

1070 – Temporary LNG Installation Guidelines

Effective 2/1/2021

[1. PURPOSE](#)

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1.0 PURPOSE

- 1.1. The use of temporary LNG injection facilities is meant for demand peak shaving and for service maintenance during gas systems repair other short-term applications.
- 1.2. The following procedure outlines the regulatory requirements and their application for DESC usage of any temporary LNG facility design.

2.0 REGULATORY BASIS

- 2.1. The applicable regulatory code is 49 CFR 193.2019 for Mobile and Temporary LNG Facilities. This subpart incorporates by reference the requirements of NFPA-59A (2001 version). The applicable section of the document, Plant Siting and Layout, section 2.3.4, directs the site facilities, qualifications, and operations for temporary LNG portable equipment for peak shaving and service maintenance.
- 2.2. Any modifications to the gas pipeline facility, including construction of an injection point, is subject to 49 CFR Part 192.
- 2.3. The use of temporary LNG is acceptable provided that it meets the duration and mobilization requirements below:
 - 2.3.1. Operational Duration
 - a. The Temporary LNG site shall be limited to less than ten (10) weeks of operation.
 - b. The equipment shall not be temporarily staged for longer than four (4) months
 - 2.3.2. Mobilization
 - a. Mobile temporary LNG facilities shall not require additional permanent infrastructure beyond the construction of an injection point.
 - b. LNG equipment shall be either skid-mounted, trailer-mounted, or otherwise portable.

2.4. Regulator Notification

2.4.1. South Carolina State ORS is required to be notified of any mobile and temporary LNG facilities installed on the system. ORS shall be notified two (2) weeks prior to beginning injection. In instances that LNG injection is urgent ORS shall be notified as soon as is practicable.

2.4.2. Notification shall include:

- a. Location of the facility
- b. Site drawing with entrance and exit points noted as well as location of surrounding roads and buildings
- c. Duration of the facility's intended operation.
- d. Estimated start date of LNG injection
- e. Description established security measures

3.0 PROCEDURE REQUIREMENTS

3.1. Management of Change Notification

3.1.1. Engineering shall complete a Management of Change (MOC) form when injection will occur and the expected parameters. These should include:

- a. Location of injection site
- b. Expected flow rates
- c. Expected pressure downstream of injection
- d. System valves that will need to be operated

3.1.2. Any necessary coordination with the Measurement and Regulation department should be specified, i.e. flows, pressures.

3.2. Transportation

3.2.1. Each LNG transport vehicle and tank used as the supply container, whether company owned, or contractor owned, must comply with USDOT requirements. All tank vehicles and tank cars under the jurisdiction of the USDOT including those in interstate commerce, shall comply with the regulations and specifications of the that federal agency.

3.3. Initial Training and Qualifications

3.3.1. Qualifications

- a. Equipment used on site shall be operated by at least one person who is qualified by experience and training.
- b. All other operating personnel shall be qualified by training.

3.3.2. Training

- a. Training shall be conducted using a written plan of instruction for all operating and supervising personnel at the temporary LNG site.
- b. The training plan includes:
 - i. Characteristics and Hazards of LNG
 - ii. Normal Operations
 - iii. Emergency Procedures

3.3. Facilities

3.3.1. Odorization

- a. LNG contractor shall provide odorization for the injected gas, unless otherwise specified by DENC or DESC.

3.3.2. Vaporizer Controls and Relief Valves

- a. Vaporizer equipment shall have both inlet and discharge block valves at manifold port.
- b. Each discharge block valve must be rated for operation at -260 °F.
- c. Vaporizer equipment shall have a safety relief valve installed which shall not allow the operating pressure to exceed 110% of the maximum allowable operating pressure.
- d. Each vaporizer discharge relief valve must be rated for operation at -260 °F.
- e. Each vaporizer safety relief valve shall be designed for either heated or ambient processes:
 - i. Ambient Process – Relief valve capacity shall be 150% of the rated flow capacity of the vaporizer (as specified for standard operating conditions).
 - ii. Heated Process – Relief valve capacity shall be 110% of the rated flow capacity of the vaporizer AND shall be located so that they are not subjected to temperatures that would cause them to exceed 140 °F (or their rated operating temperature, whichever is greater).
- f. Each heated vaporizer shall be equipped to shut off the fuel supply at the installed location and remotely.

3.4. Temporary Equipment

3.4.1. Procedures

- a. Procedures shall be made available on site for each piece of equipment. These may include manufacturer's instructions and contractor instructions.
- b. The procedures shall cover all loading and unloading operations for the specified equipment.
- c. The procedures shall cover all normal LNG transfer operations and emergency operating conditions for the equipment.

3.4.2. Tanker Car

Before connecting a tanker car, perform the following steps:

- a. Wheels all shall be chocked and have the brakes set,
- b. The derailer or switch shall be properly positioned,
- c. Warning signs or warning lights shall be illuminated for the duration of the LNG transfer AND while the tanker car remains connected.

3.4.3. Hoses

All hoses or arms used for LNG transfer shall be designed and rated for the following:

- a. The service application of transferring LNG for system injection,
- b. The expected service temperature and pressure conditions encountered,
- c. A burst pressure greater than 5X the operating pressure (MOP).

3.5. Operations

3.5.1. Communications

- a. Communications equipment shall be provided at the temporary site so that the equipment operators may be able to communicate with off-site personnel.
- b. Necessary communications equipment shall include: telephone, public address system, two-way radio, warning signs or signal lights.

3.5.2. Fire Protection

- a. Meet with local first responders before site is set up and before LNG transfer commences.
- b. Fire protection shall be provided for all temporary LNG transfer facilities.
- c. Portable or wheeled fire extinguishers recommended by their manufacturer for gas fires shall be available at strategic locations. These extinguishers shall be provided and maintained in accordance with NFPA 10.
- d. The LNG contractor shall provide a documented fire protection evaluation. The specifications for the following shall be determined:
 - i. Fire protection water systems, fire extinguishing, and other fire control equipment
 - ii. Detection and control equipment for fires, leaks, and spills of LNG and all flammable materials, as well as non-process and electrical fires.
 - iii. Methods of protection for the equipment and structures from the effects of fire exposure.
 - iv. Duties of individual personnel and the first responders during a fire emergency.

- v. The protective equipment, special training, and qualifications needed by individual plant personnel as specified by NFPA 600.
- vi. Equipment and processes to be incorporated within the emergency shutdown (ESD) system during a fire emergency.
- vii. Type and locations of sensors to initiate automatic operation of the ESD system or its subsystems

3.5.3. Emergency Shutdown (ESD)

Each temporary LNG facility shall incorporate an ESD system the meets the following requirements*:

- a. Automatically isolates or shuts off a source of LNG or any other flammable liquid or gases.
- b. Automatically shuts down equipment whose continued operation could escalate or sustain a fire other accident.
- c. Designed as failsafe or otherwise installed, located, or protected to minimize the possibility that it becomes inoperable in an emergency.
- d. ESD systems that are not failsafe shall control all components that are located within 50 ft of the equipment in one of the following ways:
 - i. Installed or located where they cannot be exposed to a fire or,
 - ii. Protected against failure due to a fire exposure for at least 10 minutes.

Note: Any equipment, such as valves or control systems, is permissible to meet the requirements of an ESD system, except where indicated in NFPA 59A (2001 edition).

3.5.4. Spacing (Clearance)

- a. The temporary LNG facility shall meet the spacing requirements of the following table:

Table 2.2.4.1 Distances from Impoundment Areas to Buildings and Property Lines

Container Water Capacity		Minimum Distance from Edge of Impoundment or Container Drainage System to Buildings and Property Lines		Minimum Distance Between Storage Containers	
gal	m ³	ft	m	ft	m
<125	<0.5	0	0	0	0
125–500	0.5–1.9	10	3	3	1
501–2,000	1.9–7.6	15	4.6	5	1.5
2,001–15,000	7.6–56.8	25	7.6	5	1.5
15,001–30,000	56.8–114	50	15	5	1.5
30,001–70,000	114–265	75	23		
>70,000	>265	0.7 times the container diameter but not less than 100 ft (30 m)		¹ / ₄ of the sum of the diameters of adjacent containers [5 ft (1.5 m) minimum]	

- b. In the event that the temporary LNG facility must provide service while positioned within a public right-of-way (or when the requirements of the table above cannot be met), each of the following requirements shall be met:

- i. Traffic barriers shall be set on all sides of the facility subject to passing vehicular traffic,
- ii. The operation shall be continuously attended to monitor the operation whenever LNG is present at the facility.
- iii. Flag persons shall be continuously on duty to direct traffic, if the facility restricts the normal flow of vehicular traffic.

3.5.5. Containment

- a. Contractor procedures shall provide portable containment provisions in event of an accidental discharge of LNG containers or other auxiliary equipment and vehicles.
- b. In all cases provisions shall be made to minimize the possibility of accidental discharge of LNG at containers endangering adjoining property or important process equipment and structures or reaching surface water drainage.
- c. These may include, as needed:
 - i. Barriers to adjoining property, e.g. sandbags
 - ii. Spill absorbing material
 - iii. Drainage and catch basin

3.5.6. Accidental Ignition

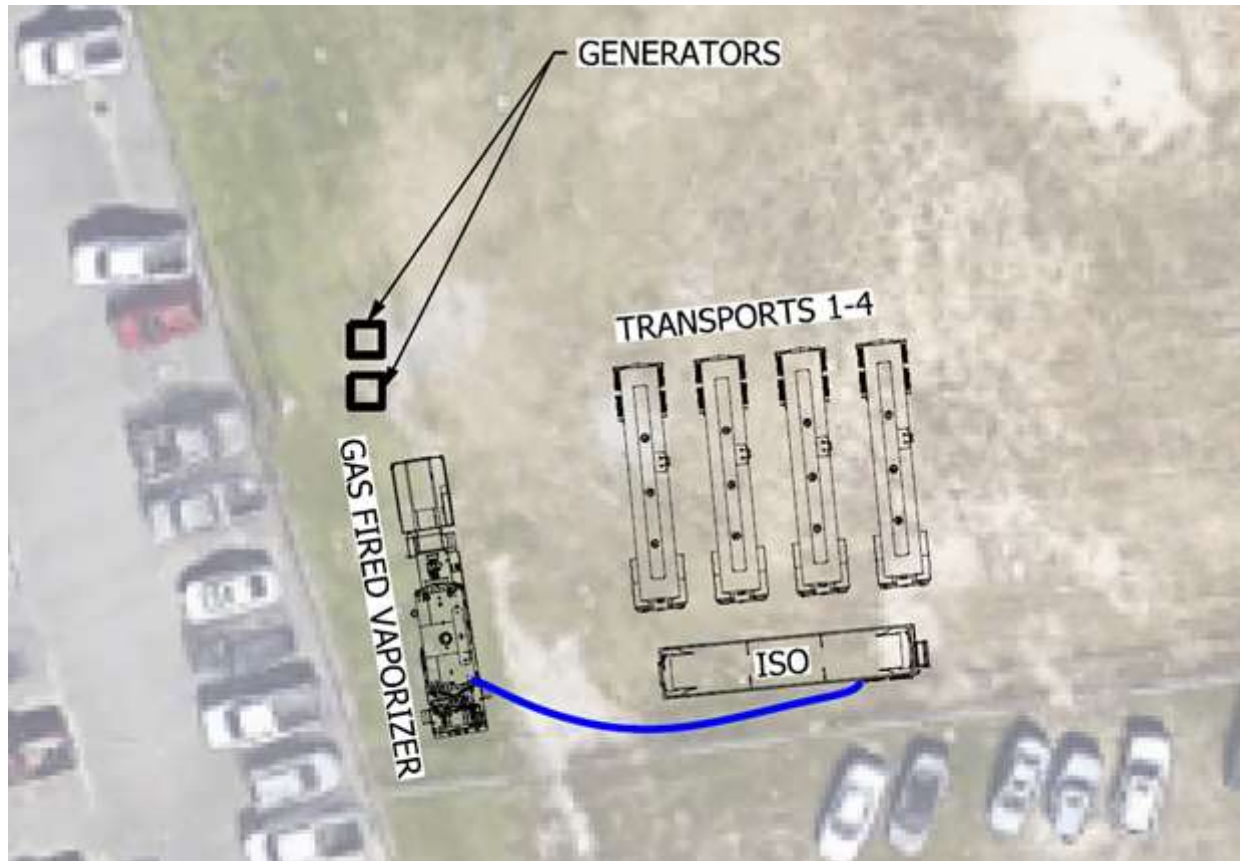
- a. Steps shall be taken to minimize the threat of accidental ignition in the temporary LNG transfer area or where the presence of flammable materials constitute a hazard of fire or explosion.
- b. Refer to [O&M Manual Chapter 12-I, Prevention of Accidental Ignition](#) for procedures for the prevention of accidental ignition of gas.
- c. All electrical equipment in the area must conform to the applicable requirements of Class 1, Division 2, of the National Electrical Code, NFPA 70 (NEA):
 - i. Electric wiring, conduit, connections, fittings, and boxes shall comply with NEA, design requirements, or
 - ii. Be situated at least 15 feet away from any LNG piping, hoses, flanges, or other LNG equipment.
- d. All electrical equipment that must be installed within a 5-foot radius from any relief valve vent or flanged coupling shall comply with applicable NEA Class 1, Division 1 design requirements.

3.5.7. Security Measures

- a. When LNG transfer equipment has been unloaded on the temporary site, the following security measures shall be required:
 - i. Post No trespassing signs or Caution tape
 - ii. Proper barriers are needed if equipment will be set up for longer than 2 days at a time.
 - iii. Orange fencing is acceptable as a perimeter barrier to keep out pedestrians, unless the temporary LNG will be set up for longer

- iv. Heavier fencing or barriers should be used if the temporary LNG transfer equipment will be left on site longer than 5 days. The type of barriers which may be used include but are not limited to: jersey barriers, water-filled barriers, chain-link fencing, plywood fencing. (SEG Corporate Security recommends: 7ft chain link, 1 ft 3-strand barbed wire.)
- b. When LNG is present on the temporary site, the following security measures shall be required:
 - i. The site shall be continuously attended,
 - ii. Public access shall be restricted.
- c. When LNG transfer is in progress, along with the above measures, Security personnel must be positioned on site.

3.6. Temporary Site Drawing (Example)



(UNCONTROLLED IF PRINTED)