construction equipment if a variance has been issued.

***NOTE: Cargo tanks / tank trucks shall never be located indoors while transferring Class I, II or III liquids;** however, cargo tanks are allowed under weather protection canopies and canopies of automotive liquid motor fuel-dispensing facilities.

(3.5) Loading Racks are used when dispensing products from the storage tanks to the tank trucks. The loading rack must be properly grounded. The piping and loading arms of this structure must be equipped with automatic shutoff valves. Wiring and electrical equipment located within 25 feet of any portion of the loading rack shall be in accordance with Section 3403.1.1 of the NY Fire Code.

Top Loading
When top loading a tank with Class I and II liquids without vapor control, valves used for the final control of the flow shall be of the self-closing type and shall be manually held open except where automatic means are provided for shutting off the flow when the tank is full. When used, automatic shutoff systems shall be provided with a manual shutoff valve located at a safe distance from the loading nozzle to stop the flow if the automatic system fails. When top loading a cargo tank with vapor control, flow control shall be in accordance with **bottom loading.** Self-closing valves shall not be tied or locked in the open position. It is important to maintain vapor space inside the storage tanks to allow for the expansion of the product.



NOTE: Grounding is used for fuel oil loading only.

Deadman Valve is a valve that automatically closes if not held open by an operator. It is a spring loaded valve and must be carefully watched.

Filling through Open Domes
Filling from tanks to trucks shall be by means of a downspout which extends to about 2-3 feet into the tank. This is only allowed for fuel oil, **it shall be unlawful to fill a cargo tank or tank truck with gasoline through an open dome.**

Bonding facilities shall be provided to cargo tanks or tank trucks during the transfer through open domes where Class I liquids are transferred. Protection shall consist of a metallic bond wire permanently electrically connected to the fill stem. The fill pipe assembly shall form a continuous electrically conductive path downstream from the point of bonding. The free end of such bond wire shall be provided with a clamp or equivalent device for convenient attachment to a metallic part in electrical contact with the cargo tank or tank car.

Stray Current Protection
Where Class I, II or IIIA liquids are transferred through open domes shall be protected against **stray currents** by permanently bonding the pipe to at least one rail and to the transfer apparatus. For example, stray currents may occur from lighting or by electric fields from transformers.

When **bottom loading** a cargo tank or tank truck, with or without vapor control, a positive means shall be provided for loading a predetermined quantity of liquid, together with an automatic secondary shutoff control to prevent overfill. The connecting components between the transfer equipment and the cargo tank or tank car required to operate the secondary control shall be functionally compatible.

Vapor-Tight Connection is designed to prevent the escape of vapor to the atmosphere when not connected to a cargo tank or tank truck.

Dry Disconnect Coupling
When bottom loading a cargo tank, the coupling between the liquid loading hose or pipe and the cargo tank piping shall be a dry disconnect coupling.

Switch Loading
Cargo tanks or tank cars which have previously contained Class I liquids shall not be loaded with Class II or III liquids until such tanks or cars and all connected piping, pumps, hoses and meters have been completely drained and flushed.

Static Protection shall be provided to prevent the accumulation of static charges during **transfer operations**.

(3.6) Spills
Bulk facilitys and terminals storing petroleum products and petroleum product pipelines operating within the city shall provide oil absorbent material, oil dispersant material, booms and other such material and equipment for the control and remediation of oil spills. MP Booms (Marine Pollution Booms) don't absorb the product; however, Sausage Booms do absorb the product.
***NOTE:** OPA (Open Pollution Act) 90 lists all the material required to be onsite in case of a spill.

INSTRUCTIONS ON REPORTING A SPILL MAY VARY WITH EACH FACILITY; however, typically they are listed as follows:

Step 1. Find the source.
Step 2. Notify the manager .
Step 3. Manager will contact the National Response Center (Coast Guard) – only if spillage impacts water. DEC (Department of Environmental Control) should be notified for spills of 5 gallons or more.
Step 4. Notify the Fire Department.
Step 5: Notify a spill clean-up company (OSRO-Oil Spill Response Organization(s)).

In case of spillage in water, extra steps must be taken:
Step 6: Stop the source
Step 7: Contain the spill (using booms and absorbent material)

Spill Equipment Material and Inventory
Quantities of clean-up materials, equipment and personnel shall be available for use at each bulk facility and terminal and locations designated for pipeline operations in accordance with table below, the rules or as a condition of the permit for the facility.

MATERIAL OR EQUIPMENT	TOTAL PETROLEUM PRODUCT STORAGE			
	1,000,000 GALLONS OR LESS	5,000,000 GALLONS OR LESS	10,000,000 GALLONS OR LESS OR PIPELINE OPERATION	OVER 10,000,000 GALLONS
Absorbent material to recover	3,000 gallons	5,000 gallons	10,000 gallons	20,000 gallons
Boom *(should be stored out of the sun)	300 feet	300 feet plus enough to encircle marine vessel or barge which may be loading or unloading at the premises		

Absorbent Materials Used to Control Product Spills
The absorbent material must meet the minimum absorption standards established by the Fire Commissioner. Generally, **each pound of the absorbent material must be capable of absorbing a half-gallon of the spilled product.**

Non-absorbing, non-drowning containment equipment.

Note: The equipment has to be covered from the sun, or stored indoors. It is prohibited to store sausage/boom as shown on the image on the right.

THE USE OF CLEAN-UP SERVICE
The commissioner may approve the utilization of an oil spill clean-up service as a "back-up" spill mitigation measure, authorizing the material quantities to be reduced by 2/3 of those specified above table, but to a quantity not less than 3,000 gallons of absorbent material and 300 feet of boom.

THE FOLLOWING CONDITIONS MUST APPLY BEFORE THE USE OF A SPILL CLEAN-UP COMPANY:
A. A responsible officer of the bulk facility and terminal or pipeline operation shall submit a sworn affidavit identifying the oil spill clean-up service with which it has contracted to perform such services, attesting that such oil spill clean-up service meets the standards set forth in the nature of the services to be rendered.
B. The fire department shall be notified, in writing, within 10 business days of the date when the utilization of the clean-up service is cancelled or the service goes out of business.
C. Such approval may be rescinded by the commissioner for good cause for failure of the spill clean-up service to timely respond to an oil spill, to have adequate equipment, materials or personnel, or to obey or cooperate with the department representatives in charge of the scene of the oil spill.

Availability of adequate storage facilities, materials handling equipment and personnel staff shall be continuously available to properly deploy and apply the materials and equipment specified in the above Section.

It is the Certificate of Fitness holder's responsibility to be aware of the **First Response Company.** Its contract number shall be listed in the operations manual.

(IV) Fire Protection Systems

(4.1) FIRE EXTINGUISHERS

Several **portable fire extinguishers** must be provided throughout the bulk storage facility. These extinguishers must be located in plain view and kept **unobstructed** at all times. Hand held portable fire extinguishers with a **rating of not less than 20-BC** shall be located within **75 feet** of product transfer hose connections, pumps and separator tanks. Portable fire extinguishers shall be hung so that the bottom is not less than 2 and not more than 4.5 feet above the floor or adjusting ground level. The Certificate of Fitness holder must be familiar with the different types of fire extinguishers available at the facility where he or she works. He or she must know how to operate the extinguishers in a safe and effective manner. They must know the difference between the various types of extinguishers and when they may be used.

CLASSES OF FIRES AND THE APPROPRIATE EXTINGUISHERS:

- ***Class A*** fires are caused by **ordinary combustible materials** (such as wood, paper, and cloth). To extinguish a Class A fire, these extinguishers utilize either the heat-absorbing effects of water or the coating effects of certain dry chemicals.
- ***Class B*** fires are caused by **flammable or combustible liquids and gases** such as oil, gasoline, etc. To extinguish a Class B fire, the blanketing-smothering effect of oxygen-excluding media such as CO2, dry chemical or foam is most effective.
- ***Class C*** fires involve **electrical equipment**. These fires must be fought with fire extinguishers that do not conduct electricity. **Foam and water type extinguishers must not be used to extinguish electrical fires.** After shutting off the electrical equipment, extinguishers for Class A or B fires may be used.
- ***Class D*** fires are caused by **ignitable metals**, such as magnesium, titanium, and metallic sodium, or metals that are combustible under certain conditions, such as calcium, zinc, and aluminum. **Generally, water should not be used to extinguish these fires.**

Wheeled Powder Fire Extinguisher

Portable Fire Extinguishers

Examples of different Fire Extinguishers

Symbols may also be painted on the extinguisher. The symbols indicate what kind of fires the extinguisher may be used on. Examples of these symbols are shown below. The symbol with the shaded background and the slash indicates when the extinguisher must not be used. The Certificate of Fitness holder must understand these symbols. All fire extinguishers should be kept in **good working order at all times**.

Operation Instructions for a Fire Extinguisher

Fire Extinguisher Inspections and Maintenance
The extinguishers are required to be **visually inspected monthly**. The owner of the premises is responsible to designate a person to perform a monthly inspection. This inspection is a "**quick check**" that a fire extinguisher is available and will operate. It is intended to give reasonable assurance that the fire extinguisher is fully charged and operable.

"Quick Checks" are done by:

- Verifying that the fire extinguisher is in its designated place,
- Confirmed that it has not been actuated or tampered with and,
- That there is no obvious or physical damage or condition to prevent its operation.

The information of the monthly **inspection record** must include:

- The date the inspection was performed;
- The person performing the inspection, and
- Those portable fire extinguishers found to require corrective action.

Monthly Inspection Tag

Such recordkeeping must be either attached to the extinguisher or on an inspection checklist maintained on file. **Labels or markings indicating fire extinguisher use, or classification, or both shall be placed on the front of the fire extinguisher.**

***NOTE: At least once per year, all fire extinguishers must be serviced by a FDNY approved company / W-96 Certificate of Fitness holder.**

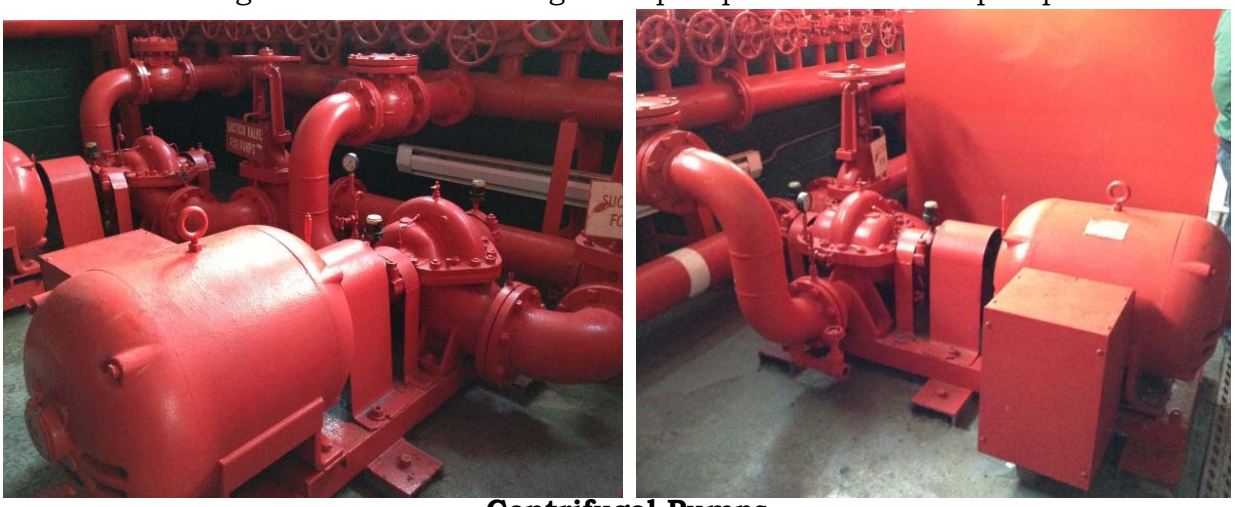
Wheeled fire extinguishers must be periodically inspected to ensure that they are working properly. **They should be tested according to the schedule recommended by the manufacturer.** All inspections should be recorded on the tag attached to the fire extinguisher. **These inspections must be conducted by an authorized representative of the manufacturer.** The extinguisher must be inspected to ensure that all extinguishers are fully charged. **Defective extinguishers must be repaired or replaced.** The name of the person conducting the inspections and the date must be recorded on the tag attached to the fire extinguisher. The Certificate of Fitness holder may also record these inspections in his/her log. Depending on the material that the extinguishers are made from, all of them are subject to periodical hydrostatic testing.

(4.2) Fire Pumps

A fire pump can be used as a provider of liquid flow and pressure dedicated to fire protection system. Fire pumps are designed to take the water from a supply source and then discharge the water into the fire protection system under high pressure. A fire pump can pump water into a fire protection system for a long time with a good water supply. Pumps can be designed to work with fresh water or salt water. The amount of pressure with which the water is discharged from the pump is called the total head. The total head is measured in pounds per square inch (psi). The higher the psi rating of the pump the greater the pressure with which the water can be discharged. Fire Pumps shall be sized to satisfy the hydraulic requirements of the fire protection system.

Manually started pumps **may be** used as a secondary supply source if the primary water supply will last long enough to allow the pump to be started. This type of system gives an automatic water-flow signal to the Certificate of Fitness holder when the pump must be started. Automatic fire pumps are usually needed where a high water demand may occur immediately. This demand may occur in a deluge system. The automatic fire pump is also used when someone is not always present to activate a manual pump. Automatic fire pumps must have their suction “under a positive head” to avoid the delays of drawing water from a supply source. **Under positive head** simply means that the water supplying the pump must be fed into the fire pump under pressure. This can be achieved by connecting the fire pump to a supply tank. Water is forced into the pump because of gravity.

A **Centrifugal Pump** is a pump in which the pressure is developed principally by the action of centrifugal force. The centrifugal fire pump is the standard pump used in most



Centrifugal Pumps

fire protection systems. This is the preferred pump because it is reliable, compact, and requires minimum maintenance. It can be powered by a variety of drivers including electric motors, internal combustion engines, and steam turbines.

Vertical Turbine Pump is designed as a modified centrifugal pump that can draw water from streams, ponds, etc., unlike the standardized centrifugal pump. The vertical turbine pump does not require a suction supply to be under pressure for it to operate. Instead it draws the water into the pump through suction. When it reaches a rotating impeller, the water pressure is then increased and is forcefully discharged through the fire protection system.

It is important to inspect the water intake hose, foot valve, and the strainer regularly. Mud, gravel, leaves and any other materials can obstruct a system's piping and cause damage to the pump.

Pressure Maintenance/Jockey Pumps are often found on fire protection systems. These pumps are designed to automatically operate when there is a slight drop in pressure because of the leakage in the system or a pressure surge. The jockey pump restores the pressure in the fire protection system to the desired level. The fire pump activates when the drop of pressure in the system is greater than the capacity of the jockey pump.

(4.2.1) Fire Pump Location

The fire pump should be housed in a room that is fire resistant or constructed of noncombustible material. The pump room should be located as close as possible to the fire protection system. The pump room should be kept clean and accessible at all times. The fire pump, driver, and controller should be protected against possible interruption of service. The temperature inside the pump room should be maintained above 40° Fahrenheit at all times to prevent freezing of the water in the system. The

pump room should only be used for fire protection functions and not for general facility operations.

Temperature of the pump room, pump house or area where engines are installed shall never be less than the minimum recommended by the engine manufacturer.

(4.2.2) Operation and Supervision
When fire pumps are activated by electric automatic controllers it is essential that they are constantly monitored to ensure the availability of the electrical power supply in case of an emergency. For this reason, supervisory devices are installed on the pumps to alert the C of F holder and/or a central station company when there is an electrical power failure. In cases where the stream turbines or internal combustion engines are used similar supervisory devices are installed to signal when there is a problem with the controlling equipment.

(4.2.3) Pump Inspection and Maintenance
In order to ensure the reliable operation of the pump in the case of an emergency, regular inspections and maintenance should be conducted, and the P-13 C of F holder should be aware of those inspection and maintenance events. The pump should be activated each week according to the manufacturer's specifications to ensure that it is working properly. When the pump is in operation, a small water leak is desirable and should not be considered a malfunction.

The centrifugal pump relies on the water supply for cooling and lubrication. The pump should never be operated without the pump being supplied with water.

Where provided, the fire pump suction, the discharge and bypass valves, and the isolation valves on the backflow prevention device or assembly shall be supervised in an open position by a fire alarm system and monitored by an approved central station. Fire pump test outlet valves shall be supervised in the closed position.

A visual inspection of all parts of the pump and the controlling equipment must also be conducted. This inspection should include the condition and reliability of the power supply. If any problems are discovered with the equipment, immediate action should be taken to correct them.

Fire pumps should be fully tested to ensure that the pump, driver, power supply and all other parts are working properly. Several different water supply sources may be used in the yard systems.

Visual inspections should include the following:

- A **weekly** visual inspection shall be made to ensure the pump suction, discharge and by-pass valves are fully open;
- All piping shall be free of leaks;
- Suction line pressure gauge readings shall be normal and supply tank should be full;
- System line pressure gauge readings shall be normal;
- Check **annually** the accuracy of pressure gauge and sensors, pump shaft endplay, coupling alignment and suction screen.

- Casing relief valves – all circulation relief valves shall be inspected weekly to verify that water flows through the valve when the fire pump is operating at shut-off pressure (i.e. churn) to prevent the pump from overheating.
- Pressure relief valves shall be inspected weekly to verify that the pressure down-stream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.

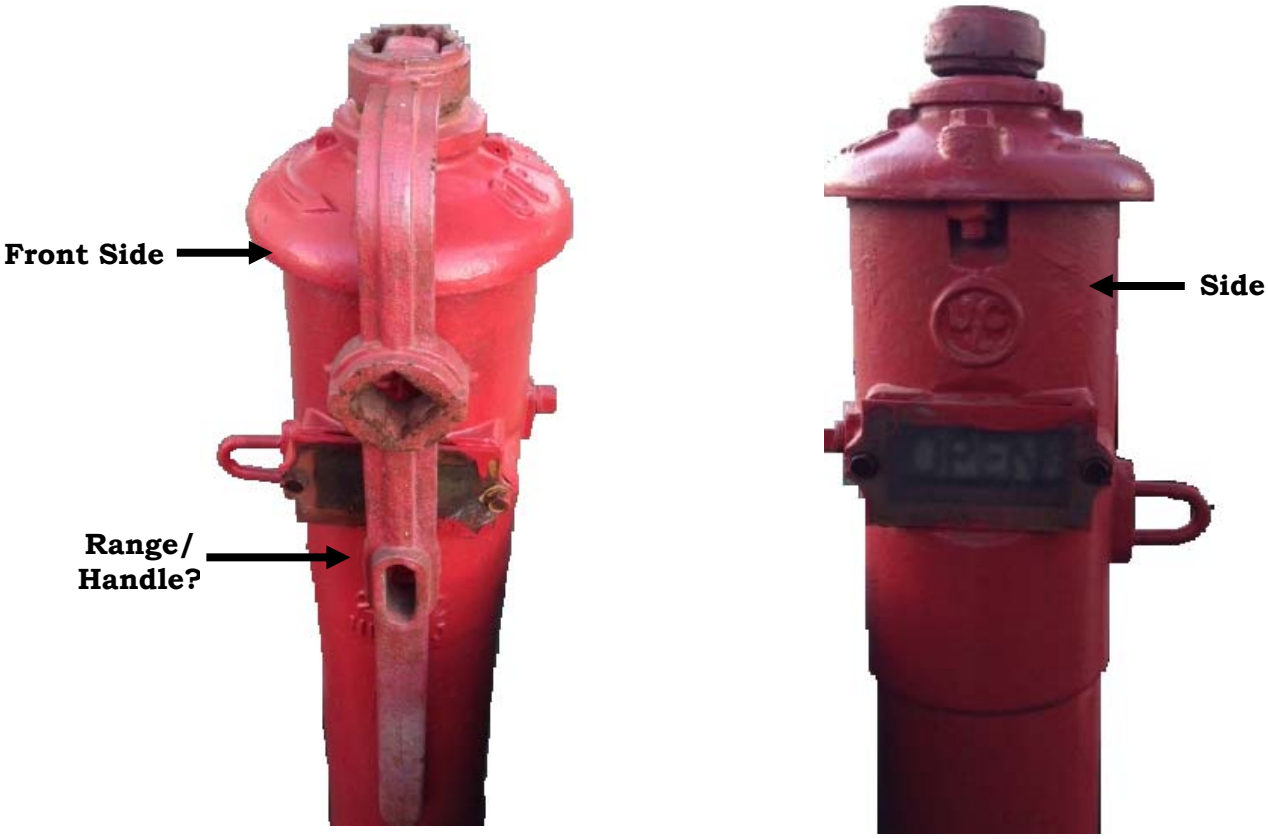
(4.2.4) Testing the Pump

A **weekly test** of fire pump assemblies shall be conducted based on manufacturer's specifications. Tests of pump room environmental conditions, including heating, ventilation and illumination shall be made to ensure proper manual or automatic operation of the associated equipment.

Annual Tests

An annual test of each pump assembly shall be conducted under minimum, rated, and peak flows of the fire pump by controlling the quantity of water discharged through approved test devices. If available suction supplies do not allow flowing of 150 percent of the rated pump capacity, the fire pump shall be permitted to operate at maximum allowable discharge. Care shall be taken to prevent water damage by verifying there is adequate drainage for the high-pressure water discharge from hoses. Pump suction and discharge pressures and the flow-meter measurements shall determine the total pump output, which is measured in gallons per minute (GPM).

PIV (Post Indicator Valve)



(4.3) Post indicator valve (PIV) is a valve assembly used to open and close the water supply to fire protection systems in large facilities. It consists of a conventional gate or butterfly valve located on the fire system water main with a raised post that protrudes above ground level or from a wall. The valve actuator and a visual indicator of the valve status are housed at the top of the post. This arrangement allows for easy opening and closing of the valve and instant visual recognition of whether it is open or closed.

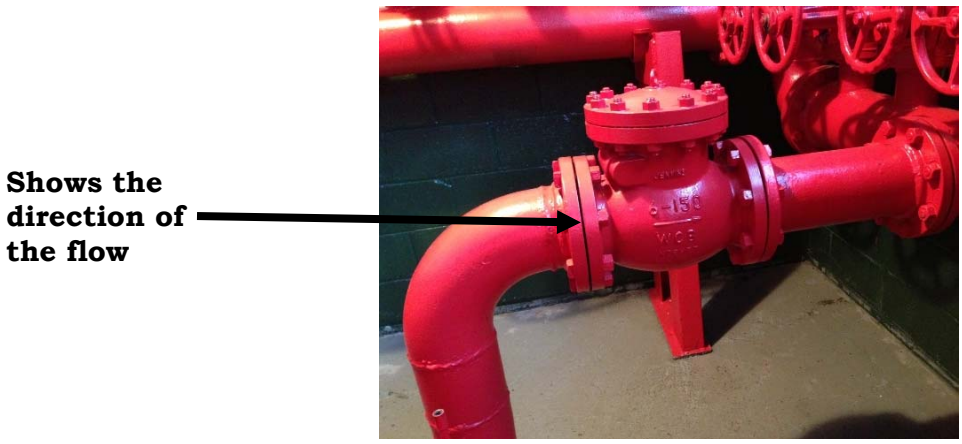


Image (above) is an example of a Check Valve.

(4.4) Fire hose and pressure reducing valves
Fire hose shall be maintained in accordance with NFPA 25 - Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.

Fire hose, when required, shall be provided and enclosed within a cabinet, and hose stations shall be labeled: FIRE HOSE—EMERGENCY USE ONLY.

All valves shall be inspected annually to verify the following:

• **The handwheel is not broken or missing.**
• **The outlet hose threads are not damaged.**
• **No leaks are present.**
• **The reducer and the cap are not missing.**

(4.5) Check valves shall be inspected internally every **5 years** to verify that all components operate correctly, move freely, and are in good condition.
Internal components shall be cleaned, repaired, or replaced as necessary in accordance with the manufacturer's instructions.

Damaged Valves

A full flow test shall be conducted on each hose connection pressure reducing valve at 5-year intervals and shall be compared to previous test results. A full flow test is also a part of the 2-Year Performance Test. Adjustments shall be made in accordance with the manufacturer's instructions. A partial flow test adequate to move the valve from its seat shall be conducted **annually**. This is required by the terminal's routine maintenance, and should be properly documented.

(4.6) Other system components such as system pipings, fittings, hangers, and supports shall be inspected and maintained to ensure continuity of water delivery to the spray nozzles at full water-flow and design pressure.

Image (above) shows a pipe that has been damaged

System components shall be inspected for the following:

• Mechanical damage (i.e. broken piping or cracked fittings)
• External conditions (i.e. missing or damaged paint, rust, or corrosion)
• Misalignment or trapped sections
• Low-point drains (automatic or manual)
• Location of rubber-gasketed fittings

Exposed Piping

Condition	Corrective Action
Leaks	Repair
Physical damage	Repair or replace
Corrosion	Clean or replace and coat with corrosion protection
Restraint methods	Repair or replace

Gauges shall be inspected monthly to verify that they are in good condition and that normal pressure is being maintained. **Gauges shall be replaced every 5 years** or **tested every 5 years** by comparison with a calibrated gauge. **The accepted reading shall be the middle third of the gauge.** Gauges not accurate to within **3%** of the full scale shall be recalibrated or replaced.

(V) Water Protection System

(5.1) Water Supply
The dependability of the water supply shall be ensured by regular inspection and maintenance, whether furnished by a municipal source, on-site storage tanks, a fire pump, or private underground piping systems. **Water supply piping shall be maintained free of internal obstructions.**

(5.2) Sprinkler System is designed to automatically discharge water through sprinkler heads in case of a fire emergency. The initiation of a sprinkler system may be activated by **heat sensors, fusible link or manually**. The P-13 Certificate of Fitness holder must visually inspect the sprinkler system at **least once every month**. Sprinklers shall be inspected from the floor level **annually**.

SPRINKLERS SHALL NOT SHOW SIGN OF:

Leakage
Corrosion
Foreign materials
Paint
Physical damage

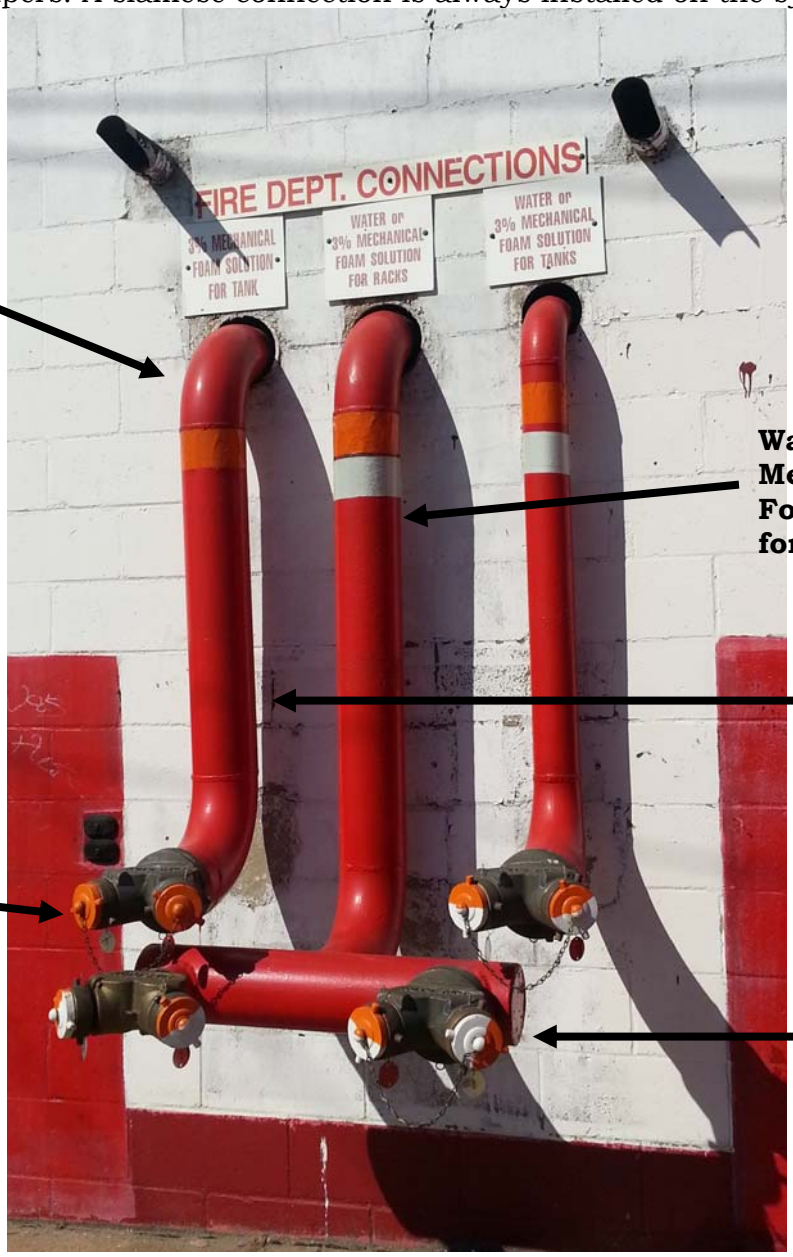
Any sprinkler that shows signs of **leakage; is painted, other than by the sprinkler manufacturer, corroded, damaged, or loaded; or in the improper orientation must be replaced**. The Certificate of Fitness holder must then ensure that the defects are repaired. **An extra supply of at least 6 sprinkler heads must be kept available at the bulk storage facility at all times.** They must be used to replace damaged or defective sprinkler heads. The Certificate of Fitness holder must document the inspection of the sprinkler system at least once a month.

The supply of spare sprinklers shall be inspected annually for the following:
(1) The proper number and type of sprinklers
(2) A sprinkler wrench for each type of sprinkler

Fog Sprinkler System (activated)

(5.3) Siamese connections for the Fire Department

Normally a sprinkler system is connected to an automatic water supply source. Siamese connections are used as auxiliary sources of water that are supplied from Fire Department pumpers. A siamese connection is always installed on the system.



Fire Department Connections

According to the NFPA the Fire Department connections shall be **inspected quarterly**. The inspection shall verify the following:

- **Fire Department connections are visible and accessible.**
- **Couplings or swivels are not damaged and rotate smoothly.**
- **Plugs or caps are in place and undamaged.**
- **Gaskets are in place and in good condition.**
- **Identification signs are in place.**

- **The check valve is not leaking.**
- **The automatic drain valve is in place and operating properly.**
- **The fire department connection clapper(s) is in place and operating properly.**

Components shall be repaired or replaced as necessary in accordance with the manufacturer's instructions. Any obstructions that are present shall be removed.

(5.4) Hose Cabinets
Hose cabinets must be painted red and provided with a white strip and number. The cabinet must be accessible at all times. Hoses, nozzles and other fire protection tools are kept in the hose cabinet. Hose connections are located in the hose cabinet. These connections allow the fire fighters to connect directly into the yard system.

The Certificate of Fitness holder should ensure that the hose cabinets are in good working order. All equipment inside should be inspected. The standard hose length is 50 feet. The hose cabinet must be closed with specific type of lock. The lock should be easily broken in the event the key is not available.

Cabinets and enclosed compartments used to house portable fire extinguishers

(L) Hose Cabinet and Foam Outlet, (R) Foam Outlet

shall be clearly marked with the words FIRE EXTINGUISHER in letters at least **2 inches high**. Cabinets and compartments shall be readily accessible at all times.

The hose in storage shall be kept out of direct sunlight and in a well-ventilated location. The hose shall be stored only after it has been properly inspected, service-tested if required, cleaned, dried and rolled. The hose that is out of service for repair shall be properly tagged and kept separated from any hose that is in storage and ready for service. To maximize the life of the hose, it should be stored in a ventilated area at temperatures between **32˚F and 100˚F. As per NYC Fire Code, the hose should be wet-tested annually at working pressure.**

(5.5) A **HOSE NOZZLE** is attached at the end of the hose. The nozzle is used to direct the stream of water from the hose. Examples of typical nozzles are shown in the pictures below:

Water Hose Nozzle

Foam Hose Nozzle

Nozzles at auxiliary hose stations shall be Fire Department approved adjustable combination **fog nozzles**. Water spray nozzles shall be inspected and maintained to ensure that they are in place, continue to be aimed or pointed in the direction intended in the system design, and are free from external loading and corrosion. Where caps or plugs are required, the inspection shall confirm they are in place and free to operate as intended. Misaligned water spray nozzles shall be adjusted (aimed) by visual means, and the discharge patterns shall be checked at the next scheduled flow test.

Gate Valve OS & Y

Closed Position

(5.6) Hydrant System

Bulk facilitys or terminals shall be provided with a yard hydrant system installed in conformance with the requirements of the construction codes, including the Building Code, this section and Section 914. Yard hydrants shall be installed such that the entire area may be reached by 250 feet of hose from a yard hydrant or a street hydrant supplied from a direct connection to a city water main or other approved water supply. The stem on the main OS & Y valve being IN would indicate that part of a standpipe/yard hydrant system has been shut down.

(5.6.1) Testing

Hydrants shall be tested annually to ensure proper functioning. Each hydrant shall be opened fully and water flowed until all foreign material has cleared.

Testing a hydrant (part of a two-year test)

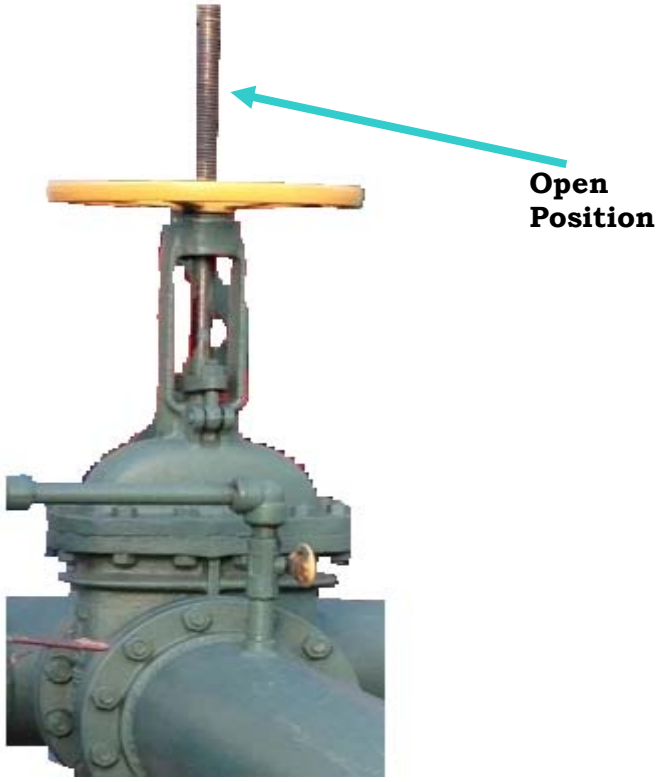
Flow shall be maintained for not less than 1 minute. After operation, dry barrel and wall hydrants shall be observed for proper drainage from the barrel. Full drainage shall take no longer than 60 minutes. Where soil conditions or other factors are such that the hydrant barrel does not drain within 60 minutes, or where the groundwater level is above that of the hydrant drain, the hydrant drain shall be plugged and the water in the barrel shall be pumped out.

Dry barrel hydrants that are located in areas subject to freezing weather and that have plugged drains shall be identified clearly as requiring pumping after operation.

(6.6.2) Maintenance

Hydrants shall be lubricated annually to ensure that all stems, caps, plugs, and threads are in proper operating condition. Hydrants shall also be kept free of snow, ice, or other materials and protected against mechanical damage so that free access is ensured. After using a fire hydrant a Certificate of Fitness holder should always ensure to secure the cap, roll and properly store the hoses, and check that the hydrant has drained properly.

Gate Valve



(VI) Foam System

Foam fire protection systems (3% foam) are very effective and are the most common method of fighting fires in bulk-oil storage facilities. Foam is created by mixing a 3% foamite concentrate with water and air. Some locations still create foam by manually mixing dual powder with water and air. At terminals that use powder to create the foam it is important for the P-13 Certificate of Fitness holder to know that in order for powder to stay in working condition, it must constantly be maintained. One way to maintain it is to **circulate the powder** - removing the powder, screening and returning it through the top of the hopper. Any powder stored in a 5 gallon should be periodically shaken to insure that it does not cake.

The foam is designed to smother the flame and prevent re-ignition. Fixed foam-generating systems are used to produce foam in case of an emergency. These systems automatically control the water and foam concentrate mixture. **The systems discharge foam directly into the storage tank in case of a fire. This foam is discharged into the tank through the foam chambers.** The foam then forms a blanket that covers the top of the product. The foam blanket will smother and then extinguish the fire. The point in the whole blanket concept is that it will prevent the oxygen above the foam from activating a fire.

(6.1) Foam House

Nozzle foam generating systems may be used to supply the foam chambers. Commonly these systems are supplied with foam from a central "**Foam House**" distribution system. In these systems, the foam and the water are automatically mixed and distributed through pipelines to the designated tank.

A Fire Department siamese connection must be installed as part of the fire protection system. The Siamese connection may be used by the Fire Department to pump foam solution directly to the burning tank. **It is critical that the foam house has all the labels properly posted.** These labels must show proper procedures and instructions. For example, every valve shall be labeled in the foam house so that in case of an emergency, time is not wasted in determining which foam valve controls the flow to the specific tank. Foam monitors are

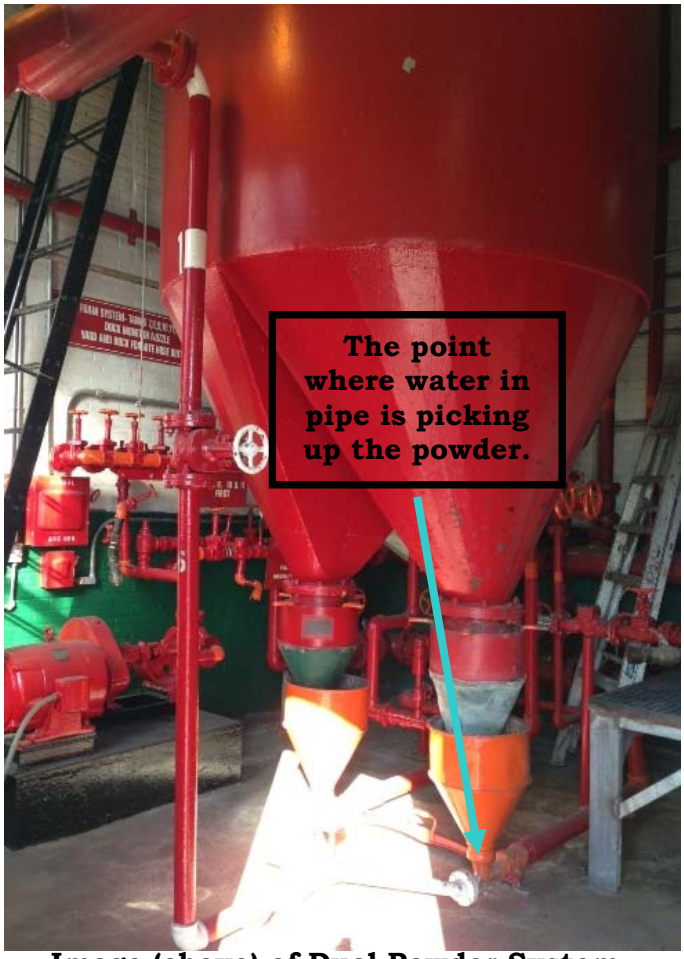
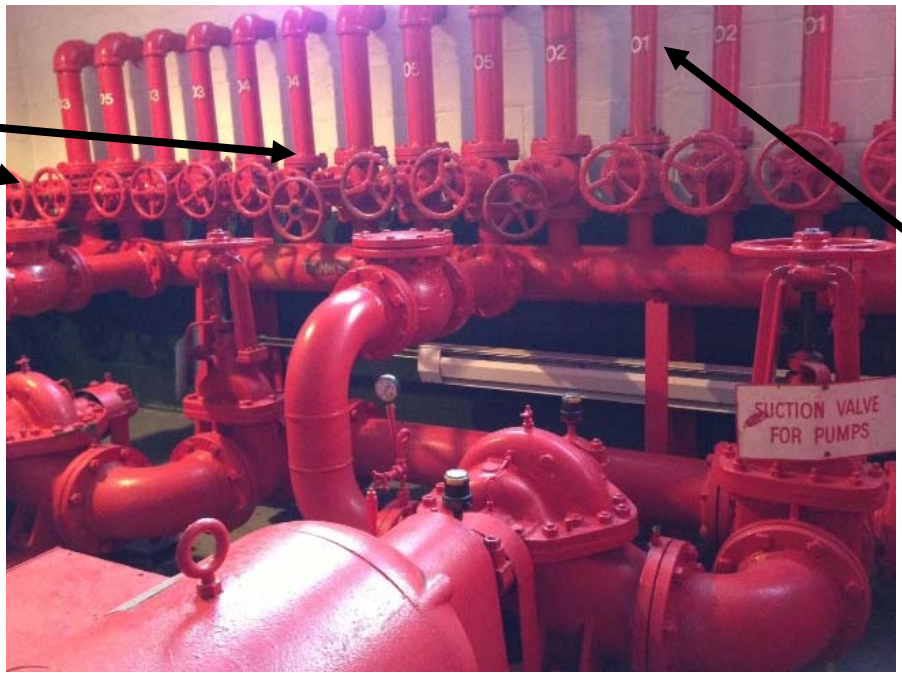


Image (above) of Dual Powder System

commonly installed throughout the tank farm area. Fixed monitor may be installed at several locations throughout the storage facility. Monitors are extremely powerful and are commonly used to discharge foam onto the fire.



FOAM DISTRIBUTING HEADER

Portable foam-generating systems are also used in bulk storage facilitys. Generally, these systems are used to extinguish smaller fires and/or spills. The portable foam generating units are manually operated by one person. They consist of an aspirator nozzle with a pick-up tube attached. The nozzle is attached to a water charged hose. The pick-up tube extending from the side of the nozzle is inserted into a container filled with foam concentrate. When water is pumped through the water hose into the nozzle it draws the foam concentrate from the container. The water, the foam concentrate, and air are mixed inside the nozzle before being discharged as foam.

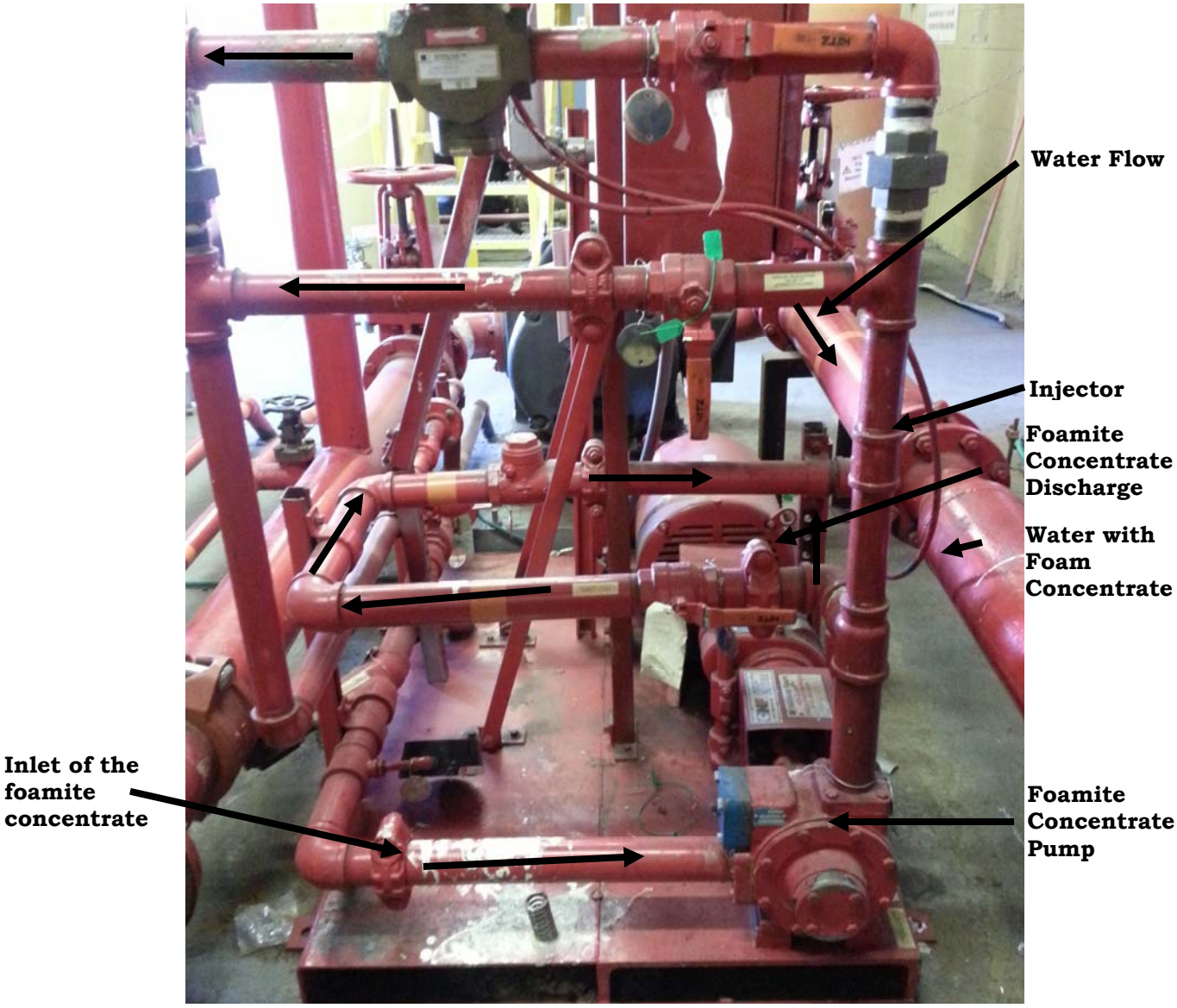
(6.2) Methods of delivering foamite concentrate to the system include via: PROPORTIONEERS, FOAMITE CONCENTRATE PUMP, and via BLADDER TYPE TANK.

- **Proportioneers** are devices that are specifically and uniquely designed for each particular system. The way the proportioners work is by ejecting the concentrate into the flow of water.

- **Foamite Concentrate Pump** dispenses foamite concentrate into the stream of the water.

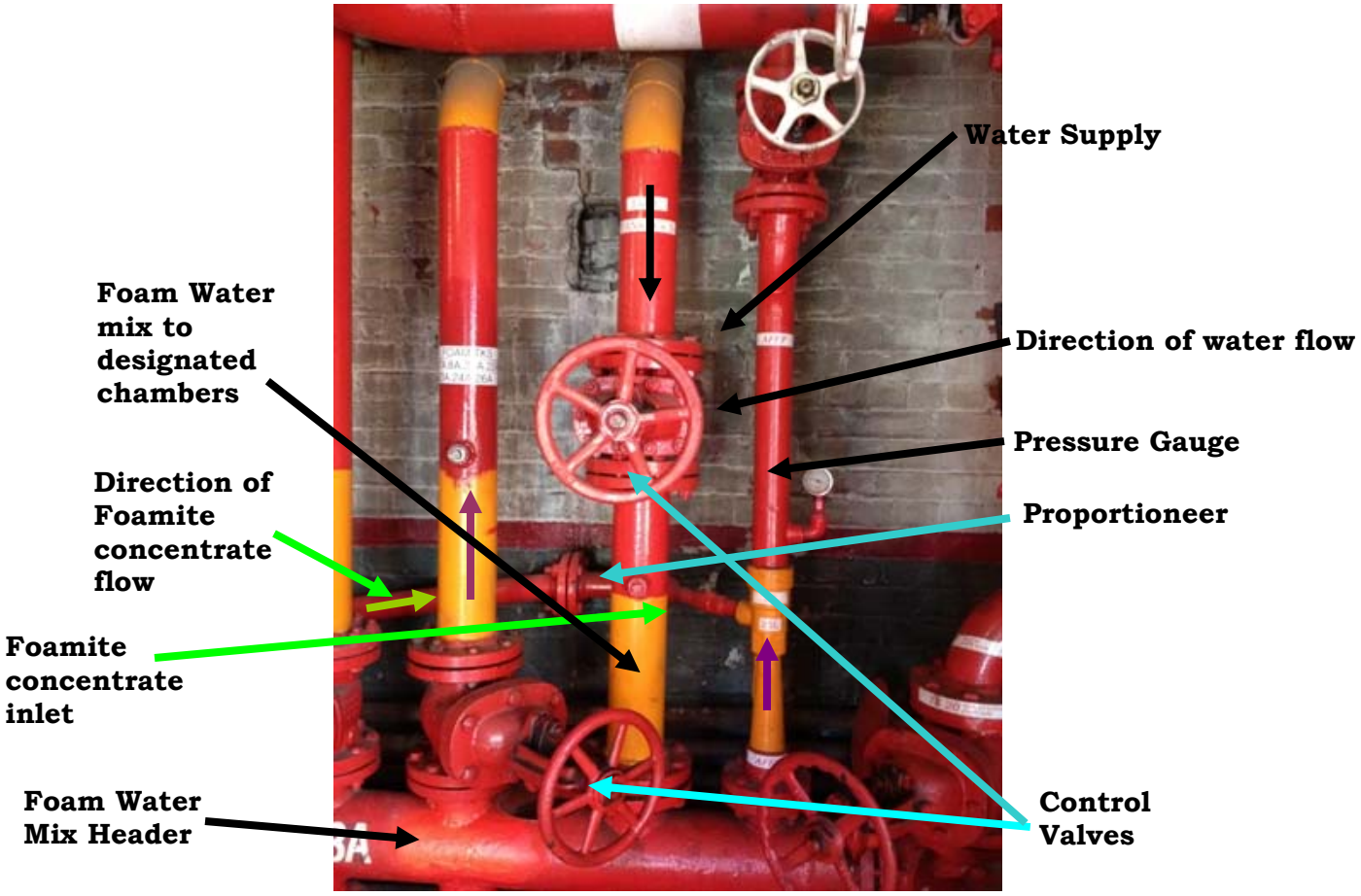
- **Bladder Tank Proportioneer** is similar to a standard pressure proportioneer, except the foam concentrate is contained inside a diaphragm bag that is within a pressure vessel. Operation is the same as a standard pressure proportioneer, except since the separation of the foam concentrate and water; this system can be used with all foam concentrates, regardless of specific gravity.

Since the tank above is not fully filled-up with foamite concentrate it is in violation of the NYC Fire



Skid inside of a Foam House

Foam-Water Discharge Devices such as chambers, and foam outlets shall be inspected visually and maintained to ensure that they are in place, and are free from external loading and corrosion. Where caps or plugs are required, the inspection shall confirm they are in place and free to operate as intended.



Each **control valve** shall be identified and have a sign indicating the system or portion of the system it controls. For systems that have more than one control valve, and are being closed for service (valves), shall have a sign on them or nearby to refer to other location of (other) usable valves. When the valve is returned to service, a drain test (either main or sectional drain) shall be conducted to determine that the valve is open. Each normally open valve shall be secured by means of a seal or a lock or shall be electrically supervised in accordance with the applicable NFPA standards. Normally closed valves shall be secured by means of a seal or shall be electrically supervised in accordance with the applicable NFPA standard. Sealing or electrical supervision shall not be required for hose valves.

(6.3) Instructions on how to release or discharge the mechanical foam to ensure that the foam is used most effectively and efficiently (foam is extremely expensive) are as follows:

• **The foam should be applied gently at a controlled rate onto the surface of the product. This will reduce the amount of time required to extinguish the fire. It will also reduce the amount of foam required to extinguish the fire and prevent a tank overfill.**
• **The foam concentrate should be mixed with the water and discharged at the designed rate.**
• **When possible, the water used to create the foam solution should be free of contaminants. Contaminants may have an adverse impact on the quality of the foam solution.**

It is important for fire fighters to be aware that the tank can only withstand the weight of a certain amount of foam. When too much foam is discharged onto the top of a floating roof tank, it can cause the roof to sink into the product.

(VII) Color Coding and Labeling

Fire protection systems shall be color-coded and labeled in accordance to the NYC Fire Code. Copies of the color code shall be posted in all central locations for fire extinguishing media, such as the foam house location.

(7.1) Color Coding
Fire protection systems shall be color-coded as follows:

- **Standpipe and/or yard hydrant systems:** Piping, valve bodies and handles, hydrants and hydrant or hose houses: **RED** with contrasting **WHITE** bands. Department siamese connections: **RED**
- **Sprinkler systems (wet or dry):** Piping and valve bodies and handles: **RED** with contrasting bright green bands. Department siemese connections: **RED** with **GREEN** caps.
- **Non-automatic sprinkler systems (including fog spray systems):** Piping and valve bodies and handles: **RED** with contrasting **ALUMINUM** bands. Department siamese connections: **ALUMINUM**.
- **Carbon dioxide extinguishing systems:** piping, valve bodies and handles: **RED** with contrasting **BLACK** bands.

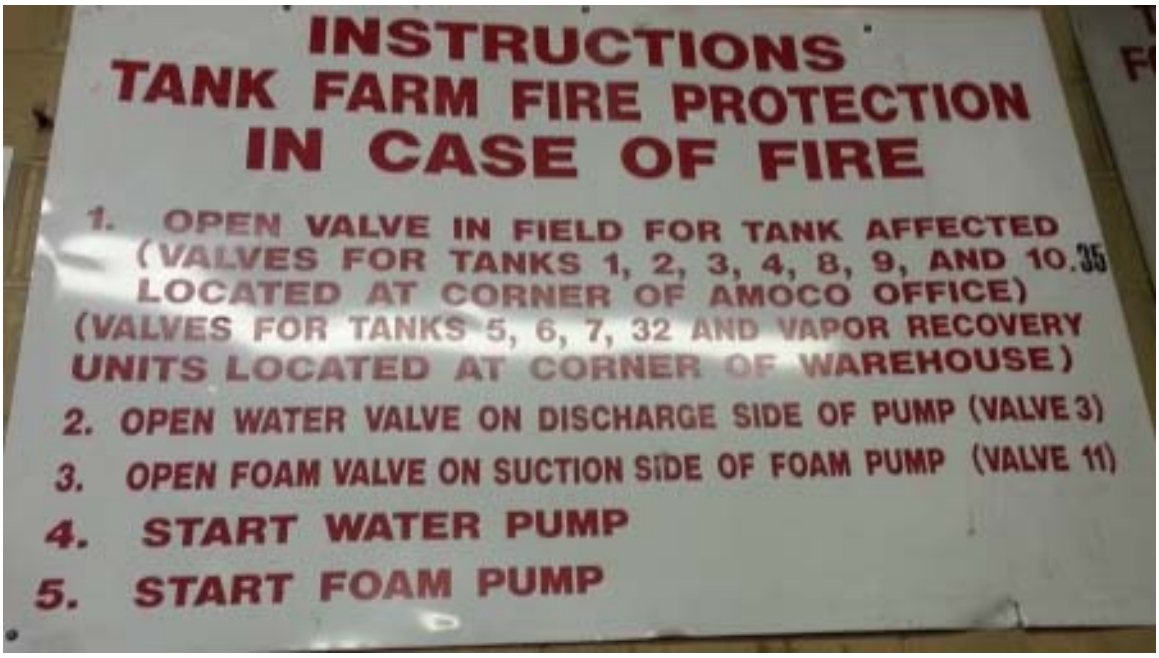
Example of a Foam House above, you can see how color coding is used.

FOAM EXTINGUISHING SYSTEMS SHALL BE COLOR-CODED AS FOLLOWS:

- **Piping, valve bodies and handles, hydrants and hydrant or hose houses: RED** with contrasting bright **ORANGE** bands.
- **Department water connections: RED**. A durable sign that reads **"WATER FOR FOAM SYSTEM"**, shall be conspicuously posted immediately adjacent to such connections.
- **Department foam connection: RED** with contrasting bright **ORANGE** band or caps. A durable sign that reads **"CHEMICAL FOAM DIRECT TO TANKS"** or **"3% MECHANICAL FOAM SOLUTION DIRECT TO TANKS**", shall be conspicuously posted immediately adjacent to such connections.

(7.2) Labeling

Bands, or piping immediately adjacent to bands, shall be labeled to indicate the names of the extinguishing media. The letters shall be in a contrasting color of a suitable size in proportion to the pipe diameters. The width of each band shall be not less than the pipe diameter and shall be spaced not more than 30 feet apart. Bands, lettering and piping shall be painted in sun- and weather-resistant colors and paint; but bands and lettering may be applied by means of pressure sensitive tape that is sun-and weather-resistant.



(VIII) Emergency Procedures and Impairments

(8.1) Impairments

Impairment Coordinator - see definitions section in this study material.

Tag Impairment System shall be used to indicate that a system, or part thereof, has been removed from service. The tag shall be posted at each fire department connection and system control valve, **indicating which system, or part thereof, has been removed from service.**

Impaired Equipment shall be considered to be the water-based fire protection system, or part thereof, that is **removed from service**.

Impaired Equipment shall include, but shall not be limited to, the following:

- sprinkler systems
- standpipe systems
- fire hose systems
- underground fire service mains
- fire pumps
- water storage tanks
- water spray fixed systems
- foam-water systems
- fire service control valves

The terminal should notify FDNY when any part of the fire protection system is shut down for repairs; **this will allow the Fire Department to modify its fire fighting strategies in case of an emergency.**

Restore System to Service

When all impaired equipment is restored to normal working order, the terminal manager shall verify that the following procedures have been implemented:

- Any necessary inspections and tests have been conducted to verify that affected systems are operational.
- Supervisors have been advised that protection is restored.
- The Fire Department has been advised that protection is restored.
- The property owner/manager, insurance carrier, FDNY approved central alarm station, and FDNY are advised that protection is restored.
- The impairment tag has been removed.

Notifications

To avoid false alarms where a supervisory service is provided, the alarm receiving facility shall always be notified by the property owner or designated representative as follows:

- Before conducting any test or procedure that could result in the actuation of an alarm
- After such tests or procedures are concluded

All personnel whose operations could be affected by the system operation shall be notified.

(8.2) Emergency Procedures in Case Of A Product Spill or a Leak
Special procedures must be followed when a spill/leak is discovered during the transfer of product to a storage tank. The product supply line must be shut-off immediately (securing/closing appropriate pumps/valves). The next step would be to contain the spill using appropriate spill equipment (pads/sausages/speedy dry).

Depending on where the spill/leak has occurred different agencies have to be notified. The P-13 Certificate of Fitness holder on duty must follow terminal guidelines.

As soon as the spill is contained the Fire Department must be notified by telephone. The Fire Department must be told the:

• Type of product spilled
• Approximate amount of gallons spilled
• Exact location of the spillage

This will allow the Fire Department to develop their strategy. The Fire Department may be contacted using the appropriate phone number from the list shown below.

Fire Department Borough Commands:
Manhattan (212) 999-2222
Bronx (718) 999-3333
Brooklyn (718) 999-4444
Queens (718) 999-5555
Staten Island (718) 999-6666

The above phone numbers must be posted at the terminal locations where the phones are most likely to be used in case of an emergency. Depending on the borough where the terminal is located, the borough command number should be conspicuously posted around the terminal. The Certificate of Fitness holder must dial 911 if the Fire Department cannot be contacted by dialing one of the numbers above. The Class III fire alarm boxes installed throughout the facility may be used to alert the Fire Department when spills occur. The Certificate of Fitness holder must know the location and the operation of each of each of the fire alarm boxes installed at the facility. The Certificate of Fitness holder must report all spills to the Fire Department. If a spill is not reported, a Certificate of Fitness holder may have his/her Certificate of Fitness revoked.

Manual pull stations (Class III boxes) shall be provided at one or more approved locations that will automatically transmit a signal to the Fire Department via an approved central station in case of an emergency.

Fire Emergency Procedures
In case there is fire at the terminal, all the proper measures must be taken to assist the Fire Department with operations and location of the necessary equipment, in addition to following the emergency fire plan.

Non-fire Emergency Procedures
In cases such as flood, earthquake etc.**, shut the facility down** until such a time that an assessment can be made. The P-13 Certificate of Fitness holder must consult with management and follow the emergency preparedness plan.

(8.3) Fire Safety Signs
NO-SMOKING signs must be prominently displayed throughout the bulk storage facility to ensure the safety of individuals and property. The Certificate of Fitness holder must ensure that these signs are kept visible at all times. Such signs shall have letters of not less than **4 inches in height** with a background of contrasting color. **Smoking is only allowed in designated areas.**

All "No Smoking" signs shall be provided in English as the primary language. Open flames and devices that generate or operate at a high temperature shall be kept a safe distance from hazardous material in storage or use.

(IX) Inspection and Testing

(9.1) Inspections

Records shall be kept for any maintenance and all inspections and tests of the system and its components, and shall be made available to the Fire Department upon request. Records shall indicate the procedure performed (inspection, test, or maintenance), the organization that performed the work, the results, and the date. **Records shall be maintained by the property owner.**

The Fire Department may conduct **unscheduled inspections** of the bulk oil storage facility. The fire safety systems and equipment may be checked during these inspections. The Fire Department deems the P-13 Certificate of Fitness holder directly responsible for the condition of the fire safety systems and equipment at the facility. A violation may be issued to the P-13 holder if any defects are discovered during these inspections. The Certificate of Fitness may be revoked in serious cases.

During **Annual Permit Renewal Inspection,** the Certificate of Fitness documentation shall be checked. Fire suppression systems, spill control material, fire extinguishing equipment, chambers, hand-tools, and all signs shall be in proper working order. Visual inspection of the tanks, dikes, pipes, valves and fusible links will occur. Painted piping and color-coding will also be visually inspected.

(9.2) Tests

(9.2.1) A 2-year test also known as the FIRE SUPPRESSION SYSTEMS' TEST focuses on the **fire extinguishing system**. It shall be **witnessed by the Fire Department Inspectors**. A foamite extinguishing system will used, and the actual demonstration must show that the system is capable of delivering the proper amount of foam to the tank most remote from the source of the supply. The remaining foam chambers will be tested with a flow of water. After the full flow test, the entire system shall be thoroughly flushed out with water. The foam system shall be returned to service and the foam concentrate tank shall be replenished to designed level. After conducting this procedure, the foam system must be properly **drained and flushed with water**.

All equipment, such as yard hydrants, water sprays, deluge systems, monitor nozzles, and overflow protection systems are required to be tested in addition to the tanks fire extinguishing system. The 2-year test is to be performed under the supervision of a P-13 Certificate of Fitness holder.

Foam Samples (depends on the terminal)
During the 2-year test as well as the 5-year test, a full flow foam test may be taken. Samples shall be submitted in accordance with the manufacturer's recommended sampling procedures. The foam sample shall be checked by **refractometric** or other approved methods to verify concentration of the solution. Concentration shall be within **10%** of the acceptance test results but in no case more than **10% below minimum** design standards. The local FDNY operations company which witnesses the foam test shall be satisfied with the quality of the foam.

Testing of 3% Mechanical Foam

PART OF A 2-YEAR FOAM CONCENTRATE TEST

Water Systems Flow Test
Each hydrant and water hose outlet must be flushed out until clean water appears. Once the hydrant is closed the water must be discharged through the foot valve. Water must drain within an acceptable amount of time.

Water Sprays Deluge Systems: The main reason for water spray testing is to ensure that each of the sprinkler heads/outlets are free of obstructions and that they have a correct spray pattern.
NOTE: After conducting the test, the water system must be properly drained.

Emergency Shut-down Test: shuts down all the equipment that is in operation (pumps, vapor recovery unit, Coast Guard valve etc.)
NOTE: Phone lines do not get shut down.

Class 3 box test: sends the signal to the FDNY approved central station to alert the Fire Department.

(9.2.2) A 5-year test also known as the **HYDRO TEST:** pressurizing of the underground yard hydrant system pipes, and siamese and other Fire Department connections.

Hydrant system: pressure test of the yard hydrant system must be conducted to show that the lines, valves, check valves and Siamese connections are free from obstruction and in proper working condition.

Siamese connections: hydrostatic test of all loading rack fog spray, sprinkler, and foam system siamese connections up to the lower check valve. The minimum test pressure should not be less than 100 psi, as per NYC FC 912.6;3RCNY-912-01.

***NOTE: The above test(s) are to be arranged for and conducted by the owner, at the owner's risk, in the presence of a representative of fire department, under the supervision of the P-13 Certificate of Fitness holder.**

Leakage test
There is an allowable leakage rate based on each individual system (manufacturer of the system should be consulted for further analysis).

(9.2.3) A 10-year test also known as the **UNDERGROUND PRODUCT PIPING TEST:** Underground piping shall be tested once every 10 years at the owner's risk by his or her representative before a representative of the Fire Department. Such test shall be made at 100 pounds per square inch or 150 percent of the maximum operating pressure, whichever is greater, for 30 minutes.

Standing Water Test
Aboveground, underground and mounded-over tanks shall be filled to capacity with water and maintained for not less than 24 hours, also known as a **Standing Water Test.** A standing water test should be conducted whenever there are repairs or modifications performed upon the tank and its systems. It is mandatory to perform this test prior to placing tanks back to service. This test should be performed by the P-13 Certificate of Fitness holder.

Hydrostatic test: shall be performed when there is new or replaced piping. It must be performed according to specific ANSIB 31.1 guidelines.

Hydrostatic test pressure shall be maintained for a sufficient time to complete visual inspection, but for not less than 1 hour. The test shall show that there is no evidence of leakage. Test pressure for aboveground tank piping shall be at 1½ times the maximum anticipated operating pressure, but not less than 100 pounds per square inch. All piping associated with a vapor recovery and processing system, including piping connecting such system to storage tanks, shall be hydrostatically tested to a pressure of 100 pounds per square inch gauge or 1½ times the maximum working pressure, whichever is greater, for a period of 2 hours, and shall show no leaks.