National Fuel

National Fuel Gas Supply Corporation
Empire Pipeline, Inc.

NATIONAL FUEL GAS SUPPLY CORPORATION AND EMPIRE PIPELINE, INC.

NORTHERN ACCESS 2016 PROJECT

RESOURCE REPORT 11
Reliability and Safety

FERC Docket No. PF14-18-000

Submitted: March 16, 2015

TETRA TECH

SUMMARY OF REQUIRED FERC REPORT INFORMATION		
Topic	**FERC Reference**	**Report Reference or Not Applicable**
1. Describe how the Project facilities will be designed, constructed, operated, and maintained to minimize potential hazard to the public from the failure of Project components as a result of accidents or natural catastrophes.	§380.12(m)	Section 11.1 Section 11.2

RESOURCE REPORT 11 – SAFETY AND RELIABILITY

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ACRONYMS

CFR	Code of Federal Regulations
Dth/d	dekatherms per day
Empire	Empire Pipeline, Inc.
FERC	Federal Energy Regulatory Commission
HCA	high consequence area
MLV	mainline valve
National Fuel	Supply and Empire, collectively known as
Project	Northern Access 2016 Project
Supply	National Fuel Gas Supply Corporation
USDOT	United States Department of Transportation
§	Section

RESOURCE REPORT 11 – RELIABILITY AND SAFETY

11.0 INTRODUCTION

National Fuel Gas Supply Corporation ("Supply") and Empire Pipeline, Inc. ("Empire"), both subsidiaries of National Fuel Gas Company, are seeking authorization from the Federal Energy Regulatory Commission ("FERC") pursuant to Section 7(c) of the Natural Gas Act to construct and operate the proposed Northern Access 2016 Expansion Project ("Project"). Through this proposed Project, Supply and Empire (collectively known as "National Fuel") jointly propose to expand the Supply pipeline system to provide approximately 497,000 dekatherms per day ("Dth/d") of new firm natural gas transportation capacity, and the Empire pipeline system to provide approximately 350,000 dekatherms per day ("Dth/d") of new firm natural gas transportation capacity.

The proposed Project consists of the following Supply components:

- construction of approximately 96.65 miles of new 24-inch-diameter pipeline ("Mainline Pipeline"), from Sergeant Township, McKean County, Pennsylvania, to an interconnection with Supply's existing Line X-North, near Supply's existing Porterville Compressor Station in the Town of Elma, Erie County, New York;

- addition of approximately 5,350 horsepower to Porterville Compressor Station;

- construction of an interconnection with Tennessee Gas Pipeline's 200 Line in the Town of Wales, Erie County, New York;

- addition of interconnect/tie-in facilities at Clermont (McKean County, Pennsylvania), Hinsdale Compressor Station (Cattaraugus County, New York), and X-North Pipeline (Erie County, New York);

- addition of a meter and regulator ("M&R")/pressure reduction station near the tie-in to X-North Pipeline;

- addition of 13 mainline valve (MLV) sites; and,

- cathodic protection facilities.

The proposed Project also consists of the following Empire components:

- construction of a 24-inch pipeline segment of approximately 3.05 miles, replacing 3.05 miles of existing 16-inch Supply pipeline ("Replacement Pipeline") in the towns of Wheatfield and Pendleton, Niagara County, New York;

- modification of tie-in facilities at the south end of the Replacement Pipeline (tie-in to Line X-North) and approximately 1 mile north of Replacement Pipeline MP 3.05 (tie-in to Empire Pipeline);

- construction of a new, approximately 22,214 horsepower compressor station in the Town of Pendleton, Niagara County, New York;

- construction of a new natural gas dehydration facility in the Town of Wheatfield, Niagara County, New York; and,

- removal of an existing meter station in the Town of Pendleton, Niagara County with relocation/reuse of certain metering equipment at the proposed Pendleton Compressor Station.

A list and mapping of Project components and their locations is provided in Resource Report 1 – Project Description.

National Fuel, through its subsidiaries, owns and operates a natural gas transmission system consisting of approximately 3,000 miles of transmission pipeline, compressor stations, and numerous receipt and delivery points for its customers. National Fuel has provided this service for over 100 years. National Fuel has an excellent record of public safety and will continue to employ system design, construction, operation, and maintenance practices to maintain this record.

11.1 DESCRIPTION OF SAFETY MEASURES

Under the Federal Pipeline Safety Act (49 United States Code 601,101 et seq.), the U.S. Department of Transportation (USDOT) is authorized to regulate pipeline safety standards. Generally, the natural gas transmission industry has an excellent record of public safety. Pipelines and related faculties are designed and maintained with strict adherence to USDOT standards to ensure public safety, reliability, and to minimize the opportunity for system failure. The proposed facilities will be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards stated in 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards*. These regulations are intended to provide protection for the public from natural gas pipeline failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

National Fuel will comply with, and in some cases exceed, the requirements of the USDOT and other applicable regulations, standards, and guidelines for safety. This will include compliance with applicable design standards and codes, construction provisions as mandated, and operation & maintenance procedures and standards, such as the Pennsylvania One Call System and Dig Safely New York.

These new facilities and pipeline will be included in the existing NFG notification system. Emergency response contact phone numbers are maintained in National Fuel's Operations Manual, and emergency contact phone numbers for adjacent infrastructure operators (such as other utility operators) are maintained in National Fuel's Gas Control

Office. National Fuel maintains personnel on-call 24/7 to respond to emergencies. National Fuel sponsors Paradigm Liaison Services to make emergency response presentations annually to emergency responders, public officials, and excavators. Included in this training is National Fuel's emergency contact information given to Emergency Responders.

Once the facilities go into service, periodic pipeline patrols are performed, as well as annual leak surveys, semi-annual leak surveys near more populated areas (Class 3 Locations), and annual valve and regulator inspections. Corrosion protection design, continuing testing evaluation and control is in accordance with standards of the National Association of Corrosion Engineers (NACE) and Federal DOT Code.

The pipeline will be periodically inspected utilizing an internal pipeline inspection from a qualified third party contractor which checks for corrosion anomalies or deformations using the most recent Magnetic Flux Reflux technology. The inspection will occur minimally every 7 years as part of National Fuel's Transmission Integrity Management Plan, which will utilize In-Line Inspection to assess the High Consequence Areas along the pipeline

National Fuel is a member of Dig Safely New York, Pennsylvania One Call System and National Fuel personnel are required to be present at all excavations on the Right of Way. Except in agricultural fields, blue and orange pipeline warning markers with emergency numbers are posted along the pipeline route. Above ground facilities are fenced and locked.

Part 192 also defines area classifications, based on population density in the vicinity of a pipeline, which determine more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous one-mile length of pipeline. The four area classifications defined by the USDOT are:

- Class 1: Any class location unit that has 10 or fewer buildings intended for human occupancy.

- Class 2: Any class location unit that has more than 10, but fewer than 46, buildings intended for human occupancy.

- Class 3:
    - Any class location unit that has 46 or more buildings intended for human occupancy; or
    - An area where the pipeline lies within 100 yards of either a building or a small, well-defined, outside area (such as a playground, recreation area, outdoor theatre, or other place of public assembly) that is occupied by 20 or more persons for at least five days a week for 10 weeks in any 12-month period (the days and weeks need not be consecutive).

- Class 4: Any class location unit that has buildings with four or more stories aboveground intended for human occupancy.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds and frequency of pipeline patrols and leak surveys must conform to higher standards in more populated areas. In addition, Class locations also specify the maximum distance to a sectionalizing block valve: 10 miles in Class 1, 7.5 miles in Class 2, 4 miles in Class 3, and 2.5 miles in Class 4.

Table 11-1 provides identifies USDOT Class Locations along the proposed pipeline routes, including the approximate total pipeline length within each Class Location.

Table 11-1. Preliminary Class Location Study for Project

Begin MP	End MP	Class Area Type	Distance (Miles)
0	11.7	Class 1	11.7
11.7	12.3	Class 2	0.6
12.3	18.4	Class 1	6.1
18.4	20	Class 2	1.6
20	30.9	Class 1	10.9
30.9	32	Class 2	1.1
32	33.1	Class 1	1.1
33.1	34.5	Class 2	1.4
34.5	55.95	Class 2	21.45
55.95	56.8	Class 3	0.85
56.8	65.75	Class 1	8.95
65.75	66.1	Class 2	0.35
66.1	71.05	Class 1	4.95
71.05	71.55	Class 2	0.5
71.55	79.85	Class 1	8.3
79.85	80.5	Class 2	0.65
80.5	86.6	Class 2	6.1
86.6	86.9	Class 2	0.3
86.9	87.4	Class 1	0.5
87.4	88.25	Class 2	0.85
88.25	93.6	Class 1	5.35
93.6	94	Class 2	0.4
94	95.4	Class 1	1.4
95.4	96.65	Class 2	1.25
		Summary	**Distance (Miles)**

		Class 1	59.25
		Class 2	36.55
		Class 3	0.85

Notes:
1. Class location identification is per CFR 192, Subpart A (General)
2. Class location study is preliminary in nature and was an office study. Field verification to be completed at a later date.

Mainline valve (MLV) sites were selected based on the Class 3 location requirements. The valve spacing being utilized assumes that the entire proposed pipeline has a population density equating to Class 3. The vast majority of the proposed pipeline has a population density of Class 1 or Class 2. The Project does not have any Class 4 locations. All mainline valves are being designed as Remote Controlled Valves (RCVs). The MLV locations are listed in Table 11-2.

Table 11-2. Mainline Valve Locations on Mainline Pipeline

MLV Number	Mile Post
1	6.92
2	13.99
3	21.94
4	28.31
5	35.69
6	43.09
7	51.07
8	58.08
9	64.73
10	72.65
11	80.45
12	87.47
13	93.65

The USDOT Pipeline and Hazardous Materials Safety Administration has promulgated a rule for Pipeline Integrity Management in High Consequence Areas (HCA) for Gas Transmission, which requires that a facility-specific Integrity Management Plan be developed to document procedures under which pipeline integrity will be monitored and maintained for those areas where the pipeline traverses lands or facilities that are considered HCAs (49 CFR Part 192 Subpart O).

Currently, there are not any areas along the proposed route that have been confirmed to meet the definition of a high consequence area (HCA). However there are several areas where a more detailed analysis will be performed to confirm the frequency and the number of people that might congregate at the site. This analysis will be completed

after the remaining field civil surveys are completed in 2015. In the event any areas are determined to be a HCA, they will be designed and operated to be in compliance with all Part 192 requirements pertaining to HCA's.

National Fuel maintains a robust Integrity Management Program in compliance with Subpart O of 49 CFR Part 192. In particular, National Fuel's Integrity Management Program assesses the risks to all of its pipeline segments, performs condition assessments and applies preventive and mitigation measures to reduce the likelihood of an incident occurring.

Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under Subpart 192.615, each pipeline operator must also establish an emergency plan that provides written procedures to minimize the hazards from a gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events (gas leakage, fires, explosions, and natural disasters);
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- making personnel, equipment, tools, and materials available at the scene of an emergency;
- protecting people first and then property, and making safe from actual or potential hazards; and
- emergency shutdown of system and safety restoring service.

Each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a gas pipeline emergency, and coordinate mutual assistance in responding to emergencies. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials.

National Fuel's Public Awareness Program fully complies with API Recommended Practice RP1162 and meets or exceeds the requirements of DOT CFR Part 192 Sections 192.7 and 192.616, – Public Awareness, and DOT CFR Part 192.111M Subpart 0 – Pipeline Integrity Management. National Fuel's public awareness program is designed to raise awareness among the four stakeholder audiences; 1) Affected Public, 2) Emergency Responders, 3) Excavators, and 4) Public Officials by informing them of the presence of pipelines in their community through a number of base line and supplemental measures including, but not limited to, bill stuffers, brochure distributions

with business reply cards, media initiatives, collaborative efforts, website postings, and HCA and school outreach. National Fuel believes a better informed public along pipeline corridors may contribute to a potential reduction in pipeline accidents. Regularly, and consistent with the guidance in RP 1162, National Fuel reviews its program's effectiveness and seeks to continually improve upon its program based upon the results of quadrennial Effectiveness Evaluations.

National Fuel also participates in annual Dig Safely New York and Pennsylvania One Call System training which is targeted primarily towards excavators. Additionally, National Fuel sends pamphlets which discuss recognition of pipeline emergencies and potential pipeline emergencies to all property owners within 1000 feet of the pipeline on a bi-annual basis. This same information is sent to government officials and first responders on an annual basis.

11.1.1 System Overview

The Project facilities to be constructed by National Fuel will fully adhere to USDOT regulatory requirements pertaining to pipeline safety. These safety regulations will be reinforced by the comprehensive and strictly enforced corporate practices of National Fuel. The information presented illustrates the low potential for public hazard from accidents associated with the operation of the proposed Project facilities.

National Fuel, through its subsidiaries, owns and operates a natural gas transmission system consisting of approximately 3,000 miles of transmission pipeline, compressor stations, and numerous receipt and delivery points for its customers. National Fuel has provided this service for over 100 years.

11.1.2 Historical Operating Record

Generally, the natural gas transmission industry has an excellent record of public safety. Pipelines and related faculties are designed and maintained with strict adherence to USDOT standards to ensure public safety, reliability, and to minimize the opportunity for system failure. National Fuel has an excellent record of public safety and will continue to employ system design, construction, operation, and maintenance practices to maintain this record.

11.2 SPECIFIC MEASURES TO PROTECT THE PUBLIC

National Fuel is well qualified to perform both emergency and routine maintenance on its interstate pipeline facilities. National Fuel's pipeline construction contracts require compliance with all OSHA regulations as well as all federal, state and local laws. National Fuel maintains strict operating policies and procedures to meet or exceed DOT Code 49 CFR Part 192 and current industry standards. Its Operator Qualification Program ensures National Fuel personnel and contractors have the required knowledge and skills. All operating personnel are thoroughly trained to perform their duties in accordance with these policies and procedures. These policies provide specific directions

in inspection and preventive maintenance of facilities, as well as procedures to follow in the event of an accident.

During construction, qualified National Fuel inspectors are on site at all times with explicit stop work authority if any public safety or environmental issues are observed. Daily Safety Meetings are held with all construction personnel to discuss current issues and observations. National Fuel's contract specifications require operator qualification programs, traffic control, road construction warning signs, power line flagging and barriers, safety fence around open excavations near residences and places of public gathering, and signs & barricades near pressure testing operations. Blasting operations will take place in a controlled manner and access points will be monitored during blasting operations. In addition, land agents will be available during construction to make landowners aware of the timing of construction on their properties and to serve as a liaison between landowners and the construction work crews to prevent/minimize conflicts between the work and landowner activities.

Periodic training sessions and review of operating and emergency procedures are conducted for affected operations employees. This training includes safe operation of pipeline valves and equipment; facilities, including meter stations and compressor stations; hazardous material handling procedures; public liaison programs and general operating procedures. The proposed Project facilities will be operated and maintained in accordance with these procedures.

11.2.1 Equipment

The National Fuel pipeline system includes many equipment features that are designed to increase the overall safety of the system and protect the public from a potential failure within the system.

Cathodic protection systems are installed at various points along the pipelines to mitigate corrosion of the pipeline facilities. The cathodic protection system impresses a low voltage current to the pipeline to off-set natural soil and groundwater corrosion potential. The functional capability of cathodic protection systems are inspected frequently to ensure proper operating conditions for corrosion mitigation.

A gas control center is maintained in West Seneca, New York. The gas control center monitors system pressures, flows and customer deliveries 24 hours a day. National Fuel also operates area offices along its pipeline system whose personnel can provide the appropriate response to emergency situations and direct safety operations as necessary.

National Fuel's pipeline systems are equipped with Remote Control Valves. This measure allows the valves to be operated remotely by Gas Control in the event of an emergency. Remotely closing the valve allows sections of the pipeline to be isolated from the rest of the pipeline system. Remote Control Valves will be implemented at the Project's 13 proposed MLVs along the Mainline Pipeline.

11.2.2 Procedures with Local Authorities

Coordination with public authorities and local utilities is maintained in all locations along the pipeline. Key components of the program consist of:

- periodic visits with municipal safety officials to inform them of the nature of National Fuel facilities and to coordinate emergency response in the event of an accident;
- special informational meetings and training at the initiation of the municipality; and
- periodic literature distribution listing emergency telephone numbers and other pertinent data.

National Fuel has emergency response plans in place for the existing facilities that comprise this Project. Regular meetings are held with the emergency response agencies (including local fire departments) where the role and responsibilities for responding to pipeline emergencies are discussed. The information exchanged between National Fuel and the emergency response agencies that participate in these meetings familiarizes each organization with the resources, personnel, and equipment that can be utilized in the unlikely event that an incident occurs.

National Fuel will incorporate the facilities proposed by this Project into its emergency response plans that currently cover existing facilities and will work with first responders in the community to develop modifications to a local community's plan as necessary. National Fuel will continue to work with the local communities to ensure that a satisfactory plan is in place.

National Fuel's training of its personnel and of first responders provides instruction on the requirement to evacuate buildings or the immediate area of citizens affected by a leak or emergency, and the need to move to a safe location. The nature of the leak or emergency would determine the radius of evacuation; the direct notification would include avoiding actions that could cause an ignition source (do not allow anyone to smoke or operate electrical switches, lights, appliances, cellular phones, etc.).

One of the company's primary roles is to isolate the affected facility to stop the flow of gas to the site. First responders are instructed not to operate any valves on the system because operating the wrong valve could make matters worse. National Fuel's personnel with knowledge of the system will perform any operations pertaining to the operating (opening and closing) of valves. First responders' primary role is that of evacuation and creating a safe zone by cordoning off the emergency site. Roles of responders, roles of National Fuel personnel, properties of natural gas, and "tabletop" scenarios are covered in these classes. Additional equipment includes Vehicles with Hand Tools, Leak Detection Equipment (Combustible Gas Indicators and Flame-Ionization Leak Detectors), Air Movers, Pneumatic Grease Guns, Leak Repair Materials, Grounding Cables, Traffic Control Safety Devices, etc. National Fuel also has Emergency Pipeline Construction Contractors available 24 hours a day, 7 days a week, in the event of an emergency, to

provide crews and heavy equipment, their emergency contact information is included in our Operations Manual.

11.3 REFERENCES

Code of Federal Regulations – 18 CFR Part 380. Title 12 Environmental Reports for Natural Gas applications, Subpart (m) *Resource Report 11 Reliability and Safety.*

Code of Federal Regulations – 49 CFR Part 192. *Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards.*

United States Department of Transportation (USDOT), Research and Special Programs Administration, Office of Pipeline Safety. September 5, 2002a. *Pipeline Security Information Circular.*

USDOT. September 5, 2002b. *Contingency Planning Guidance.*