Federal Pipeline Safety Regulations-- Their Development and Application

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The Office of Pipeline Safety (OPS) is assigned the responsibility for the Federal gas pipeline safety programs. These responsibilities involve a network of more than a million miles of gas transmission pipelines, distribution systems, and nonrural area gathering lines. Those systems under OPS jurisdiction are constructed, operated and maintained by more than 2000 separate operators who supply 40 percent of the nation's energy needs while serving 41 million customers. Age of the systems range from "brand new" to those which have been in the ground for over 150 years, so the duties of the OPS involve a variety of engineering and operating challenges.

In addition to the gas pipeline safety programs of the OPS, the office also handles the technical details of liquid pipeline safety, the responsibility for which is assigned to the Federal Railroad Administrator. Provisions of those liquid pipeline safety programs affect some 130 interstate oil and products pipelines having 230,000 miles of system.

The Natural Gas Pipeline Safety Act of 1968 is the power source for all of the gas safety regulatory activities of the OPS. There are several provisions of the Act which are especially significant in the work of the OPS. First, the Act required that interim minimum Federal safety standards be adopted for gas pipelines within three months of its enactment; and that within 24 months the Secretary was to establish minimum Federal Safety standards for the transportation of gas and pipeline facilities. Such standards apply to the design, installation, inspection, testing, construction, extension, operation, replacement, and maintenance of pipeline facilities. Standards affecting design, installation, construction, initial inspection and initial testing are not to be applicable to pipeline facilities in existence on the date such standards are adopted.

The Act provides for the establishment of a Technical Pipeline Safety Standards Committee to evaluate and comment on proposed standards and amendments as to technical feasibility, reasonableness, and practicability of each such proposal. The Committee also may propose standards to the Secretary of Transportation for his consideration. The 15 members of the Committee are to be experienced in the safety regulation of gas transportation and pipeline facilities, or technically qualified by training and experience in one or more fields of engineering applied in the transportation of gas or operation of pipeline facilities. Five members are selected from government agencies (two being State commissioners), four members from the natural gas industry, and six members from the general public. The law requires that the Committee review proposed standards; however, in addition, OPS seeks the Committee's advice on many aspects of administration of the Act.

States have a very important role to assume in the gas pipeline safety programs. Approximately three-fourths of all of the gas system mileage in the nation may be characterized as intrastate. Individual state agencies may assume responsibility for safety regulation of intrastate facilities under the certification or agreement provisions of Section 5 of the Act. The Department has final overall responsibility for safety regulation of intrastate gas pipelines, but each State may adopt for intrastate systems additional, or more stringent, standards which are not incompatible with the Federal standards. The Act created exclusive Federal authority over systems which are subject to the jurisdiction of the Federal Power Commission under the Natural Gas Act, generally described as interstate systems.

The Office of Pipeline Safety is placing emphasis on establishing an effective Federal/State compliance program closely coordinated with the States. OPS has worked closely with the States in all aspects of the program, even in those areas which are exclusively Federal. Cooperative action, particularly concerning intrastate facilities, is one of the most important parts of the total pipeline safety program. In 1971,

of 52 eligible jurisdictions, (including the District of Columbia and Puerto Rico), 50 cooperated with OPS under Section 5 of the Act. Since 1968, State legislatures have exercised great leadership in enacting pipeline safety legislation which facilitates joint action with Federal programs. It was clearly not the intent of Congress that Federal resources and actions carry out all aspects of the Act. In fiscal year 1971, $500,000 was made available by Congress to assist the States in their programs, and Congress appropriated an additional $750,000 for fiscal year 1972.

Specific provisions are contained in the Act for the filing of operators' inspection and maintenance plans with the Department of Transportation, or to the State agency carrying out the gas pipeline safety regulations pursuant to a certification or agreement under Section 5 of the Act. Another Section spells out requirements for record keeping, reports to be made to DOT and monitoring and inspection for compliance. Cooperation with the Federal Power Commission and State agencies is covered in the Act also. Provisions for compliance, judicial review of orders, injunctive and jurisdictional matters, administration (research, testing, and development), an Annual report to Congress, and civil penalties (not to exceed $1000 for each violation for each day such violation persists up to $200,000 for any related series of violations) are other important elements in the Act.

In September 1968, the Secretary created the Office of Pipeline Safety and in August 1970, OPS was transferred to a new office, the Office of the Assistant Secretary of Transportation for Safety and Consumer Affairs. Retired Air Force Lieutenant General Benjamin O. Davis, Jr., is the Assistant Secretary in charge of that office and among his other responsibilities are the Office of Hazardous Materials and the Anti-Skyjacking program of DOT.

The Office of Pipeline Safety has been organized along the lines of the specific functions required by the Act and includes divisions for technical, state, regulatory, and industry programs. In addition, OPS recently added a professional staff position assigned specifically to compliance programs. Staffing of OPS currently provides for 20 professional and seven clerical personnel. Early days were spent in staffing up and OPS was fortunate to obtain 10 engineers of various specialties with extensive experience, several with 20 to 25 years in the industry, to participate in several months' concentrated activity in the writing of the first standards.

Over a year ago, the Department established a pilot field office in Houston* to work with State agencies and gas system operators in the States of Texas, New Mexico, Oklahoma, Arkansas, and Louisiana. It is a small office having three staff positions at present and will serve as a pilot operation to develop good working relationships with State agencies and assist industry in complying with DOT regulations. The pipeline industry is widely dispersed so there is a key role for OPS field offices in carrying out Federal/State pipeline safety programs.

Much of the work of the OPS staff in late 1969 and the first half of 1970 was devoted to developing the first comprehensive performance-type regulatory standards ever written for the gas industry on a national basis. The earlier interim standards were based on existing State standards which had as a common denominator the 1968 edition of the USAS B 31.8 Code. Those regulations were used as a "base line" in writing the new performance-type standards. There were many refinements and some points were added to further improve pipeline safety. The new DOT standards are mandatory legal requirements... not advisory specifications... and are now in effect.

DOT pipeline safety standards are performance oriented. The standards tell the operator what he must accomplish and the safety level he must meet. As much as possible, we want to avoid telling the pipeline system operator how he must perform the details; the intent is to leave him free to use his ingenuity in developing improved methods and materials, and proving them effective and safe. DOT policy is to use these minimum standards as a baseline and by means of various reports made to OPS to determine whether less regulation, or increased regulation, may be required in particular areas.

One such area has been that of corrosion control. Information available to OPS indicates that about one-half of all leaks repaired on gas facilities are caused by corrosion. It has been recognized for many years that corrosion control is a vital part of the efficient and safe operation of any gas pipeline system—gathering, transmission, or distribution. The minimum Federal standards issued in August 1970 were based largely on existing State regulations and it was

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recognized that those were not adequate for corrosion control. Therefore, OPS wrote a completely new set of regulations on corrosion to preclude major deficiencies in the Federal standards in this vital area. These new corrosion regulations went into effect August 1, 1971.

Now with the publication of the Federal standards plus a total of six amendments, the regulations are practically complete so this will be the first time that the gas pipeline industry has been regulated or monitored by uniform safety standards on a nationwide basis. As within any industry there were many operators with a high degree of safety and uniform standards. It is with the few that may not have been operating at a "minimum" level of safety (through lack of knowledge, personnel with limited experience, outmoded systems design, or whatever reason) where Federal safety standards will produce needed results.

Information exchange has been an important part of the OPS activity in the first three years of operations. This was absolutely necessary because the tasks were new, available personnel were limited in number, and the industry concerned comprises more than 2000 operators dispersed throughout the country. In the last two years, staff members have discussed OPS programs with over 8000 people at some 60 professional, state, and industry meetings. OPS has mailed over 80,000 pieces of information to nearly 4000 addressees on the OPS state agency, industry, engineer/contractor, press and general public mailing list. Late in 1970, OPS held six regional orientation meetings attended by 125 agency personnel from 50 states and some 850 participants from industry and the public.

A monthly Advisory Bulletin on pipeline safety was initiated in September 1971. It contains significant interpretations based on inquiries to OPS about certain regulations, and disseminates other information concerning regulations and related pipeline safety programs. It met with great interest, producing over 200 letters requesting that 600 new names be added to the mailing list to receive it since its first issue.

Now that regulations are issued, other programs of OPS in the compliance area become especially important. Key among these are the leak and failure reporting requirements and the monitoring of operator compliance through OPS evaluation of the operators' inspection and maintenance plans.

The regulations for reporting leaks require telephonic reports at the earliest practicable moment from each operator discovering a leak that caused death or personal injury requiring hospitalization, or that meets certain other criteria. Also, each operator of a distribution system serving more than 100,000 customers, or each operator of a transmission or jurisdictional gathering system, is required to make a followup written report on leaks that required telephonic notice to OPS; or one that required immediate repair and other emergency action in the case of distribution operators. Such reports are also required on test failures for transmission and gathering pipeline facilities. All operators subject to the Act are required to make an appropriate annual report of leaks repaired and other system data on a calendar year basis by February 15 of each year. An amendment issued in January 1972 eliminated this annual report requirement for petroleum gas systems which serve less than 100 customers from a single source. These regulations became effective February 9, 1970. It is hoped that in coming years the effectiveness of pipeline safety programs will be indicated by analyzing results from this comprehensive leak and failure reporting system.

Meanwhile, a summary of reports for 1970 and preliminary totals for the first six months of 1971 are especially significant. Individual leak reports to OPS showed totals of 1019 leaks for 1970 and 691 for the first six months of 1971. These do not appear high for a million-mile network of buried pipelines, but 22 deaths reported in 1970 and 31 in the first half of 1971, plus 218 people injured in 1970 and 243 reported injured in the first six months of 1971 underscore the need to act on problem areas. Of these totals, 21 of the 22 deaths reported for 1970 and 29 of the 31 fatalities in the first half of 1971 were reported by distribution firms. Data on injuries further indicates that the greatest problems are with the urban utilities with some 90 to 95 percent of injuries occurring there.

The number-one problem area in both reporting periods was damage caused by outside force. "Damage by outside force" was the cause listed in 70 percent of the 676 incidents reported by distribution operators in 1970 ... and preliminary first six-months figures for 1971 are 63 percent of a total of 481 leak incidents. Transmission line data do not indicate quite as high a ratio, but there were 181 incidents of "damage by outside force" out of a total of 343 reported (or 53 percent) for transmission and gathering line operators in 1970; and preliminary six-month's data for 1971 shows 114 cases of outside damage, or

54 percent of those reported. These figures leave little doubt about the need for action in this important area. OPS is increasing its activity in every practical way to reduce this toll. A number of different elements will be brought into action, including several at the State and local level and many on a voluntary cooperative basis.

As an initial step by OPS in a continuing program to help eliminate these hazards, we proposed a model statute to State and local governments, the pipeline industry, contractor groups, labor unions, national associations of those utilities operating underground systems, national and regional gas associations, engineering and other professional groups, the press and other interested public groups. OPS is earnestly soliciting their cooperation plus their support of this important program aimed at solving the number one pipeline safety problem.

The model statute recommends requirements for the filing of utility maps with a local government body, examination of map files by excavation personnel, notice to utilities by excavators, reponse by utilities to notice, and requirements directed at avoiding damage to utilities as well as reporting of any damage that may occur. It might well be called a statute of "good neighbor policy" underground but its real serious aim is to save lives and prevent injuries, damages and service disruptions.

The Office of Pipeline Safety is also increasing its efforts in promoting joint underground utility cooperation among not only gas operators, but also petroleum pipelines, electrical, telephone and other communications systems, water, subway, sewage systems, and any other construction and operating people in the "underground movement". There are already a number of coordinating groups working on such programs as reducing interference on corrosion control. Such programs depend not only on well-thought-out plans to operate the damage control system effectively, but also a good educational and communicating system to get the right information to the people who will be working underground. Since communications are such vital parts of the system, it seems apparent that effective coordination with the telephone companies should be a key element in the programs.

The Department's safety regulations for liquids pipelines contain a requirement for line marking which is more detailed than present gas pipeline marking requirements. The author is presently studying the content for a similar pipeline marking requirement for gas pipelines which is planned to be issued as a notice for proposed rulemaking as soon as practicable. The department expects and encourages comments from the Technical Pipeline Safety Standards Committee, State and local governments, industry, operators of other underground facilities, contractors, labor, professional groups, and the public in this important area. Whatever reasonable program that can be developed and carried out to reduce this toll in loss of life, injury, property damage and service interruptions should be beneficial to all of these groups. Any comments or suggestions are welcome.

A very important development in the pipeline safety field in the past year has been the birth and growth of the Department of Labor's Occupational Safety and Health program. There are many areas where our pipeline safety programs relate to the work they are doing. Surely any of our standards, or other safety programs that make for safer operation of a pipeline system will yield important benefits to the employees as well as the public. This would be particularly true in the area of programs to reduce outside force damage incidents which have been spotlighted as a major problem area for attention by OPS. We do not foresee any areas where our efforts should not dovetail with those of OSHA and we intend to maintain close liaison with the Department of Labor so that both programs achieve maximum results.

In the future, OPS plans to devote much attention to a clearer understanding of the regulations by all operators and we will continue to issue and disseminate interpretations of specific questions toward that end. Technical subjects likely to receive particularly close attention in the future include: LNG transportation and storage, offshore construction and operations, design and construction in Arctic regions, evaluation of the condition of existing systems, and the problem of outside force damage discussed earlier.

Information being reported to OPS tells us that we have plenty of important work to do to make the nation's vital pipeline transportation systems as safe as possible. We will strive to make our regulatory goal reasonable, effective, and complete but we recognize that a great share of the work of reaching pipeline safety goals must be accomplished in the field.