

<b>RESOURCE REPORT ELEVEN - RELIABILITY AND SAFETY</b>	
<b>SUMMARY OF COMMISSION FILING INFORMATION</b>	
<b>Information</b>	<b>Found in</b>
1. Describe how the Project facilities would 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 11.0

### TABLE OF CONTENTS

	<u>Page</u>
11.0 RESOURCE REPORT 11- RELIABILITY AND SAFETY .....	11-1
11.1 HAZARDS.....	11-1
11.2 SAFETY STANDARDS .....	11-1
11.3 PIPELINE ACCIDENT DATA.....	11-3
11.4 MEASURES TO PROTECT THE PUBLIC.....	11-4
11.4.1 Surveys.....	11-4
11.4.2 Equipment.....	11-5
11.5 REFERENCES .....	11-5

## LIST OF TABLES

<b><u>Number</u></b>	<b><u>Title</u></b>
11.3-1	Service Incidents by Cause, Significant Incident Details 1988 Through 2008

## **11.0 RESOURCE REPORT 11- RELIABILITY AND SAFETY**

T. W. Phillips will own and operate all the components of the Project. Facilities proposed by T. W. Phillips will be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards, specified in 49 Code of Federal Regulations (CFR) 192, and other rules and regulations of appropriate federal, state, and local agencies having jurisdiction.

The proposed Project within Clearfield County, PA does not include any new or recommissioned LNG facilities as identified in 18 CFR 380.12 (m).

### **11.1 HAZARDS**

The transportation of natural gas by pipeline involves some degree of risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas is colorless, odorless, and tasteless. It is nontoxic, but is classified as a simple asphyxiate, possessing only a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. The specific gravity of methane is 0.55 and therefore, it is buoyant at atmospheric temperatures.

The construction contractor is responsible for conducting work in a safe manner, correcting hazardous conditions as they arise, and removing all endangered workers from an imminent danger area. Imminent danger is defined as causing death or a serious injury including situations immediately dangerous to life and health. T. W. Phillips' job site agents will promptly notify the Construction Supervisor of any observed imminent danger; and will require immediate removal of all endangered workers. When the Construction Supervisor is not immediately available, T. W. Phillips' job site agent will direct endangered workers to leave the imminent danger area. Notifications shall be documented.

### **11.2 SAFETY STANDARDS**

The proposed pipeline facilities included in this docket would be designed, constructed, operated, and maintained in accordance with the United States Department of Transportation (USDOT) Minimum Federal Safety Standards stated in Title 49 of CFR Part 192. The regulations are intended to ensure adequate 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.

Part 192 also defines area classifications, based on population density in the vicinity of the proposed 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 three primary classifications are defined as follows:

Class 1, 2 and 3 pipe locations are defined by the USDOT as:

- 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:
  - (i) Any class location unit that has 46 or more buildings intended for human occupancy; or
  - (ii) 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).

The USDOT also defines a Class 4 location, but there are no areas within the Project that meet these criteria. Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipelines constructed in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil, and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings require 36 inches in normal soil and 24 inches in consolidated rock. 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. Pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas.

Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under Section 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.

At this time, specific areas have not been identified that meet Class 2 or Class 3 pipeline location requirements. However, T.W. Phillips has designed all Project pipelines to meet the requirements of Class 3 pipeline locations.

### **11.3 PIPELINE ACCIDENT DATA**

Since February 9, 1970, 40 CFR Part 191.15 has required operators of transmission and gathering systems to notify USDOT of reportable incidents, and to submit a written report on form RSPA 7100.2 as soon as practicable, but not more than 30 days. Reportable incidents are defined as any leak that involves property damage of more than \$50,000, injury, death, release of gas, or otherwise that are considered significant by the operator.

During the 20-year period from 1988 to 2008, 2,913 transmission service incidents were reported over the nationwide natural gas gathering and transmission systems. Service incidents, defined as failures that occur during pipeline operations, have remained fairly constant over this period with no clear trend in annual totals. Table 11.3-1 provides a percentage distribution of the causal factors and the total number of incidents by causal factor. The population of pipelines included in the data set varies widely in terms of age, pipe diameter, and level of corrosion control.

The most dominant causal factor is corrosion, constituting 23.5 percent of all service incidents as shown in Table 11.3-1.

## **11.4 MEASURES TO PROTECT THE PUBLIC**

T. W. Phillips maintains operating policies and procedures that are periodically reviewed by DOT. All operating personnel are thoroughly trained to perform their activities in accordance with these policies and procedures. These policies provide specific directions in preventive maintenance and vigilant patrols of facilities, as well as procedures to be followed in the event of accident or natural catastrophe.

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; fire fighting school; public liaison programs and general operating procedures. The proposed Project facilities will be operated and maintained in accordance with these procedures.

The Project will fully adhere to DOT regulatory requirements pertaining to safety. These safety regulations will be reinforced by T.W. Phillips' comprehensive and strictly enforced corporate practices.

### **11.4.1 Surveys**

The following details the surveys and frequency they are completed along T. W. Phillips' facilities. These inspections include line patrols, leak surveys, and cathodic protection. Patrols of all pipelines and facilities are performed along with scheduled preventive maintenance. Any unusual situation or condition is reported and investigated immediately. Leak surveys are instrumental in early detection of leaks and can reduce the likelihood for pipeline failure. The Project facilities constructed by T. W. Phillips in this docket will have inspection surveys consistent with these procedures.

- Line Patrols:
  - Minimum two times per year in Class 3 locations.
  - Minimum four times per year at road crossings in Class 3 locations.
- Leak Surveys:
  - Annually.
- Cathodic Protection:
  - Rectifier readings six times per year.

- Inspections:
  - Test station readings annually.
  - Critical Bond readings six times per year.

T. W. Phillips will become a member of PA's One Call System. Through One Call and similar organizations, contractors provide notification to a central agency of proposed excavation, which in turn, notifies T.W. Phillips of the excavation locations. If T. W. Phillips' facilities are located in the area of proposed contractor activity, they will be marked in the field and a representative of T. W. Phillips will be present during excavation to ensure that the facility is not compromised.

#### **11.4.2 Equipment**

The T. W. Phillips transmission system includes many equipment features that are designed to increase the overall safety of the system and protect the public from a potential failure of the system due to accidents or natural catastrophes.

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

#### **11.5 REFERENCES**

American Gas Association. 1986. An analysis of reportable incidents for natural gas transmission and gathering lines 1970 through June 1984. Columbus, Ohio.

Office of Pipeline Safety. *Natural Gas Pipeline Operators Incident Summary Statistics by Year, January 1988+ through May 2008*. <http://ops.dot.gov>

United States Department of Transportation. 2001. Pipeline Safety Code of Federal Regulations Part 191 and Part 192. Oklahoma City, Oklahoma.

**Table 11.3-1**

**SERVICE INCIDENTS BY CAUSE, SIGNIFICANT  
INCIDENT DETAILS 1988 THROUGH 2008<sup>1</sup>**

<b>Cause</b>	<b>Percentage</b>	<b>Number of Incidents</b>
Corrosion	23.5	685
Other	22.9	667
Excavation Damage	21.6	630
Material Defect	19.8	578
Construction Defect	6.8	200
Natural Force	4.0	119
Outside Forces	1.1	34
<b>Totals</b>	<b>99.7</b>	<b>2,913</b>

Note:

<sup>1</sup> Office of Pipeline Safety. *Natural Gas Pipeline Operators Incident Summary Statistics by Year, January 1988 through May 2008.*