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II. Oil Pipelines

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A. INTRODUCTION

Pipelines are a vital link in the energy supply chain in the United States and Canada. Approximately two-thirds of U.S. domestic energy supplies are transported by pipeline. There are roughly 170,000 miles of hazardous liquid pipelines, enough to circle the globe eight times; 295,000 miles of gas transmission pipelines; and 1.9 million miles of gas distribution pipelines in the United States. Hazardous liquid pipelines carry crude oil to refineries and refined petroleum products to locations where these products are consumed or stored for later use. Hazardous liquid pipelines also transport highly volatile liquids (HVLs) and other hazardous liquids such as anhydrous ammonia and carbon dioxide.

Natural adjuncts to pipelines are both railroads, which sometimes traverse the same rights of way as pipelines, and trucks, which tend to take hazardous liquids that are moved by pipeline the last miles to their ultimate destination.

Safety and security are distinct areas of regulation for both pipelines and trucks with multiple federal agencies having jurisdiction over certain aspects of each area. With a veritable alphabet soup of agencies having jurisdiction, coordination and cooperation among the agencies as well as among the government and the private sector that owns and operates the assets have become increasingly necessary. Cybersecurity is also an overarching concern affecting all modes of energy transportation. Although an extensive discussion of cybersecurity is outside the scope of the specific subjects addressed here, this report addresses current issues

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and initiatives in safety and security affecting transportation by pipeline and by truck.

B. SAFETY VERSUS SECURITY: COORDINATION OF FEDERAL AGENCIES

A network of crude oil pipelines transports crude oil and synthetic oil from production areas in the United States and Canada and from marine terminals to refineries. The refineries then refine the oil into petroleum products, such as gasoline, heating oil, jet fuel, and other products, such as liquefied petroleum gases, condensates, kerosene, and heavier distillates. From the refinery, an entirely different network of pipelines transports the products to distribution terminals for distribution to markets and consumers. Gasoline and home heating oil are typically transported by truck for the last leg from the distribution terminals to service stations, secondary terminals, and homes. Pipelines transport the bulk of petroleum moved in the United States and span the entire country.

A number of federal agencies have jurisdiction over various matters relating to pipelines and trucking. Under the National Infrastructure Protection Plan (NIPP), the Transportation Security Administration (TSA) under the Department of Homeland Security (DHS) is assigned as a sector-specific agency (SSA) for the transportation sector, which includes pipelines. SSAs are responsible for coordinating infrastructure protection activities within the critical infrastructure sectors.

The Department of Energy (DOE) is the SSA for the energy sector and works closely with TSA on pipeline security issues, programs, and activities. The U.S. Coast Guard is the SSA for the transportation sector maritime mode, covering liquid natural gas (LNG). In collaboration with DHS, Department of Justice through the FBI is responsible for investigating and prosecuting actual or attempted attacks, sabotage, or disruptions of critical infrastructure.

While these agencies largely handle *security* issues, the Department of Transportation (DOT) is responsible for administering national *safety* regulation in natural gas and hazardous liquid pipeline transportation. TSA and DOT therefore coordinate on matters relating to transportation security and transportation infrastructure protection.

1. Transportation Security Administration

The TSA, although once under DOT but now within DHS, is the lead federal agency for security in all modes of transportation, including pipelines. TSA oversees industry's identification and protection of critical pipeline assets through security reviews, risk assessment, and inspections. The Office of Pipeline Safety (OPS) within the Pipelines and Hazardous Materials Safety Administration (PHMSA) in the DOT, is the lead federal regulator of pipeline safety. While TSA and the OPS have distinct missions, pipeline security and safety are intertwined, raising questions about the appropriate division of responsibility between the agencies and about the resources they have for mandated security activities.

As the lead agency for pipeline security, TSA expects pipeline operators to maintain security plans based on federal pipeline security guidelines that were initially issued by the DOT in 2002 and later adopted by TSA with the establishment of the TSA Pipeline Security Division. Initially developed in conjunction with pipeline industry partners, these guidelines suggest minimum security levels for prevention, deterrence, and security incident response. They also provide a baseline and guidance for conducting assessments and determining criticality level of facilities. TSA is currently in the process of revising the guidelines with the assistance of industry and government partners and distribution of the updated guidelines is expected in 2010.

PHMSA and TSA entered into a memorandum of understanding (MOU) on September 28, 2004, in recognition of their mutual interest in ensuring coordinated, consistent, and effective activities and improving interagency coordination on transportation security and safety matters. An August 9, 2006, annex to the MOU clearly delineates the lines of authority and responsibility and promotes efficiency, communication, and nonduplication of effort through cooperation and collaboration between the DOT and DHS in the area of transportation security based on existing legal authorities and core competencies. The annex provides for coordination in information sharing and identification of critical infrastructure and resources, strategic planning, and development of standards; establishes a working group; and provides for coordination meetings.

2. Pipelines and Hazardous Materials Safety Administration (PHMSA)

Whereas the focus of TSA is on pipeline security, PHMSA, under DOT, has broad authority to regulate pipeline safety, including the safety of LNG facilities. The current legislation authorizing pipeline safety regulation expires at the end of 2010; pipeline safety reauthorization legislation will be taken up this year by the Railroads, Pipelines and Hazardous Materials Subcommittee of the House Transportation and Infrastructure Committee.

PHMSA has taken a number of initiatives to enhance pipeline safety. On December 3, 2009, the DOT issued two anticipated sets of regulations to enhance pipeline safety for natural gas and hazardous liquid pipelines. The two rules involve control room management and distribution integrity management. First, DOT called for strengthened management and oversight of control room operations for all types of DOT-regulated pipelines. Second, DOT required operators of natural gas distribution pipelines to adopt integrity management programs similar to current requirements already in place for larger transmission pipelines. DOT also required installation of excess flow valves for the first time for natural gas distribution pipelines.

a. Integrity Management Programs

Integrity management programs combine periodic inspection and testing of a pipeline's condition with continuous management processes to collect, integrate, analyze, and apply information about possible threats. All hazardous liquid

pipelines and carbon dioxide pipelines that could affect a “high consequence area”¹ must develop a written integrity management program that addresses the risks on each segment of the pipeline. An integrity management program must include, inter alia, a process for identifying which pipeline segments could affect a high consequence area, a baseline assessment plan, an analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure, and criteria for remedial actions, as well as preventive and mitigation measures.²

b. New Integrity Management Rules: Distribution Pipelines

The new integrity management rule for natural gas distribution pipelines incorporates the same basic principles as those for transmission pipelines, but accommodates the significant differences between the two pipeline types. In addition, the rule requires distribution operators to install excess flow valves in new and replaced services for single-family residences where conditions are suitable for their use.

Unlike requirements for transmission pipelines which are limited to high consequence areas, the new distribution integrity management regulations will be applied to an operator’s entire system.

c. New Control Room Management Regulations

The Pipeline Inspection, Protection, Enforcement and Safety Act of 2006 (PIPES Act) introduced additional requirements for PHMSA with respect to control room management and human factors. Section 12 of the PIPES Act³ required PHMSA to issue regulations requiring each operator of a gas or hazardous liquid pipeline to develop, implement, and submit a human factors management plan designed to reduce risks associated with human factors, including fatigue, in each control room for the pipeline. The new regulations are intended to enhance pipeline safety by coupling strengthened control room management with improved controller training and fatigue management. The regulations are not applicable to LNG facilities.

DOT has issued the rules, which were developed in cooperation with Congress, the NTSB, and the pipeline industry. The rules must be implemented by February 1, 2013.⁴

1. A “high consequence area” means: (1) a commercially navigable waterway, which means a waterway where a substantial likelihood of commercial navigation exists; (2) a high population area, which means an urbanized area, as defined and delineated by the Census Bureau, that contains 50,000 or more people and has a population density of at least 1,000 people per square mile; (3) another populated area, which means a place, as defined and delineated by the Census Bureau, that contains a concentrated population, such as an incorporated or unincorporated city, town, village, or other designated residential or commercial area; or (4) an unusually sensitive area, as defined in § 195.6. 49 CFR § 195.452(a).

2. 49 CFR § 195.452(f).

3. Pipeline Inspection, Protection, Enforcement and Safety Act of 2006 (PIPES Act), Pub. L. No. 109-468, § 12, 120 Stat. 3486 (codified at § 49 U.S.C. 60101).

4. Control Room Management/Human Factors Final Rule, 74 Fed. Reg. 63310 (Dec. 3, 2009), corrected, 75 Fed. Reg. 5536 (Feb. 3, 2010).

The new control room management rule requires pipeline operators to establish human factors management plans and to account for National Transportation Safety Board (NTSB) recommendations on supervisory control and data acquisition (SCADA) system displays, alarm systems, and controller training. In addition, operators must establish maximum hours-of-service limits and integrate these procedures into existing operation and maintenance, operator qualifications and emergency processes.

Hazardous liquids and gas pipelines are often monitored in a control room through computer-based equipment, such as a SCADA system, that records and displays operational information about the pipeline system, such as pressures, flow rates, and valve positions. These monitoring and control actions are a principal means of managing pipeline operations. The new control room management requirements improve opportunities to reduce risk by providing more effective control of pipelines. Affected pipeline operators must define the roles and responsibilities of controllers and provide them with the necessary information, training, and processes to fulfill them. Operators must also implement methods to prevent controller fatigue. The new rule further requires operators to manage SCADA alarms—to assure control room operations are taken into account when changing pipeline equipment or configurations and to review reportable incidents or accidents to determine whether control room actions contributed to the event.

d. Control Room Cybersecurity Concerns

This is an area where DOT and TSA regulatory efforts could overlap. Due to the pipeline industry's dependence on remote control systems, cyberthreats continue to be a significant area of concern to TSA, and it has established two programs to address this. First, because it is technically possible for hackers, terrorists, or foreign governments to access these SCADA systems to obtain confidential information, damage the systems using the remote control, or both, TSA has partnered with the Gas Technologies Institute to develop presentation materials to illustrate existing SCADA vulnerabilities and increase the cybersecurity awareness of pipeline companies. Second, TSA has implemented a program of SCADA security evaluation as a necessary adjunct to TSA's corporate security reviews in order to assess the vulnerability of pipeline SCADA networks to cyberattack.

e. Critical Infrastructure Identification, Prioritization, and Protection

On December 17, 2003, former President Bush issued Homeland Security Presidential Directive 7 (HSPD-7), establishing a national policy for executive agencies to "identify and prioritize United States critical infrastructure and key resources and to protect them from terrorist attacks." HSPD-7 maintained DHS as the lead agency for pipeline security and instructed the DOT to "collaborate in regulating the transportation of hazardous materials by all modes (including pipelines)." The order required that DHS and other federal agencies collaborate with "appropriate private sector entities" in sharing information and protecting critical infrastructure.

f. Criminal and Civil Penalty Authority

DOT has significant authority to enforce its regulations. It may require inspections, impose fines and injunctions and assess civil and criminal penalties. It may also levy civil penalties for failures to protect critical infrastructure information.

3. FERC Jurisdiction Relating to Safety and Security

The Federal Energy Regulatory Commission (FERC) also has jurisdiction with respect to matters pertaining to safety and security of interstate pipelines.

a. Critical Pipeline Infrastructure: Public Versus Confidential Information

Immediately after the 9/11 terrorist attacks, FERC took action to protect critical energy infrastructure information (CEII) and removed from public view certain documents, such as oversized maps, that detail the specifications of energy facilities licensed or certificated under Part I of the Federal Power Act and Section 7(c) of the Natural Gas Act.⁵ CEII is defined as specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure (physical or virtual) that fits into any of four categories: (1) information that relates details about the production, generation, transmission, or distribution of energy; (2) information that could be useful to a person planning an attack on critical infrastructure; (3) information that is exempt from mandatory disclosure under the Freedom of Information Act; and (4) information that gives strategic information beyond the location of the critical infrastructure. Critical infrastructure is defined as “existing and proposed systems and assets, whether physical or virtual, the incapacity or destruction of which would negatively affect security, economic security, public health or safety, or any combination of those matters.” While the policy covers maps and other information with respect to both existing and proposed natural gas pipeline, electric transmission, and hydropower facilities, it did not include oil pipeline information. Unlike its gas pipelines, for which FERC has certificate authority under Section 7 of the NGA, FERC does not have jurisdiction over the siting of oil pipelines.

Since then, balancing its interest in the security of information with its interest in public access to information, the FERC has modified and relaxed the CEII regulations several times, *inter alia*, to limit the information covered by the regulations, to lower the hurdles for landowners, government agencies and other persons with a legitimate interest to obtain access to CEII information, *i.e.*, those who do not pose a security risk. The CEII regulations also acknowledged certain CEII information can be obtained publically from other government websites.⁶

5. Treatment of Previously Public Documents, Statement of Policy on Treatment of Previously Public Documents, Docket No. PL02-1-000, 97 FERC ¶ 61,030 (Oct. 11, 2001).

6. *See, e.g.*, Order No. 702, Critical Energy Infrastructure Information, Docket No. RM06-23-000, 121 FERC ¶ 61,107 (Oct. 30, 2007).

b. Security Surcharges

Another measure taken by FERC to address pipeline security immediately after 9/11 was an announcement that it would approve applications proposing to recover “prudently incurred costs necessary to further safeguard the nation’s energy systems and infrastructure.”⁷ Applications were subsequently filed by a handful of oil pipelines seeking to add a security surcharge to their pipeline tariffs. While the Commission approved several applications, one application was withdrawn in the face of shipper protests challenging already existing pipeline over-recoveries. Such applications have not been commonplace, and pipelines generally seem to have found proposing a security surcharge more problematic than it is necessary. Clearly the prudently incurred costs associated with implementing security measures in compliance with DOT and TSA regulations are a legitimate component of a pipeline’s cost of service. However, it may be that, as a result of the automatic indexing (increases) of rates for oil pipelines annually, filing for such costs has not been necessary.⁸

c. FERC and Cybersecurity

Although FERC has not addressed the issue of cybersecurity with respect to oil or gas pipelines, it has sought additional authority with respect to cybersecurity on the electric side. In a congressional oversight hearing held on March 23, 2010, before the House Subcommittee on Energy and Environment, FERC’s Chairman Wellinghoff called upon Congress to pass legislation giving the FERC statutory authority to regulate cybersecurity on the electric grid. Such authority will likely require an amendment of Section 215 of the Federal Power Act, according to Chairman Wellinghoff. Congressman Dingell has requested that FERC present the Subcommittee with draft legislation.

C. TRUCKING AND MOTOR CARRIER SECURITY AND SAFETY

As with pipelines, trucking plays a significant role also in moving petroleum and petroleum products, either from the wellhead to the interstate pipelines upstream or at the downstream end of the system from the terminals to the gas station or consumer. Trucks move other commodities as well, of course, including hazardous materials, and like pipelines, motor carriers, trucking, and coaches are

7. Press Release, Federal Energy Regulatory Commission, Commission Will Approve Applications for Prudent Cost Recovery Tied to Security Needs (Sept. 14, 2001) (PL 01-6-000), available at www.ferc.gov/news/news-releases/2001/2001-3/nr01-38.PDF.

8. Indexing is beyond the scope of this report. The term refers to the annual application of an inflation index determined by the FERC to the rates of oil pipelines. FERC established indexing in 1995 pursuant to the Energy Policy Act of 1992 as a so-called streamlined method of ratemaking in lieu of cost-of-service ratemaking. The index percentage has ranged up to 7.6 percent a year since then, decreasing only four times in the last sixteen years. This means that oil pipeline rates have escalated cumulatively by more than 20 percent in the last fifteen years.

subject to regulation by multiple federal agencies: TSA, the Federal Motor Carrier Safety Administration (FMCSA), and PHMSA.

Currently, the FMCSA, within DOT, has a full rulemaking docket. One of the most controversial issues in trucking today is how many hours in a day an operator for a property-carrying commercial vehicle can drive. Hours-of-service requirements are designed to help prevent commercial vehicle-related accidents, fatalities, and injuries by prescribing duty hours and rest periods for commercial drivers. This issue is presently under review in a rulemaking at the FMCSA.⁹

The present rulemaking is the result of two prior rulemaking proceedings in which there was a substantial difference in view among the safety advisory groups, the industry, and the Bush administration. The original rule permitted more drivers to drive more hours. The rule was appealed the D.C. Circuit twice; both times the court remanded it to the FMCSA. The Obama administration has committed to issue a notice of proposed rulemaking within twenty-one months. As of May 2010, the proposal was still pending,

The Obama administration has also been active in tightening the rules governing new entrants to the market. FMCSA is involved in a series of final rules involving testing and qualification of new entrants before they are approved for a license and post entry safety audits. With respect to motor coaches, the FMCSA is also tightening new entrant standards and audits. In addition, the National Highway Transportation Safety Administration (NHTSA) is working toward a new rule that will require seatbelts on motor coaches.

With respect to security issues, the NHTSA is trying to ensure that drivers who transport hazardous materials, which by definition includes explosives, toxic materials by inhalation, and radioactive materials—must be highly qualified and have undergone a background check. In addition, they are required to obtain a special endorsement on their licenses.

Finally, the FMCSA is considering a new proposal to ban texting for truck drivers. Such a prohibition would be a federal ban superimposed on top of the several states that have already enacted antitexting legislation.

The FMCSA has civil penalty authority, including the revocation of licenses, to enforce its regulations. It also provides safety ratings for carriers.

D. CONCLUSION

The safety and security of pipelines in the United States necessarily involves a number of different federal agencies, oil and gas industry associations, large and small pipeline operators, and critical and noncritical infrastructure facility owners. Pipeline security also requires collaboration and cooperation among all parties. Almost a decade after 9/11 and nearly eight years after the establishment of the Department of Homeland Security, these relationships and interdependen-

9. Federal Motor Carrier Safety Administration, Docket No. FMCSA 2004-19608.

cies continue to develop as the appropriate division of responsibilities among the various federal agencies evolves in practice.

With the pipeline industry's dependence on sophisticated computer controlled systems, there are significant concerns about cyberattacks that might paralyze critical transportation and delivery of petroleum, the safeguarding of which will require continuing cooperation of government agencies among themselves as well as with the private sector owners and operators of the assets. However, pipeline transportation remains one of the safest modes of moving hazardous materials over long distances. Trucking also has its place in the nation's transportation network and faces many of the same challenges. The major challenge for entities operating in both areas will be to be able to navigate successfully the multiple agencies' congruent jurisdiction over various aspects of safety and security in their industry.