3-24-16

FIRE DEPARTMENT • CITY OF NEW YORK

STUDY MATERIAL FOR THE EXAMINATION FOR

C-99

CONSOLIDATED EXAMINATION C-99 FOR:

C-06 Dispensing CNG at a Full/Self Service Station

C-07 Supervision of a self-service CNG Station

C-08 Maintenance of a CNG Facility

C-09 Supervision of a Full Service CNG Station

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NOTICE OF EXAMINATION

Title: **Examination for Certificate of Fitness for Supervision of a CNG Motor Fuel Dispensing Facility (C-99)**

Date of Exam: Written exams are conducted Monday through Friday (except legal holidays) 8:00 AM to 2:30 PM.

REQUIREMENTS FOR WRITTEN EXAM

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 C-99 Certificate of Fitness: None
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 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

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

9. EXAM INFORMATION

The **C-99** exam will consist of **40** multiple-choice questions, administered on a "touch screen" computer monitor. It is a time-limit exam. A passing score of at least 70% is required in order to secure a Certificate of Fitness.

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-c99-noe-study-materials.pdf

10. If all the requirements are meet and pass the exam a certificate 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.

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.)***

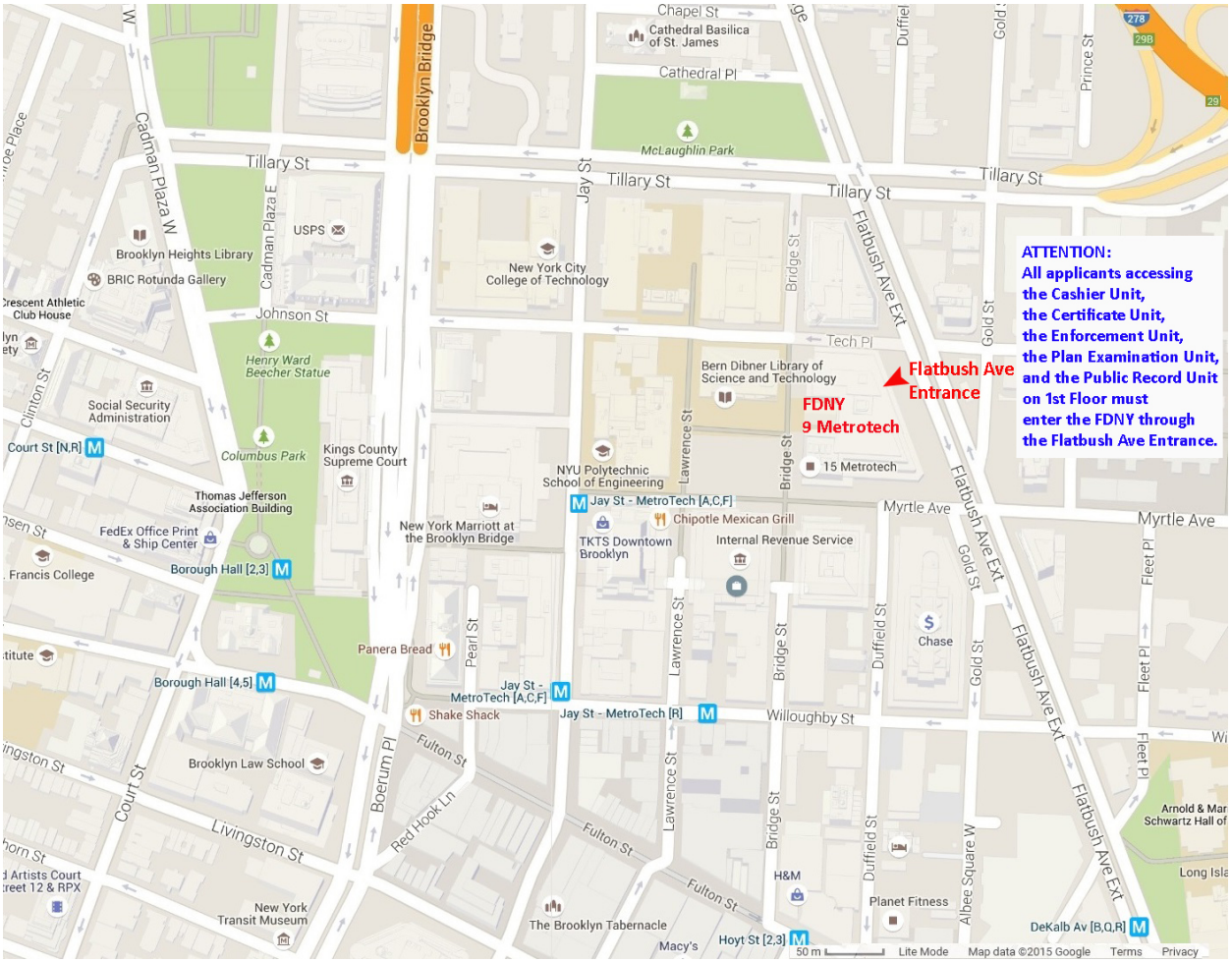
- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency and if applicable, your supporting documents to:

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)**.



ABOUT THE STUDY MATERIAL

This study material will help you prepare for the examination for the Certificate of Fitness for DISPENSING, SUPERVISION, and MAINTENANCE of CNG FACILITIES. The study material includes information taken from the New York City Fire Code the Fire Rules of the City of New York (RCNY), and NFPA 52 (2006) Standards. The study material DOES NOT contain all of the information you need to know to perform your job. It is **your** responsibility to learn anything else that is needed to supervise and maintain a CNG facility safely and efficiently.

All questions on the Certificate of Fitness examination are multiple choices, with four alternative answers to each question. Only one answer is correct for each question. If you do not answer a question your answer will be scored as incorrect. A score of 70% correct is required on the examination in order to qualify for the Certificate of Fitness. Read each question carefully before marking your answer. There is no penalty for guessing.

SAMPLE QUESTIONS

1. 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.

2. 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 in the testing room
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.

3. 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 in the testing room
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

ALCOHOL-BLENDED MOTOR FUEL. Gasoline blended with ethanol or other alcohol with an alcohol concentration greater than 15 percent by volume.

BREAKAWAY DEVICE. Device which is used in case the vehicle begins to move away while the hose is still attached, prevents the hose from tearing apart.

CERTIFIED ATTENDANT. A person holding a Certificate of Fitness for the supervision and dispensing of motor fuel at fleet motor fuel-dispensing facilities, full-service motor fuel-dispensing facilities and self-service motor fuel-dispensing facilities. Certified attendant shall be responsible for ensuring that the facility is maintained in accordance with this NYC Fire Code and the NYC Fire Rules.

CNG. Compressed natural gas.

DISPENSING DEVICE, OVERHEAD TYPE. A dispensing device mounted above a dispensing area, typically within a canopy structure, and characterized by the use of an overhead hose reel.

FULL-SERVICE MOTOR FUEL-DISPENSING FACILITY. A motor fuel-dispensing facility wherein motor fuel is dispensed into the fuel tank of motor vehicles, motorcycles, marine vessels or watercraft by a certified attendant or, when under the personal supervision of a certified attendant, by persons employed by or on behalf of the owner of the facility.

FLEET MOTOR FUEL-DISPENSING FACILITY. A motor fuel-dispensing facility wherein motor fuel is stored and/or dispensed into the fuel tank of a motor vehicle, motorcycle, marine vessel or watercraft owned or operated by or on behalf of the owner of the facility, and where such dispensing operations are conducted by persons employed by or on behalf of the owner of the facility. Operation is under the personal supervision of C-99 COF holder.

GENERAL SUPERVISION. Supervision by the holder of any FDNY certificate who is responsible for performing the duties of the Certificate of Fitness holder but need not be personally present on the premises at all times.

LIQUEFIED NATURAL GAS (LNG). A fluid in the liquid state composed predominantly of methane and which may contain minor quantities of ethane, propane, nitrogen or other components normally found in natural gas.

LIQUID MOTOR FUEL. Gasoline, diesel fuel or other flammable or combustible liquids used as fuel in the operation of motor vehicles, motorcycles, marine vessels and watercraft.

LIQUID MOTOR FUEL STORAGE AND DISPENSING SYSTEM. A liquid motor fuel storage tank and all motor fuel storage and dispensing equipment associated with

such tank, including the tank, piping, valves, fill connection catchment basins, vent lines, pumps, dispensing devices and any other ancillary equipment.

MOBILE CNG MOTOR FUEL SYSTEM. A CNG motor fuel system mounted on a vehicle chassis, intended to be driven to different sites for the purpose of dispensing CNG into portable containers, storage system or motor vehicle-mounted containers.

MOBILE CNG CASCADE. Multiple CNG containers connected together by rigid steel pipe or tubing, mounted on a trailer or motor vehicle chassis, and intended to be driven or towed to different sites for the purpose of dispensing CNG into portable or motor vehicle-mounted containers.

MOTOR VEHICLE. A vehicle or other conveyance having more than two running wheels and using liquid motor fuel or flammable gas as fuel for generating motive power, except such vehicles as have a storage tank with a maximum capacity for less than 2 gallons (7.6 L) of liquid motor fuel or flammable gas that generates energy that is equivalent to the energy generated by 2 gallons (7.6 L) of gasoline.

PERSONAL SUPERVISION. Supervision by the holder of any FDNY Certificate of Fitness is required to be personally present on the premises, or other proximate location acceptable to the FDNY, while performing the duties for which the certificate is required.

SELF-SERVICE MOTOR FUEL-DISPENSING FACILITY. A motor fuel-dispensing facility wherein motor fuel is dispensed by customers of the facility from a motor fuel storage and dispensing system into the fuel tank of motor vehicles or motorcycles.

STATIONARY CNG FUEL SYSTEM. A CNG motor fuel system which is permanent installed and connected to a natural gas main. It is not intended to be moved in a course of normal use.

1. INTRODUCTION

New York City has encouraged the conversion of gasoline powered motor vehicles to compressed natural gas (CNG) for the purpose of reducing carbon monoxide emissions. Public transportation across the country has been using CNG for decades. Currently, about 12-15% of public transit buses in the U.S. run on natural gas (either CNG or LNG – liquefied natural gas). That number is growing, with nearly one in five buses on order today slated to run on natural gas. States with the highest consumption of natural gas for transportation are California, New York, Texas, Georgia, Massachusetts and Washington, D.C. Consumer use of the fuel is most prevalent in California and New York. Utah is catching up fast, with the most CNG stations per capita and more than 5,000 CNG vehicles on the roads.

Many other states have federal vehicle tax credits in place to provide incentives for drivers to purchase CNG vehicles or to convert their vehicles, if it's one of the limited number that qualify, to run on CNG fuel. Roughly 250,000 of the 12 million CNG vehicles worldwide are in the U.S., according to GE, including aftermarket conversions. The nation's only light-duty, factory-produced CNG vehicle in production, the Honda Civic Natural Gas, has been on the market since 1998. Though these vehicles are selling out faster than they are made and production is expanding, no other automakers are currently manufacturing light-duty CNG vehicles in the U.S.

C-99 Certificate of Fitness study material outlines the New York City Fire Department regulations for supervising and maintaining a CNG facility. These regulations require all dispensing operations to be conducted or observed by a person holding a C-99 Certificate of Fitness for dispensing and handling of CNG (with the exception of dispensing operations of a **fleet service** where the certified individual must be on the premises at the time of CNG operations). All supervisory and related activities must be conducted by a person with a C-99 Certificate of Fitness for the supervision and maintenance of CNG facilities. Certificate of Fitness holders are responsible for ensuring that Fire Department regulations are obeyed on the premises at all times. Some of the regulations related to storage dictate that all bulk storage tanks must be designed to meet American Society of Mechanical Engineers (ASME) design specifications and that all storage and shipping containers must meet the Department of Transportation (DOT) design specifications.

1.1 WHAT IS COMPRESSED NATURAL GAS?

CNG is a mixture of flammable hydrocarbon gases and vapors consisting primarily of methane in a compressed gaseous form. In its natural state, CNG is an odorless, tasteless and nontoxic gas, weighing two-thirds the weight of air. However, only odorized CNG may be dispensed from CNG stations in New York City. The odorization of the CNG helps to identify leakage. Although CNG is nontoxic, it can cause asphyxiation if released into a confined area. Symptoms of suffocation will begin to occur when oxygen levels are less than 19%. See the table below for more details.

OXYGEN CONTENT (% by volume)	EFFECTS AND SYMPTOMS (at atmospheric pressure)
15-19%	Decreased ability to work strenuously. May impair coordination and may induce early symptoms in persons with coronary, pulmonary, or circulatory problems.
12-15%	Respiration increased in exertion, pulse up, impaired coordination, perception, and judgment.
10-12%	Respiration further increases in rate and depth; poor judgment; lips blue.
8-10%	Mental failure; fainting, unconsciousness, ashen face; blueness of lips; nausea, and vomiting.
6-8%	8 minutes, 100% fatal; 6 minutes, 50% fatal; 4-5 minutes, recovery with treatment.
4-6%	Coma in 40 seconds; convulsions; respiration ceases, death.

1.2 CERTIFICATE OF FITNESS RESPONSIBILITIES

The Certificate of Fitness holder's primary function shall be to **supervise**, **observe** and **monitor** the dispensing of CNG. The certified attendant shall: (FC 2208.1.11.1)
(1) prevent the dispensing of CNG into portable containers (EXCEPT at outdoor utility-operated facilities)
(2) control sources of ignition
(3) take immediate action upon a fire, leak, or other emergency
(4) be ready to use a portable fire extinguisher

C-99 COF CARD

FIRE DEPARTMENT PERMITS
Compressing gases: A permit is required to compress a flammable gas, including piped natural gas, to a pressure exceeding 6 psig.

A permit is also required to maintain and/or operate the following types of motor fuel dispensing facilities:
FULL SERVICE
SELF-SERVICE
FLEET SERVICE

1.2.1 SUPERVISION (FC 2201.7)

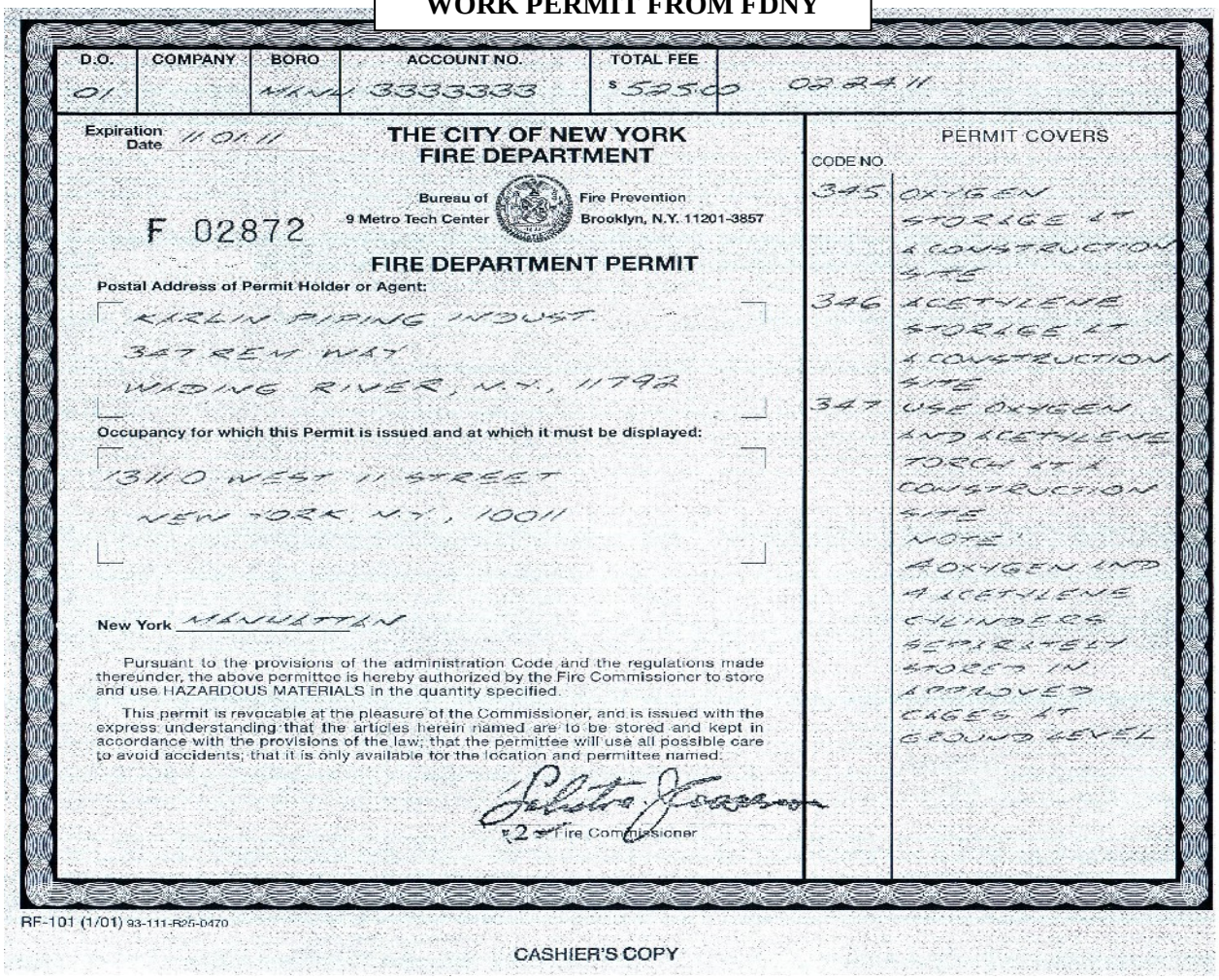
(1) The dispensing of motor fuel at full-service motor fuel-dispensing facilities, fleet motor fuel-dispensing facilities and self-service motor fuel-dispensing facilities shall be conducted by or under the **PERSONAL SUPERVISION** of a certified attendant, who shall be responsible for ensuring that dispensing operations are conducted accordingly.
(2) The C-99 Certificate of Fitness holder shall conduct a visual inspection of the dispensing area on a daily basis to monitor the condition of such installation. (FC 2208.1.13.1)

1.2.2 MAINTENANCE (FC 2208.1.3)

Maintenance of CNG motor fuel-dispensing systems shall be conducted under the **PERSONAL SUPERVISION** of a person holding a C-99 Certificate of Fitness.

The C-99 Certificate of Fitness holder must make sure that the CNG station is serviced according to the manufacturer's recommendations. For example, the Certificate of Fitness holder should make sure that the compressor's oil is changed periodically. The Certificate of Fitness holder should not mix different viscosity or brands of oil in the CNG system. Each time the oil is changed, the affected areas must be checked for leaks using a soap and water solution. All defective parts must be repaired or replaced before the system is restarted.

EXAMPLE OF TEMPORARY HOT WORK PERMIT FROM FDNY



D.O.	COMPANY	BORO	ACCOUNT NO.	TOTAL FEE	
01		MNH	3333333	$525.00	03 24 11

Expiration Date 11 01 11

THE CITY OF NEW YORK
FIRE DEPARTMENT

Bureau of Fire Prevention
9 Metro Tech Center Brooklyn, N.Y. 11201-3857

F 02872

FIRE DEPARTMENT PERMIT

Postal Address of Permit Holder or Agent:

KARLIN PIPING INDUST.
347 REN WAY
WIDING RIVER, N.Y., 11792

Occupancy for which this Permit is issued and at which it must be displayed:

1310 WEST 11 STREET
NEW YORK, N.Y., 10011

New York MANHATTAN

Pursuant to the provisions of the administration Code and the regulations made thereunder, the above permittee is hereby authorized by the Fire Commissioner to store and use HAZARDOUS MATERIALS in the quantity specified.

This permit is revocable at the pleasure of the Commissioner, and is issued with the express understanding that the articles herein named are to be stored and kept in accordance with the provisions of the law; that the permittee will use all possible care to avoid accidents; that it is only available for the location and permittee named.

Fire Commissioner

PERMIT COVERS

CODE NO.	
345	OXYGEN STORAGE AT A CONSTRUCTION SITE
346	ACETYLENE STORAGE AT A CONSTRUCTION SITE
347	USE OXYGEN AND ACETYLENE TORCH AT A CONSTRUCTION SITE

NOTE: 4 OXYGEN AND 4 ACETYLENE CYLINDERS SEPARATELY STORED IN APPROVED CAGES AT GROUND LEVEL

RF-101 (1/01) 93-111-R25-0470

CASHIER'S COPY

Welding, cutting or similar hot work may be conducted for emergency repair, alteration or installation work, providing that all necessary safety precautions are taken and all required department permits and authorization from the holder of a Certificate of Fitness for CNG station maintenance have been obtained. Under no circumstances should the Certificate of Fitness holder grant permission to perform "hot" work unless all required fire department permits have been secured.

2. DISPENSING FACILITIES

2.1 FULL SERVICE DISPENSING

The certified attendant at a full-service CNG motor fuel-dispensing facility shall personally supervise the dispensing of motor fuel into vehicles by facility personnel. The certified attendant shall conduct a visual inspection of the dispensing area on a daily basis to monitor the condition of such installation. The C-99 Certificate of Fitness holder shall notify the owner and make any other notifications required by this code if there is any evidence that the installation is not in good working order. A record of such inspections and notifications shall be maintained at the premises in accordance with FC107.7. (FC 2208.1.13.1)

2.2 SELF-SERVICE DISPENSING

Approved self-service devices, equipment and systems such as, but not limited to, card-operated and remote-preset types, are allowed at CNG motor fuel-dispensing facilities. The certified attendant shall set the dispensing devices in the "off" position when not in use if such dispensing device can be activated without the certified attendant's knowledge. (FC 2208.1.11.2)

GENERAL CNG DISPENSER MODULE

Nothing in this study material shall be construed to prohibit a certified attendant (C-99 Certificate of Fitness holder) on duty from engaging in other activities (such as collection of money or processing of credit cards) so long as such activities do not interfere with the certified attendant's ability to **supervise, observe and monitor the dispensing of fuel.**

A control booth shall be located on the premises of every self-service CNG motor fuel-dispensing facility. The control booth shall be designed and located so that the certified attendant stationed therein shall have a full, unobstructed clear view of dispensing operations, except that mirrors and/or an approved closed-circuit television installation shall mean that the image on the monitor shall be of such brightness and resolution as to allow ready identification of individuals and easy observation of activities at all times of day. CNG motor fuel-dispensing facilities shall be located at a site operated by a natural gas utility, or other approved location. (FC 2208.3) Persons dispensing CNG at a self-service CNG motor fuel-dispensing facility shall hold a valid driver's license or be at least 18 years of age. The certified attendant OR other facility personnel may require any member of the public to produce a driver's license or proof of being 18 years or older. (FR 2208-02)

Operational and Maintenance Requirements (FR 2208-02)

- The CNG motor fuel-dispensing facility shall be operated so that movement of motor vehicles is orderly and consistent with the logical operation of the facility.
- Motor vehicles SHALL NOT be repaired in dispensing areas.

CREDENTIAL CONTROL PANEL AT DISPENSING AREA

2.3 FLEET SERVICE DISPENSING

The certified attendant responsible for supervision of the dispensing of CNG at a fleet motor fuel-dispensing facility shall inspect the dispensing area on a periodic basis in accordance with this study material and the facility rules. The certified attendant shall notify the owner and make any other notifications required by this study material if there is any evidence that the facility is not in good working order. A record of such inspections and notifications shall be maintained at the premises in accordance with NYC Fire Code section 107.7. (FC 2208.1.12.1)

TYPICAL SIGNAGE AT THE FLEET FUEL DISPENSING TERMINAL

Employees of CNG fuel-dispensing facility whose duties involve the dispensing of CNG shall be trained and knowledgeable in such duties. (FC 2208.1.12.2)

Dispensing equipment used at fleet CNG motor fuel dispensing facilities shall be programmed or set to limit uninterrupted CNG delivery to an approved amount and require a manual action to resume delivery. (FC 2208.1.12.3)

3. GENERAL DISPENSING OPERATION

3.1 INSPECTIONS OF DISPENSING AREAS (FR 2208-02)

The certified attendant responsible for supervision of the dispensing of CNG shall inspect the dispensing area on a daily basis and notify the owner and make any other notifications required by this code if there is any evidence that the facility is not in good working order. (FC 2208.1.12.1)

Dispensing may be initiated by a remote switch located in the kiosk or control booth by a certified attendant, or activated by the card reader at the dispensing area by the authorized driver.

The CNG dispenser must stop the filling operation when the nozzle has been removed from the vehicle (disconnected).

A mobile CNG motor fuel compression, storage and/or dispensing system may be used to fuel vehicle-mounted containers as approved by the commissioner and subject to such conditions as the commissioner may prescribe consistent with public safety. (FC 2208.10)

3.2 METHODS OF DISCHARGE (DEFUELING): (FC 2208.8.1)

The discharge of CNG from motor vehicle fuel containers shall be accomplished through a closed transfer system or an approved method of atmospheric venting.

3.2.1 CLOSED TRANSFER SYSTEM

- An FDNY approved procedure for discharging the container shall include the actions the operator will take in the event of a low-pressure or high-pressure natural gas release during the discharging activity.

3.2.2 ATMOSPHERIC VENTING

- An FDNY approved schematic design document shall illustrate the location of the vessel support, piping, the method of grounding and bonding.
- A method of rigidly supporting the container during the venting of CNG shall be provided. The selected method shall provide not less than two points of support and shall prevent the horizontal and lateral movement of the container.
- The structure or appurtenance used for supporting the container shall be grounded in accordance with Electrical Code.
- The container valve shall be bonded prior to the commencement of venting

operations.

3.2.2.1 VENT TUBE (Atmospheric Venting) (FC 2208.8.2.5)

- A vent tube that will divert the gas flow to the atmosphere shall be installed on the container prior to commencement of the venting and purging operation.
- The vent tube shall be capable of dispersing the gas a minimum of 10 feet above grade level.
- The vent tube shall not be provided with a rain cap or other feature that would limit or obstruct the gas flow.
- At the connection fitting of the vent tube and the CNG container, a listed bidirectional detonation flame arrester shall be provided.

3.2.2.2 SEPARATION DISTANCE FOR ATMOSPHERIC VENTING OF CNG

EQUIPMENT OR FEATURE	MINIMUM SEPARATION (feet)
Buildings	25
Building openings	25
Lot lines	15
Public street or private roads	15
Vehicles	25
CNG compressor and storage containers	25
CNG dispensers	25

3.3 DISPENSING EQUIPMENT

3.3.1 HOSES (NFPA 4.10)

Metallic hoses, flexible metal hoses, tubing, and their connections shall be compatible for use with natural gas service and designed or selected for the most severe pressures and temperatures under normal operating conditions with a burst pressure of at least four times the service pressure. They shall be constructed of or lined with materials that are resistant to corrosion and exposure to natural gas. Prior to use, hose assemblies shall be distinctly marked by OEM or its designated representative at a pressure at least twice the service pressure.

Hoses shall be designed as to be protected against physical damage (may include use of a retractable device). Breakaway device is used in case vehicle begins to move away while the hose is still attached. Hoses shall be tested for leaks with soapsuds or equivalent leak detection method at least annually by a person holding a Fire Department C-99 Certificate of Fitness and must be replaced if damaged. An annual record of visual inspections must be maintained on site for at least 4 years after inspection. (FC 2208.1.10)

3.3.2 HOSE MARKING

Hoses shall be distinctly marked by the OEM or component manufacturer, either by the manufacturers permanently attached tag or by distinct markings indicating the manufacturer's name or trademark, applicable service identifier, and design pressure.

3.3.3 VEHICLE FUELING CONNECTIONS

Connector for hoses that connect cylinders or containers being charged must have an approved coupling. They shall be rated for service and pressure intended and designed to withstand twice the maximum filling pressure, and equipped to prevent the leakage on connecting or disconnecting to cylinders or container being filled. Accidental disconnects of the hose must also cause automatic shut-off of gas flow.

Hoses used for the dispensing of CNG must be connected to the dispenser by means of a quick-disconnect coupling. This coupling will separate and automatically stop the flow of gas from the dispenser if a vehicle should pull away during dispensing operations.

Excess-flow valves, or other suitable automatic shut-off system(s), must be provided in dispensing system lines to provide for emergency shut-off in the event of pipe breakage, hose rupture, or hose separation from dispenser. This device, if mechanical must be located as close as is practical to the storage system discharge manifold.

3.4 CONTROL BOOTH (Applicable only to Self Service CNG Stations)

The control booth shall be an interior or exterior enclosure to which the public has no access.

- The certified attendant shall be present within the control booth while dispensing operations are conducted.
- Audio and visual alarms that are required for CNG stations shall actuate within the control booth.
- A properly labeled manual switch that activates the emergency shut-down device shall be located within the control booth.
- A console that controls the self-service CNG motor fuel dispensers shall be provided within the control booth and within 5 feet of the emergency shutdown device manual switch. **(FC 2208.1.11.3)**
- Approved self-service devices, equipment and systems such as, but not limited to, card-operated and remote-preset types, are allowed at CNG motor fuel-dispensing facilities. The certified attendant shall set the dispensing devices in the "off" position when not in use if such dispensing device can be activated without the certified attendant's knowledge. (**FC 2208.1.11.2)**

FIRE ALARM STROBES, EXAMPLE OF VISUAL SIGN OF FIRE ALARM

- A two-way voice communication system shall be installed to provide contact between the control booth and each dispensing island.
- The control booth shall be designed and located so that the certified attendant stationed therein shall have a full, unobstructed clear view of dispensing operations, except that mirrors and/or an approved closed-circuit television installation may be provided to afford the certified attendant a clear view of dispensing operations when the view from the control booth is partially or temporarily obstructed. The closed-circuit television installation shall mean that the image on the monitor shall be of such brightness and resolution as to allow ready identification of individuals and easy observation of activities at all times of the day.

3.4.1 CONTROL BOOTH REQUIREMENTS

Housekeeping

- The control booth shall be kept clean and orderly. The glass panels of the control booth shall be kept unobstructed by equipment, merchandise or litter.

Operating Manual

- Operating manual, emergency procedures, and facility operating procedures shall be maintained in the control booth.

Portable Fire Extinguishers

- Portable fire extinguishers shall be provided adjacent to the CNG motor fuel-dispensing facility. In addition, two (2) portable fire extinguishers with at least a 40-B:C rating shall be provided within the control booth.

CONTROL PANEL (CONTROL BOOTH)

3.5 SHUT-DOWN OPERATIONS

3.5.1 MANUAL VALVES (INLET VALVE) (FC 2208.6)

- Gas supply piping to equipment shall be provided with a remote, readily accessible manual shutoff valve of the fast-closing, quarter-turn type.
- Manual valves shall

be located so as to minimize the risk of physical damage and minimize being rendered inoperable as a result of freezing.

- Location:
  - Not less than 25 feet from the compressor for compressors rated for 300 standard cubic feet per minute or less.
  - Not less than 75 feet from the compressor for compressors rated greater than 300 standard cubic feet per minute.

3.5.2 REMOTE MANUAL SHUT-OFF VALVE

A manual shut-off valve, designed to cut off the gas supply to the CNG station in case of an emergency, must be installed in the gas feed line. The C-99 Certificate of Fitness holder must make sure that the valve is protected against physical damage and kept accessible at all times. This valve is required in addition to any automatically operated shut-off valves.

3.5.3 AUTOMATIC SHUT-OFF VALVE

An automatic shut-off valve connected to the gas piping system will be installed on CNG stations to automatically cut off the CNG gas supply in case of an emergency. The valve must be positioned upstream of the confined high pressure gas piping. The valve shall be installed underground or otherwise protected from exposure to fire and physical damage in a manner acceptable to the fire commissioner.

3.5.4 EMERGENCY SHUTDOWN SWITCHES (FC 2208.7)

- An approved, clearly identified and readily accessible emergency shutdown switch shall be provided at an approved location.
- The switch, upon activation, shall automatically and immediately shut off the power supply to the compressor and close valves between the gas supply and the compressor and between the storage tanks and the dispensers.
- Such emergency shutdown switches for outdoor CNG dispensers shall be located within 75 feet of, but not less than 25 feet from, the fuel dispensers.
- For interior fuel-dispensing operations, such emergency shutdown switches shall be installed at an approved location.
- Additional automatic emergency shutdown switch shall be provided in the compressor area for both indoor and outdoor compressors.
- An approved sign shall be posted on or immediately adjacent to such switches and shall read: **EMERGENCY CNG SHUTOFF**.
- The emergency shutdown switch shall be of a type that is manually resettable.

EMERGENCY SHUT-OFF SWITCH

4. CNG STATIONS

The NYC Fire Department recognizes and approves the use of three types of CNG stations in New York City: **stationary stations, mobile stations** and **mobile cascades**. These stations are used to dispense CNG at regulated pressures into DOT approved cylinders or containers.

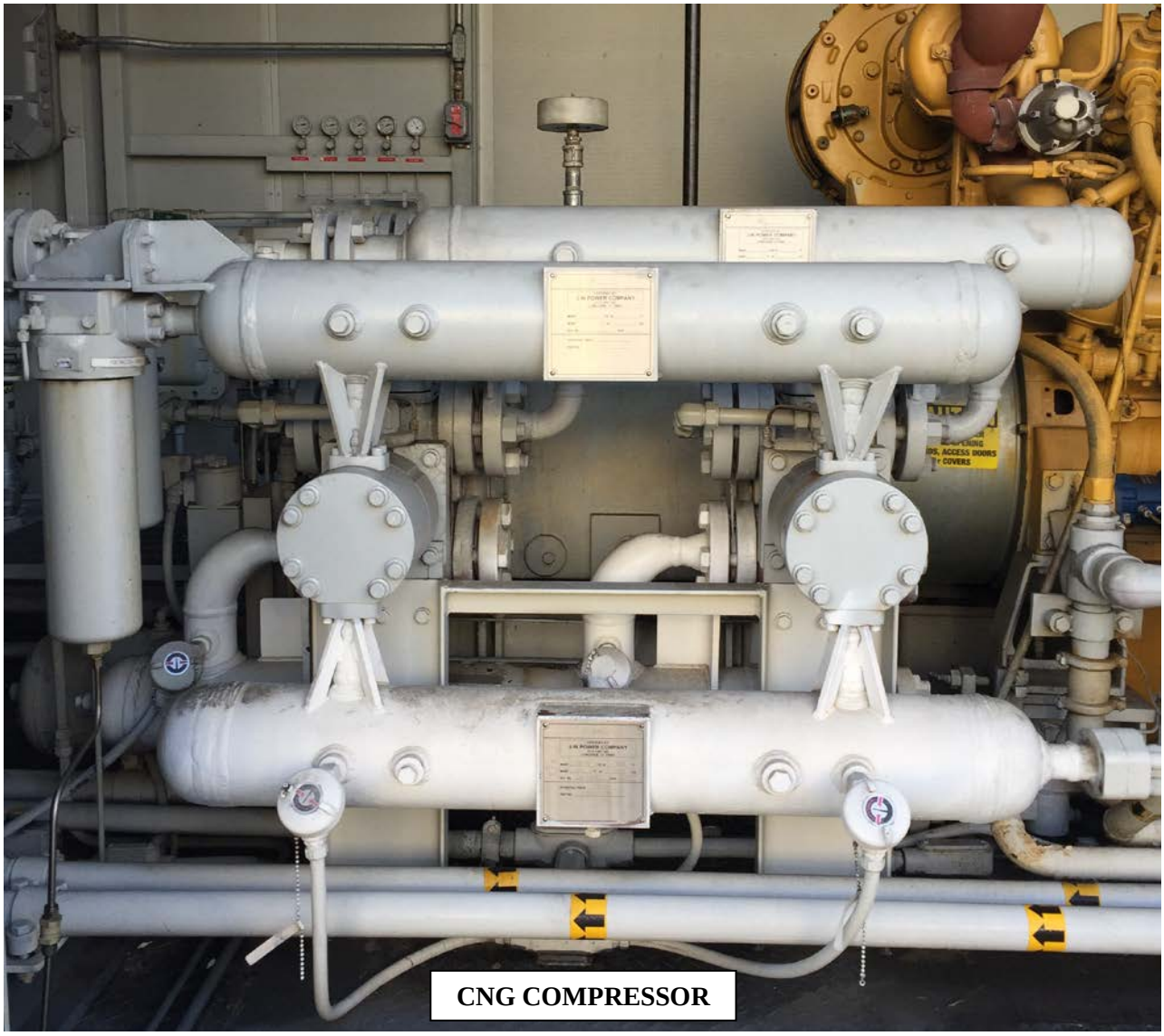
STATIONARY CNG CONTAINERS AT A CNG STATION

Generally, the CNG is dispensed into portable cylinders to be used in motor vehicles and/or tanks mounted on motor vehicles. CNG may also be used for other purposes when fire department approval has been secured.

4.1 STATIONARY CNG STATIONS

Stationary CNG stations are commonly installed in utility companies or other locations deemed suitable by the fire commissioner, including automotive service stations, bus depots, and fleet garages. The stationary CNG station consists of an assembly of components, which include a compressor, a dispenser, valves and piping, and a storage system.

The compressor is used to draw the gas from a distribution pipeline and compress it into the storage system. Then the CNG is dispensed from the storage system into cylinders mounted on motor vehicles. Fire Department regulations require stationary CNG stations to be located outdoors at grade level.



4.2 MOBILE CNG STATIONS (FR 2208-01)

A mobile CNG station consists of an assembly of components, which includes compressors, cylinders and dispensers, mounted on a motor vehicle. Mobile stations are designed to draw CNG from a CNG supply source and dispense it into motor vehicle mounted cylinder(s). Several Fire Department regulations must be obeyed when operating mobile CNG stations.

4.2.1 Design and Installation Requirements

- Labels reading "MANUAL CYLINDER SHUT OFF VALVE" in lettering a minimum of 1/2" high shall be placed on the appropriate access doors.
- Hoses, hose connections, dispensers, gas detection systems and electrical equipment used for CNG shall be listed. Vehicle-fueling connections shall be listed and labeled.
    - Vehicle fueling hose shall be compatible with CNG and shall withstand a pressure of at least four times the service pressure. Hoses shall be

designed as to be protected against physical damage (may include use of a retractable device).

- Hoses shall be tested for leaks with a noncorrosive solution or equivalent leak detection method at least annually by a certified attendant and shall be replaced if damaged.

4.2.2 Fire Safety Precautions (FR 2208-01)

(A) Mobile CNG motor fuel systems may only be operated outdoors.

(B) The engine and ignition system of the mobile CNG motor fuel system and the motor vehicle into which CNG is being dispensed shall be off during dispensing operations. The compressor may remain active during stationary operations.

(C) The wheels of such mobile systems mobile systems shall be chocked during compressing and/or dispensing operations.

(D) Motor vehicles into which CNG is being dispensed shall be electrically bonded or grounded to the mobile CNG motor fuel system.

(E) A cellular telephone by which fires or other emergencies may be reported to the Fire Department shall be provided to the Certificate of Fitness holder responsible for the operation of the mobile CNG motor system.

(F) Each mobile CNG motor fuel system shall be provided with a portable fire extinguisher having at least a 20-B:C rating.

(G) Dispensing areas shall be well lighted whenever dispensing is being conducted. (FC 2208.1.4)

(H) The mobile station's wheels must be chocked to prevent movement.

4.3 MOBILE CNG CASCADES

A mobile CNG cascade consists of several cylinders mounted on a trailer or motor vehicle. CNG is stored inside the cylinders under pressure and the cylinders are connected with steel piping. The C-99 Certificate of Fitness holder transfers the CNG from the mobile cascade into vehicle mounted cylinders. Mobile cascades are commonly used as a temporary CNG supply when there is a problem with a stationary CNG station.

4.3.1 Design and Installation Requirements (FR 2208-01)

- A manual shut-off valve shall be provided. Such valve shall be accessible and shall be installed in a protected location to minimize damage from vibration and unsecured objects.
- Labels with a minimum of ½” letters indicating the location of the manual shut-off valve shall be affixed to the mobile CNG cascade at the valve or other conspicuous location.

- CNG containers and shut-off valves shall be color-coded as follows, and the pressure of each bank clearly indicated on the unit:
  (1) High pressure – Black

(2) Medium pressure – Green
(3) Low pressure – Orange

- Labels reading "COMPRESSED NATURAL GAS" in red lettering on contrasting background in a minimum of six (6) inches high shall be placed on each side and the rear of the mobile CNG cascade.

4.3.2 FIRE SAFETY PRECAUTIONS (FR 2208-01)

The following fire safety precautions shall be observed at all times during operation of mobile CNG cascades.

(A) Mobile CNG cascades may only be operated outdoors.

(B) The wheels of such mobile cascade shall be chocked during operation.

(C) If attached to a motor vehicle, the engine and ignition system of the motor vehicle and motor vehicle into which CNG is being dispensed shall be off during dispensing operations.

(D) When the mobile CNG cascade is used as a replacement for a dispenser, the cascade shall be located in an approved dispensing area and the Fire Department shall be notified of the use of the cascade as a replacement and its location.

(E) Each mobile CNG cascade shall be provided with a portable fire extinguisher having at least a 20-B:C rating.

Several regulations which must be obeyed when operating mobile cascades include the following:

High, medium, and low pressure CNG container banks and their shut-off valves must be color coded for easy identification. The color coding system is as follows:

Pressure	Color
High	Black
Medium	Green
Low	Orange

The pressures corresponding to the black, green and orange container banks must be clearly identified on the cascade unit. Decals, reading COMPRESSED NATURAL GAS in 6 inch high red letters on contrasting background, must be placed on each side and the rear of the unit.

The emergency shut-off valve must be identified by placing decals, with minimum one-half inch letters reading MANUAL CYLINDER SHUT-OFF VALVE, next to the emergency shut-off valve. The shut-off valve must be protected against physical damage and excessive vibration.

At least one dry chemical fire extinguisher must be installed on each mobile cascade. When the mobile cascade is used as a temporary replacement for a stationary CNG station, the mobile cascade must be positioned in an approved dispensing area. The C-

99 Certificate of Fitness holder must notify the Fire Department when the mobile cascade is used to replace the standard dispensing unit. This will allow the Fire Department to modify its fire-fighting strategies should an emergency arise.

In some cases the fire commissioner may require additional safety features to be installed.

4.4 CNG EQUIPMENT

4.4.1 COMPRESSOR ASSEMBLY

A compressor assembly includes the **compressor**, **interstage piping**, **storage vessels**, **pressure relief devices**, and a **control panel**. The compressor uses suction to draw the CNG from a supply source and then transfers it through the station's pipelines and hoses under pressure. In some stations, the compressor discharges the CNG into a storage system for later use. In other stations it pumps it directly to the dispensing unit. Either a natural gas engine must drive all compressors or an explosion proof electric motor, approved for use in Class I installations (i.e. hazardous locations).

CONTROL PANEL FOR CNG STATION

A control panel should be in close proximity of the compressor. It is used to regulate the operation of the compressor. A manually operated shut-off switch must be installed in all CNG stations. It should be used by the C-99 Certificate of Fitness holder to quickly shut down the compressor during an emergency. For example, it may be used when there is concern about suction pressure, discharge pressure, or motor temperature. It should also be used during a fire emergency to shut down the compressor.

The compressor building or enclosure must not be used for any other purpose. Compressor buildings and enclosures must be ventilated to ensure that the gas-air mixture never exceeds 20% of the lower explosive limit (LEL). The LEL is simply defined as the lowest concentration of CNG in air that may be ignited. Compressor buildings and enclosures must also be provided with explosion venting designed to vent the combustion gases into the atmosphere in case of an explosion.

Heating methods for the compressor buildings or enclosures must be free of ignition sources. Fire Department approved heating sources include catalytic heaters, encased electric heating (such as within the concrete floor slab of the enclosure or building), explosion-proof forced air heating and steam and hot water taken from an outside source. Open flames or other potential ignition sources must never be taken into the

compressor building or enclosure. Smoking is never permitted in the compressor building or enclosure.

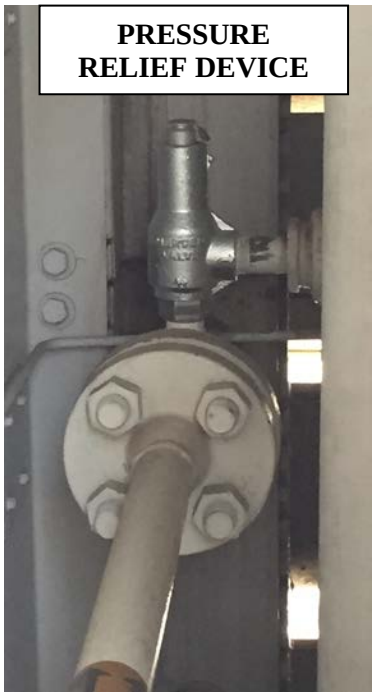
4.4.2 PRESSURE-LIMITING DEVICE

An automatic pressure-limiting device, designed to automatically shut down the compressor when the gas discharge pressure reaches dangerous levels, must be installed on each CNG station. This prevents the cylinder from being overcharged and ruptured.

Each compressor shall be equipped with an automatic shutdown device that will shut down the compressor in the event of low suction pressure, high motor temperature, high discharge pressure or high discharge temperature. (FC 2208.8)

4.4.3 CNG CONTAINERS

- Design and Installation (NFPA 4.4)
  - Containers shall be manufactured, inspected, marked, tested, retested, equipped, and used in accordance with the following:
    - U.S. Department of Transportation (DOT) or Transport Canada (TC) regulations, exemptions, or special permits.
    - Approved cylinders and containers are stamped or labeled with DOT or ASME approval markings.



4.4.4 PRESSURE RELIEF DEVICES

According to DOT regulations and the ASME unfired pressure vessel code, all CNG cylinders and storage tanks must have a pressure relief device installed. These devices are designed to release the gas from the cylinder or container when the pressure inside reaches dangerous levels. For example, the pressure relief device may open and vent the CNG to the atmosphere when the cylinder is overfilled or exposed to extreme temperatures. Typical pressure relief devices consist of rupture disks, fusible plugs, combination rupture disks fusible plugs, and pressure relief valves. **The pressure rating must be labeled on the CNG container or cylinder, the relief valve rating and the cylinder that it's attached to should be consistent.** The Certificate of Fitness holder must make sure that the pressure relief devices are protected against tampering and physical damage. **If any adjustment to these devices is required it must be performed by a representative of the manufacturer.** Some CNG stations are designed so that an alarm will sound when a pressure relief device opens and vents into the atmosphere. In such

cases when a pressure relief device vents, the Certificate of Fitness holder must immediately stop all compressing and dispensing operations.

NFPA 8.10.3

Pressure relief valves shall be tested at least every 3 years by the manufacturer authorized representative. The certificate of fitness holder is responsible for the record keeping.

4.5 MINIMUM CLEARANCES

The Certificate of Fitness holder must make sure that flammable and combustible materials, liquids, gases, etc. are kept a minimum distance away from CNG stations and storage areas. The table below indicates the minimum distances required.

EXPOSURE	Outdoors	In a CNG building or compressor enclosure
Readily ignitable material.	10 feet	5 feet
Above ground storage of flammable or combustible liquids.	20 feet	10 feet
Storage of flammable or oxidizing gases.	10 feet	5 feet
Above ground piping containing flammable or oxidizing gases or flammable or combustible liquids, excluding piping used to dispense other motor vehicle fuels.	20 feet	10 feet
Below ground storage of flammable or oxidizing gases or flammable or combustible liquids, including piping.	5 feet	5 feet
Any source of ignition including motor vehicles, except those entering or departing the fueling area and those being fueled.	10 feet	5 feet
Intakes of ventilation or air conditioning equipment or air compressors.	25 feet	25 feet
Lines of adjoining property which may be built upon.	10 feet	5 feet
Adjacent buildings of other than masonry or concrete construction.	10 feet	5 feet
Adjacent buildings of masonry or concrete construction.	5 feet	0 feet
Openings of adjacent buildings.	15 feet	10 feet
Hospitals, schools, theaters, or other places of public assembly		

or amusement where 50 or more people congregate.	20 feet	10 feet
Public street or sidewalk.	10 feet	5 feet
Nearest rail of any rapid transit elevated line or the main track of any railroad excluding underground railway.	50 feet	25 feet
Overhead electrical transmission or distribution line.	25 feet	25 feet
Other motor vehicle fuel dispensers (gasoline, diesel, methanol, etc.) Dispenser	5 feet	5 feet
Compression and Storage	10 feet	5 feet

4.6 GROUNDING AND CLERANCES

4.6.1 GROUNDING

All piping, compressors, storage systems, cylinders and containers installed on CNG stations must be electrically grounded. The electrical grounding reduces the likelihood of accidental ignition of the CNG due to sparks generated by static electricity build-up.

4.6.2 SMOKING AND OPEN FLAMES (FC 2208.1.9)

It shall be unlawful to smoke or use/maintain an open flame in any area where CNG motor fuel is compressed, stored or dispensed.

4.6.3 ELECTRICAL EQUIPMENT GUIDELINES

All electrical equipment installed inside any CNG building, compressor enclosure, or CNG storage area must meet Class I specifications (i.e. approved for use in hazardous locations). Electrical equipment installed outdoors and within 10 feet of the compressor, storage system, or dispenser system must also be approved for use in hazardous locations.

ELECTRICAL INSTALLATIONS

Location	Division or Zone	Extent of Classified Area
Containers (other than mounted fuel supply containers)	2	Within 10 ft (3 m) of container
Area containing compression and ancillary equipment	2	Up to 15 ft (4.6 m) from equipment
Dispensing equipment outdoors	1	Inside the dispenser enclosure
Outdoors	2	From 0 to 5 ft (1.5 m) from the dispenser
Indoors	1	Inside the dispenser enclosure
Indoors	2	Entire room, with adequate ventilation *(see 8.4.3)*
Discharge from relief valves or vent		
Outdoors	1	5 ft (1.5 m) in all directions from the point source
Outdoors	2	Beyond 5 ft (1.5 m) but within 15 ft (4.6 m) in all directions from point of discharge
Valves, flanges of screwed fittings	None	Unclassified
Discharge from relief valves within 15 degrees of the line of discharge	1	15 ft (4.6 m)

4.6.4 SAFETY DEVICES

Several safety devices are required by the Fire Department in CNG stations. The Certificate of Fitness holder must know and understand how these devices operate.

4.6.5 PROHIBITIONS

4.6.5.1 SIGNAGE (FC 2208.8.1.2.6)

- "No Smoking" - It shall be unlawful to smoke or use or maintain an open flame in any area where CNG motor fuel is compressed, stored or dispensed. Approved container shall be bonded signs shall be posted on the container support structure or appurtenance.
- Durable signs shall be conspicuously posted in dispensing areas in CNG motor fuel-dispensing facilities.
    - A sign setting forth dispenser operating instructions shall be posted on every dispenser. Such sign shall also indicate the location of the emergency shutdown switches.
    - A warning sign that reads as follows shall be posted on or immediately adjacent to each dispenser:
        1. No smoking.
        2. Shut off engine.

Several types of safety signs may be posted at various locations in CNG stations. These signs must indicate:

· The general fire safety procedures to be followed during a fire emergency.
· How to sound the fire alarm.

EXAMPLES OF SIGNAGE

· The location of the manual shut-off switch.
· The location of fire extinguishers.
· How to use the fire extinguishers and related fire-fighting equipment.
· That smoking and open flames are prohibited within 10 feet of a CNG Station.

The Certificate of Fitness holder must make sure that required fire safety signs are posted and clearly visible at all times.

4.6.5.2 EMERGENCY TELEPHONE (FC 2208.1.6)

A telephone not requiring a coin to operate or another approved, clearly identified means to notify the Fire Department shall be provided at the facility in an approved location.

4.6.5.3 OPERATION

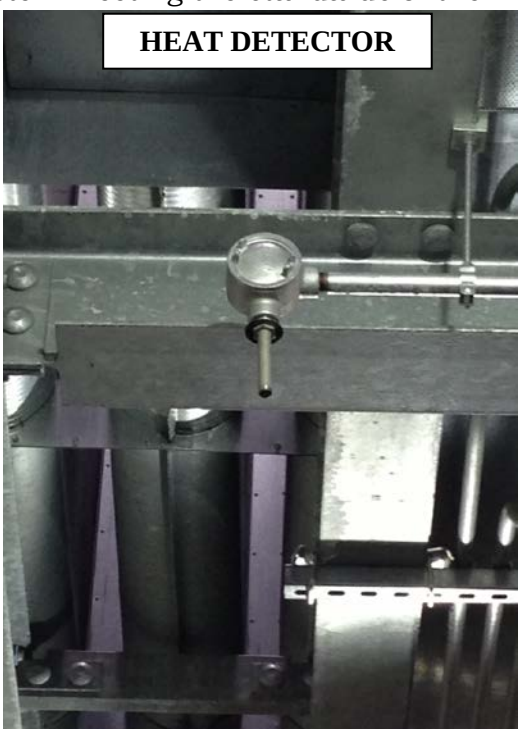
It shall be unlawful to: (FC 2208.1.1)

- Operate a self-service marine CNG motor fuel-dispensing facility.
- Fill a portable container, other than permanently mounted fuel containers on CNG-powered vehicles (except outdoors at a utility-operated facility).

5. DETECTION SYSTEMS

5.1 GAS DETECTION SYSTEM

- Indoor compressing, indoor storage and indoor dispensing areas shall be provided with a combustible gas detection alarm system meeting the standards of the construction codes, including the Building Code.
- Gas detection systems shall activate a local audible and visible alarm at 20 percent of the LEL and automatically shut off gas supply at 50 percent of the LEL, with simultaneous transmission of an alarm to the Fire Department by an approved central station company.
- The automatic shutoff valve shall be located upstream from the confined high-pressure piping and shall be installed underground or otherwise protected from exposure to fire in an approved manner. (FC 2208.7.2)



5.2 HEAT DETECTION SYSTEMS

Indoor compressing, storage and dispense areas shall be provided with a closed-circuit heat detection system utilizing approved heat

detection devices and equipment designed to automatically activate a local audible and visible alarm with simultaneous transmission to an approved central station, activate a fire extinguishing system over the area or enclosure, and shut off the gas supply to the compressor and dispenser. The automatic shutoff valve shall be installed underground or otherwise protected from exposure to fire in an approved manner. (FC 2208.7.3.1)

For outdoor CNG storage exceeding 35,000 SCF located within 25 feet of a building or structure, activation of the heat detection system shall simultaneously transmit an alarm to an approved central station. (FC 2208.7.3.2)

5.3 FIRE SUPPRESSION AND EXTINGUISHING SYSTEMS

5.3.1 EXTINGUISHING SYSTEMS

Automatic, extra hazard fire extinguishing systems must be installed in all indoor CNG stations. Typically, a Halon 1301 (which no longer is allowed for new installations) and/or a dry chemical system or an equivalent is installed. Any fire extinguishing system installed in a CNG station must meet the standards established by the New York City Buildings Department, the Fire Department, and NFPA 17. These extinguishing systems are automatically activated by closed circuit fire detection systems during a fire emergency. They may also be manually operated from a designated remote location in case of an emergency. Once operated, an audible and visual alarm SHALL ACTUATE AT A SUPERVISED LOCATION ON THE PREMISES THAT ASSURES IMMEDIATE RESPONSE.

In some cases the alarm is also automatically transmitted to the Fire Department via an approved central monitoring station. When a fire extinguishing system is discharged, the system must be inspected and fully recharged by a DOB licensed contractor (certified by the manufacturer) prior to re-starting CNG dispensing operations.

PORTABLE FIRE EXTINGUISHER

A performance test of the non-water fire extinguishing system and the dispensing facility emergency shutdown system shall be conducted at least once every 5 years. The test shall be conducted at the owner's risk by his or her representative before a representative of the Fire Department. (FC 2208.7.4.1)

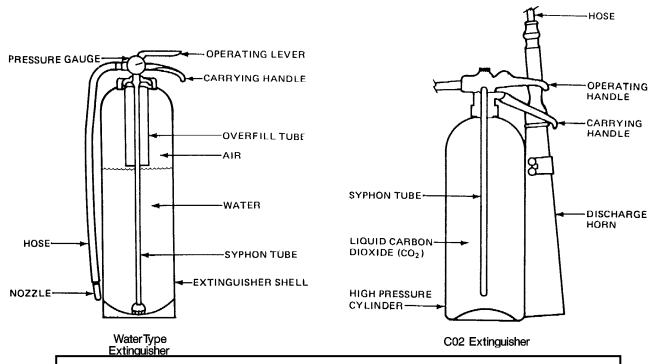
5.3.2 FIRE EXTINGUISHERS

At least one portable dry chemical or equivalent fire extinguisher must be installed at each CNG station. Additional fire extinguishers may be required by the Fire Department in some CNG stations. The Certificate of fitness Holder should make sure that all required extinguishers are installed and maintained in good working order at all times. The Certificate of Fitness holder must know how to operate the extinguishers in a safe

and efficient manner. He or she must know the difference between the various types of extinguishers and when they should be used. Three classes of fires and the appropriate extinguishers are described below.

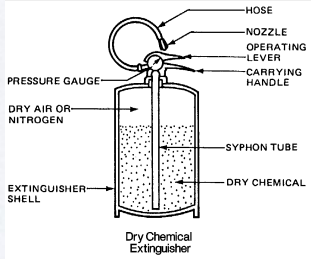
Class A Fires occur when ordinary combustible materials are ignited. For example, wood and paper fires are class A fires. Water type extinguishers should be used to extinguish these fires because they cool the fire while quenching the flame.

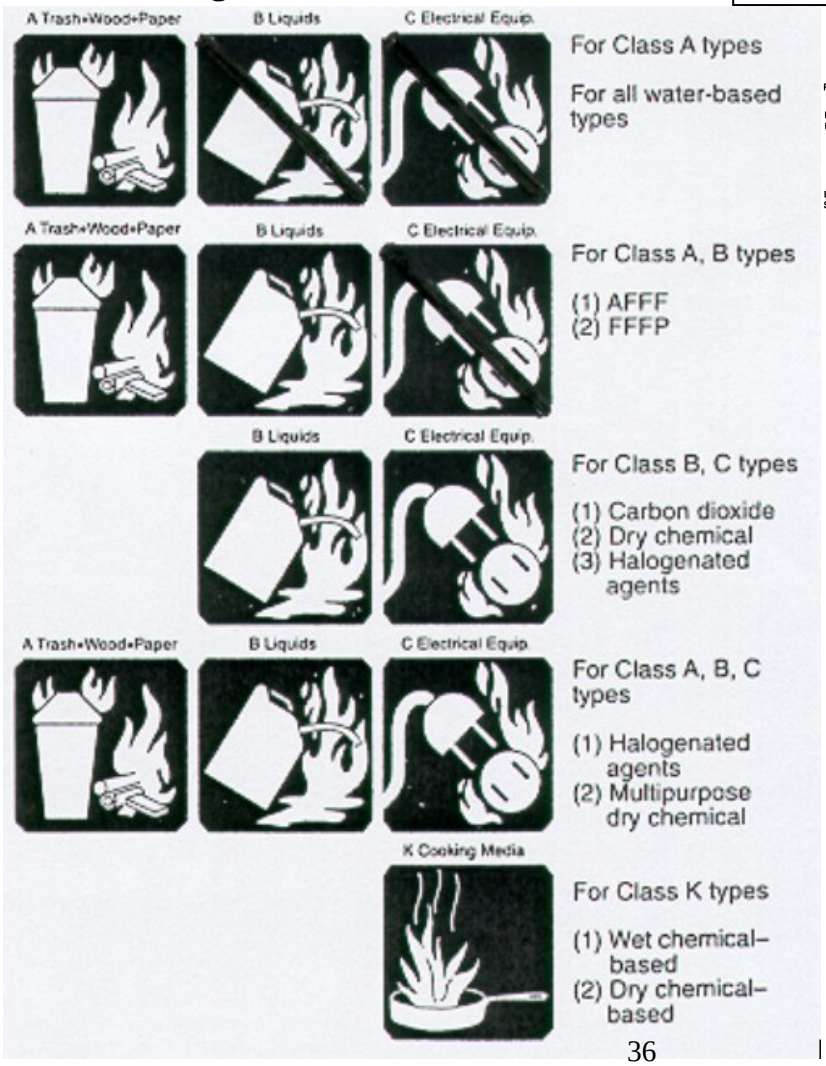
Class B Fires occur when flammable liquids, gases or greases are ignited. These fires must be extinguished by smothering the flame. The flame may be smothered using carbon dioxide, dry chemical or foam extinguishers. Water type extinguishers will not effectively extinguish class B fires. These extinguishers are must be used when attempting to extinguish a fire at a CNG station.



FIRE EXTINGUISHER COMPONENTS

Class C fires occur when electrical equipment catches fire. These fires must be fought with fire extinguishers that do not conduct electricity. Carbon dioxide and dry chemical extinguishers must be used to extinguish electrical fires. Foam and water type extinguishers must not be used to extinguish electrical fires.





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.

SYMBOLS PAINTED ON FIRE EXTINGUISHERS

A symbol with a shaded background and a slash indicates that the extinguisher must not be used for that type of fire. The

certificate of fitness holder must understand these symbols and must make sure that the fire extinguishers are kept in good working order at all times.

Generally, operation instructions are clearly painted on the side of the fire extinguisher. They clearly describe how to use the extinguisher in case of an emergency. An example of these instructions is shown on the next page.

5.3.3 CHOOSING THE CORRECT EXTINGUISHING AGENT

When attempting to extinguish fires involving materials other than CNG, care must be taken to make sure that only appropriate extinguishing agents are used. For example, only non water-based foam extinguishers should be used on fires involving water soluble flammable liquids such as gasoline. Water based foam extinguishers are ineffective on these fires because the flammable liquid destroys the foam blanket.

OPERATION INSTRUCTIONS FOR A FIRE EXTINGUISHER

6. INSPECTIONS

The C-99 Certificate of Fitness holder should ensure that the fire protection systems are fully charged at all times and that all scheduled inspections, service, and repairs are performed.

6.1 DAILY INSPECTIONS (FR 2208-02)

- **The COF holder shall conduct an inspection of the facility on at least a daily basis, and document such inspection in the log book. The inspection shall verify that:**
    - The heat detectors are undamaged and unobstructed.
    - Portable fire extinguishers have been serviced and have adequate pressure.
    - The remote manual release (shutdown) is clear of obstructions.
    - Audible and visible alarms are in good working order.
    - Emergency procedures signage is posted, unobstructed and legible.
    - Required lighting is in good working order.
    - Any mirrors and/or approved closed-circuit television used to monitor dispensing operations are in good working order.
    - The voice communications system is in good working order.

6.2 FDNY INSPECTIONS

Fire Department inspectors will conduct periodic inspections of the CNG station and all required permits. Enforcement action may be taken against the Certificate of Fitness holder and the owner of the CNG station when Fire Department regulations are not obeyed, or when the permits are not secured and posted. These actions may include fines and the revocation of the Certificate of Fitness.

6.3 RECOMMENDED INSPECTION PROCEDURES

The Certificate of Fitness holder should make regular inspections and patrols of the assigned area of responsibility to make sure that fire protection systems, storage containers, and related equipment are in good condition. Defective components should be replaced promptly. The Certificate of Fitness holder must notify the Fire Department and his or her supervisor when major defects are discovered (e.g., when the fire suppression system is inoperative). Violations may be issued and enforcement action taken against the Certificate of Fitness holder when major defects are not reported. Although the inspections will vary depending on the location, the following general guidelines will apply for all locations.

The area around CNG station and related equipment must be checked daily for potential ignition sources. Any potential ignition sources that are discovered must be corrected or removed immediately. For example, frayed electrical wires and defective electronic components must be either repaired or removed.

Trash and garbage must not be allowed to accumulate anywhere inside the storage areas. Accumulated trash is a fire hazard because it may be easily ignited by a stray spark. All trash and garbage must be removed from the CNG station and related equipment on regular basis.

The entire system should be visually inspected by the C-99 Certificate of Fitness holder daily. Defects must be repaired before the system is placed into operations. All inspections and defects should be recorded by the C-99 Certificate of Fitness holder.

6.4 TESTING

All new or replaced CNG Station gas piping (excluding non-welded stainless steel tubing utilizing compression fittings) must be hydrostatically pressure tested, in the presence of a Fire Department inspector, at twice the maximum operating pressure for one hour. In the case of prefabricated systems, a notarized certificate from the manufacturer attesting to satisfactory completion of the said test is acceptable. All tie-in connections and stainless steel tubing utilizing compression fittings must be tested for leaks using the soap and water solution test.

Vehicle fueling hoses must be tested for leaks using the soap and water test at least annually by the C-99 Certificate of Fitness holder. Defective or damaged components must be replaced promptly. Annual record of visual inspections must be maintained on site for at least 4 years after inspection. CNG cylinders and containers must be hydrostatically tested every five years or more frequently if required by the DOT.

6.5 RECORDS (MAINTENANCE LOG BOOK) (FR 2208-02)

A maintenance log shall be kept on the premises for inspection by any Fire Department representative. Such a log shall list all COF holders with their COF numbers and certificate expiration dates. Entries in such a log book shall be of daily inspections, repairs of any system, and any unusual occurrences.

The Certificate of Fitness holder should keep a comprehensive record of all incidents (such as fire, leak, device, equipment or system failure, out-of-service fire protection, alarm, or safety system) and of equipment maintenance. These records should be maintained on the premises for a minimum of **4 years** and should be made available to Fire Department representatives upon request. (FC 2208.1.10)

6.6 FIRE EXTINGUISHER INSPECTIONS

The extinguishers are required to be 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.

Periodic "**monthly**" inspections of fire extinguishers **SHALL** include a check of the following items:

(a) Location in designated place

(b) No obstruction to access or visibility

(c) Operating instructions on nameplate legible and facing outward

(d) Safety seals and tamper indicators not broken or missing

MONTHLY INSPECTION TAG

(e) Fullness determined by weighing or “hefting”

(f) Examination for obvious physical damage, corrosion, leakage, or clogged nozzle

(g) Pressure gauge reading or indicator in the operable range or position

(h) Condition of tires, wheels, carriage, hose, and nozzle checked (for wheeled units)

Monthly “quick checks” are intended to give reasonable assurance that the fire extinguisher is fully charged and operable. This is done by verifying that it is in its designated place, that it has not been actuated or tampered with, and that there is no obvious or physical damage or condition to prevent its operation.

Frequency

1. Fire extinguishers shall be **manually inspected when initially placed in service**.

2. They shall be inspected either manually or by an electronic mean once a month**.**

3. Fire extinguishers should be visually inspected more often especially where any of the following conditions exist:

(1) High frequency of fires in the past

(2) Severe hazards

(3) Locations that make fire extinguishers susceptible to mechanical injury or physical damage
(4) Exposure to abnormal temperatures or corrosive atmospheres

When an inspection of any fire extinguisher reveals a deficiency in any of the conditions listed above, immediate corrective action shall be taken.

7. EMERGENCY PROCEDURES (FC 2208.1.5.3)

7.1 FIRE PROTECTION AND PREVENTION SYSTEMS

The Fire Department requires fire protection and prevention systems to be installed in CNG stations. The Certificate of Fitness holder should make sure that these systems are maintained in good working order at all times.

A sign setting forth emergency procedures that reads as follows shall be posted in the dispensing area, or other approved location:

IN CASE OF FIRE, LEAK OR EMERGENCY:
ACTIVATE EMERGENCY CNG SHUTDOWN
DIRECT VEHICLE OCCUPANTS TO EXIT VEHICLES
AND LEAVE AREA IMMEDIATELY
KEEP ALL PERSONS AWAY FROM THE AREA.
NOTIFY THE FIRE DEPARTMENT (CALL 911)
(FACILITY ADDRESS)
(Indicate address, with cross-street reference).

The Certificate of Fitness holder must know the locations of and how to operate all fire extinguishing devices, control devices, and fire alarm stations required at his or her CNG station. In case of a fire, explosion, major leak or other emergency, the Certificate of Fitness holder must notify the fire department by phone immediately and activate the alarm system. The Certificate of Fitness holder must know the telephone number of the Fire Department Borough Communication Office. The borough phone numbers are listed below. These phone numbers must be posted near the phones most likely to be used in case of an emergency.

Manhattan	(718) 999-2222
Bronx	(718) 999-3333
Brooklyn	(718) 999-4444
Queens	(718) 999-5555
Staten Island	(718) 999-6666

In some cases, the activation of the fire alarm will transmit a signal to the Fire Department via a central monitoring station. The Certificate of Fitness holder must answer any questions asked by the fire fighters when they arrive. The Bureau of Fire Prevention should be notified as soon as possible after an explosion or fire has occurred. The Bureau of Fire Prevention may require a detailed report on the causes and the consequences of the explosion or fire. Generally, this report must be filed within ten days after the incident.

7.2 CNG FIRES

When a CNG fire occurs, the best way to bring it under control is to shut off its supply source and allow the fire to burn itself out.

7.3 ACTIONS TAKEN BY FDNY

It may not be possible to shut off the supply source in many situations. In such cases, the fire should be allowed to burn itself out and a water spray should be discharged onto the CNG station, dispensing units, compressors, and related equipment. The water spray will have a cooling effect and will help prevent an explosion. The water spray should also be discharged onto storage cylinders and flammable materials located near the fire.

FIRE ALARM PULL BOX