DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

49 CFR Part 192

[Docket No. PS-118; Notice 1]

RIN 2137-AB97

Excess Flow Valve Installation on Service Lines

AGENCY: Office of Pipeline Safety (OPS), RSPA, DOT.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: Gas service lines are frequently severed or damaged by excavation causing loss of life, injury and property damage by fire and explosion. OPS seeks public participation in determining whether operators should be required to install excess flow valves on service lines to improve safety and reduce the frequency of incidents. Excess flow valves are designed to shut off the flow of gas in the service line by closing automatically when a line is broken. A questionnaire is included in this notice to gather information based on gas distribution company knowledge and experience.

DATES: Interested persons are invited to submit written comments on this notice by March 20, 1991; however, late filed comments will be considered to the extent practicable. All persons must submit as part of their written comments all of the material that they consider relevant to any statement of fact made by them.

ADDRESSES: Send comments in duplicate to the Dockets Unit, Room 8417, Office of Pipeline Safety, Research and Special Programs Administration, U.S. Department of Transportation, 400 Seventh Street, SW., Washington, DC 20590. Identify the docket and notice numbers stated in the heading of this notice. All comments and other docketed material will be available for inspection and copying in room 8419 between the hours of 8:30 a.m. and 5 p.m. each working day.

FOR FURTHER INFORMATION CONTACT: Jack Willock, (202) 366-4571, regarding the subject matter of this notice, or the Dockets Unit, (202) 366-4453, regarding copies of this notice or other material in the docket that is referenced in this notice.

SUPPLEMENTARY INFORMATION

The Problem

Service line incidents, which are primarily caused by excavation, continue to be a serious problem on natural gas distribution service lines. A service line is defined in 49 CFR part 192 as "a distribution line that transports gas from a common source of supply to (a) A customer meter or the connection to a customer's piping, whichever is farther downstream, or (b) the connection to a customer's piping if there is no customer meter." In a typical incident a worker, while excavating, damages a service line, and natural gas escapes unrestricted from the damaged pipe. The escaping gas may explode, burn, or asphyxiate the worker, local residents, and bystanders and cause damage to excavation equipment and nearby houses and buildings.

The problem is of sufficient importance that RSPA attempted to address the problem by issuing regulations, 49 CFR 192.614, on April 1, 1982, effective April 1, 1983, requiring pipeline operators to conduct a damage prevention program, similar to a one-call system public service program, to prevent pipeline damage by excavation activities. The one-call system is a communication system where a pipeline operator, together with other underground utility operators, provides one telephone number for excavation contractors and the general public to call for notification and recording of their intent to engage in excavation activities. This information is relayed to members of the one-call system giving them the opportunity to communicate with excavators, to identify their facilities by temporary markings, and witness or inspect the excavation. In addition, OPS published an NPRM (53 FR 24747, June 30, 1988) proposing to broaden protection against excavation damage by extending the one-call rules to cover rural areas and hazardous liquid pipelines. Also, RSPA recently issued final regulations (55 FR 38388, September 20, 1990) requiring each State to adopt a one-call damage prevention program as a condition to receiving a full grant-in-aid for the State's pipeline safety compliance program.

In a study mandated by Congress in the Pipeline Safety Reauthorization Act of 1988 (Pub. L. 100-561) regarding the feasibility of the RSPA regulating excavators, OPS found that the number of annual injuries from outside force incidents on pipelines has leveled off at 1/5 of the level of a decade ago. Despite the apparent success of these initiatives, 298 service line incidents, mostly excavation related, have been reported since July, 1984, when the current RSPA incident reporting form became effective. In accordance with 49 CFR 191.3, RSPA requires reports when gas is released from a pipeline resulting in death, personal injury, property damage of $50,000 or more, or other "significant event" in the judgment of the operator. A total of 44 fatalities and 178 injuries resulted from the 298 incidents. Despite the improvement, OPS feels that the current incident rate is too high and seeks to lower it by taking supplementary actions, e.g., one-call, damage prevention.

A Possible Solution to the Problem

One means of reducing or preventing injury or death and loss of equipment from service line incidents resulting from line breaks or ruptures may be to require the installation of excess flow valves (EFVs) in service lines. EFVs have been installed in service lines voluntarily by a few gas distributors for at least 20 years. Their purposes is to limit flow from the main distribution line if a service line is ruptured to the extent that the gas flow escaping from the rupture exceeds a threshold level. When the threshold is reached, the valve closes automatically and the escape of gas from the rupture is virtually eliminated. The existing Federal gas pipeline safety rules, which are set out in 49 CFR part 192, do not require that an EFV be installed for limiting the discharge of gas in the event a service line is damaged.

EFVs are intended to prevent the adverse effects of major leaks (that result from line breaks due to excavation damage or other sudden breaks in a pipeline), but not to prevent incidents caused by slow leaks (as might be caused by corrosion pitting). Also, EFVs are not 100% effective in preventing incidents but may minimize their overall impact. For example, in two incidents reported to OPS, EFVs closed, but did not completely prevent fire or damage. In one incident, a service line to a trailer in a trailer court was damaged by construction in an adjacent lot. The EFV closed, but allowed a reduced amount of gas to escape and ignite. No fatalities or injuries were reported, but $7,000 damage was experienced. In the other incident, an electric utility employee, while repairing an electric service line, burned through the ⅝ inch gas service line and caused a flash fire. The electric utility employee was injured by the fire, even though the EFV closed immediately and shut off the gas source.

Based on a review of the 298 incident reports received by this office since July, 1984, OPS estimates that a majority of the fatalities, injuries and incidents might have been avoided or mitigated if EFVs had been installed in service lines. These conclusions were reached from

an analysis of our reports considering only those incidents where EFVs would logically be installed and expected to operate satisfactorily. Consideration was limited to those incidents with service line pressure in excess of 5 psig where reports indicated threshold flow was exceeded. Five psig is the minimum operating pressure that manufacturers' literature indicate EFVs will close effectively, and laboratory test data in the Gas Research Institute (GRI) report (GRI-85/0150) confirm the manufaturers' literature. The GRI report is discussed later under the Prior Studies section of this ANPRM.

National Transportation Safety Board Recommendations

The National Transportation Safety Board (NTSB), since 1971, has issued six recommendations regarding the use of EFVs in service flow lines. The first of these, Recommendation P-71-01, was issued as a result of a special NTSB study and called for further study by OPS "to develop standards for the rapid shutdown of failed natural gas pipelines * * *." In its accident report (PAR-73-1) of a ruptured service line in Lake City, Minnesota, NTSB noted that an EFV might have stopped the flow of gas after the service line rupture and avoided the loss of live and property. In safety recommendation P-73-02, NTSB called for OPS to undertake a study of fail-safe devices to stop gas flow from ruptured lines and to consider amending 49 CFR part 192 to require the installation of such devices in gas distribution systems.

Following an accident involving explosions and loss of life and property in New York City on April 22, 1974, (PAR-76-2) NTSB called for OPS to "Determine the availability, the practicability, and the state-of-the-art in the manufacture of excess flow valves for use on low-pressure gas distribution systems, (and) based upon the results of these findings, amend 49 CFR part 192 to incorporate the use of these valves in commercial buildings." (Recommendation P-76-9A).

The NTSB, in its accident report concerning an explosion and fire in Standardsville, Virginia on October 24, 1979 (PAR-80-3), concluded that, if an excess flow valve had been installed in the service line, gas flow would have been shut off when the service line ruptured and that the accident would have been prevented. The subsequent NTSB recommendation called for RSPA to "Expedite rulemaking to require the installation of excess flow valves on all newly installed or renewed high-pressure gas distribution system flwo lines " (Recommendation P-80-55).

In its accident report on two explosions and fires that occurred at Simon Kenton High School, Independence, Kentucky on October 9, 1980 (PAR-81-1), NTSB found that had an EFV been installed on the service line, the severity of the first explosion may have been lessened and the second explosion may have been avoided. Because of this accident and other service line accidents which may have been avoided by the use of automatic shut off devices, NTSB conducted a special study to better define the potential uses of these values and called of RSPA to "Initiate rulemaking to require the installation of excess flow valves on all newly installed or renewed high-pressure gas distribution service lines with priority given to service lines supplying schools, churches, and the places of public assembly." (Recommendation P-81-9). Based on the study findings, the NTSB recommended that the GRI "Plan and conduct a test and evaluation of existing excess flow valves to determine and document, on a comparable basis, their operating and design characteristics, such as reliability, service pipe size and length, operating pressure range, maximum service load, and susceptibility to contamination." (Recommendation P-81-35). NTSB further recommended that GRI "Determine the conditions and locations * * * for which excess flow valves can be effective in preventing or minimizing the potential for various types of accidents resulting from leaks on high pressure service lines. Among the conditions which should be evaluated are gas demand variations, minimum operation pressure, service line size, length and configuration, major leaks on house piping, cleanliness of gas, and effect on peak shaving operations." (Recommendation P-81-36). NTSB also recommended that RSPA initiate rulemaking to require installation of EFVs on new and renewed single-family, residential high pressure services. (Recommendation P-81-38).

NTSB investigated 5 accidents in 1988 and 1989 involving gas distribution systems in Kansas and Missouri operated by Kansas Power and Light Company. (PAR-90-01) In a letter of April 20, 1990 to the RSPA, the NTSB stated "The accidents involving gas leaking from service lines at Kansas City, Missouri, and Oak Grove, Missouri, and possibly the accident at Overland Park, Kansas, could have been prevented or at a minimum, the consequences could have been substantially reduced had an excess flow valve been installed at the service line connection to the gas main." Three fatalities and 10 injuries resulted from these accidents. NTSB recommended that RSPA "Require the installation of excess flow valves on new and renewed single-family, residential high pressure service lines which have operating conditions compatible with the rated performance parameters of at least on model of commercially available excess flow valve." (Recommendation P-90-12).

RSPA Actions

In the past, RSPA has questioned the potential benefits and effectiveness of the universal installation of EFVs. During the 1970s and early 1980s, several gas distribution companies installed EFVs only to remove them from service later. The most common reasons cited to justify removal were lack of dependability including false closure and problems with proper resetting. Other companies have continued to install EFVs and have concluded that they close reliably and automatically reset after the line has been repaired.

Despite the damage prevention programs undertaken by the Department, the incident frequency has persisted at a significant level, and the use of EFVs may be a reasonable initiative for reducing the incident rate further. Accordingly, RSPA has decided to conduct additional study. Personnel from the RSPA Office of Pipeline Safety met with representatives of the American Gas Association (AGA), GRI, Gas Safety Action Council (GASAC) and NTSB to obtain current information on EFVs. The AGA is a gas utility industry trade association. GASAC is an organization concerned with user and consumer safety in the natural gas distribution industry. GRI's mission and responsibilities are described in the next paragraph. Meetings were held on two occasions during June and July, 1990 and a questionnaire was developed by GASAC. The questionnaire was reviewed by those in attendance at the second meeting and forms the basis for the questionnaire that accompanies this ANPRM.

Prior Studies

After receiving requests from the NTSB and AGA, GRI conducted two studies from 1982-1985. GRI is a private, not-for-profit organization of natural gas pipeline and distribution companies that conducts gas-related research and development programs on behalf of its members. Most of the GRI funding is derived from gas transportation tariffs authorized and regulated by the Federal Energy Regulatory Commission (FERC)

and collected from interstate pipeline companies. GRI issued the following reports: "Assessment of Excess Flow Valves in Gas Distribution Service" (GRI–85/0150), and "Costs and Benefits of Excess Flow Values in Gas Distribution Services" (GRI–86/0022).

The two GRI studies included (1) a questionnaire to gas distribution companies on their experience with EFVs, (2) laboratory performance tests of EFVs and (3) a cost/benefit analysis of EFVs. The questionnaire was mailed to 153 gas distribution companies. Its purposes was to obtain operating data, costs, and results of laboratory and field testing of EFVs by the operating companies. Ninety-three companies responded. The responding companies had 176,427 EFVs in service and 32.7 million service lines (79 percent) of the total 41.4 million residential, commercial and industrial service lines existing in the U.S. during 1982.

GRI analyzed the survey data and value costs and determined that 12.2 million services (operating at pressures at or above 10 psig) of the universe of 41.4 million services were potentially suitable for EFVs. The average cost of an EFV was reported as $18.25. Installation costs were $405 for paved areas and $240 for unpaved areas (in 1982 dollars). This includes costs of excavating and exposing the service line for the sole purpose of installing an EFV. GRI's assessment report noted that approximately 331,000 (2.8%) of the 12.2 million total service lines operating above 10 psig were new or renewed during 1981, and that if EFVs were installed at this rate, a minimum of 37 years would be required to install EFVs on all such service lines. Both the value study and the cost/benefit study concluded that the cost of installation of EFVs in service lines could not be justified by potential benefits.

GRI conducted laboratory tests to determine the operating characteristics of those EFVs commercially available at that time. The devices were tested for performance, and the effects of pressure surges, volume surges, temperature, service line length and diameter and solid particle contamination. The GRI assessment report concluded that EFVs operate when distribution line pressure is 10 psig or greater, but did not specify the minimum operating pressure for those valves available at the time.

The findings of the GRI studies have not been universally accepted. NTSB disagreed with GRI regarding the use and installation of EFVs and objected to the cost/benefit conclusions and states that the conclusions are deficient and biased. (Letter of October 26, 1987 and September 27, 1988 from NTSB to GRI are available in the docket).

In view of the persistently high service line incident rate, the NTSB recommendations, and the lack of unanimity from the GRI studies, OPS has concluded that additional information is needed to determine the appropriate course of action in an effort to reduce the frequency of service line incidents.

Request for Information

Based on the information received, OPS will consider at least the 3 following courses of action: (1) Amend 49 CFR part 192 to require the installation of EFVs in all new and existing service lines over an appropriate period of time; (2) Amend 49 CFR part 192 to require the installation of EFVs in all new and replaced service lines operation at 5 psig or above; or (3) Make no changes to the existing regulations. Under (2) above, the installation of the EFV would be required if the service line connection to the main distribution line is uncovered.

OPS seeks to obtain current information regarding EFVs through the following questionnaire. The comprehensive questionnaire developed by GASAC was valuable in preparing the final questionnaire included in this ANPRM. The number of questions in the final questionnaire has been reduced from the one developed by GASAC because we believe more gas distributors will respond and more accurate replies will be received from a brief questionnaire. Interested parties are invited to complete the accompanying questionnaire or address other facts and issues relating to service line safety.

GASAC has agreed to provide information gathered from newspaper reports of natural gas incidents that have occurred throughout the United States. This data will be included in the docket and will be considered in conjunction with the incident reports received in this office under 49 CFR part 191. Such data will supplement OPS data in the preparation of cost/benefit analysis calculations regarding the installation of EFVs in service lines.

Issued in Washington, DC, on December 14, 1990.

George W. Tenley, Jr.,

Associate Administrator for Pipeline Safety.

Collection & Evaluation of Current Operational Data and Use of Excess Flow Valves (EFV) by Natural Gas Distributors

1. Check one of the following:

(1a) ——— never used EFVs on service lines at any time

(1b) ——— have used EFVs in the past but no longer use them

(1c) ——— currently using and/or installing EFVs on service lines

If you checked 1a, please provide your company's rationale for not using EFVs on service lines and complete questions 2 and 3.

If you checked 1b, please provide your company's rationale for no longer using EFVs and answer all questions.

If you checked 1c, please answer all questions.

2. Please list the approximate total number of service lines in your system that operate within the following minimum service line pressure ranges on peak usage days.

Operating pressure range	Number of services
1 psig or less (28" wc or less)	
1 psig to 5 psig	
5 psig to 60 psig	
60 psig and over	
Total no. services in your system	

3. Please list the approximate number of new and renewed gas service lines that were installed by your company in the years noted.

	New	Renewed
1985		
1986		
1987		
1988		
1989		

4. Under what situations do you or did you install EFVs?

On new services ———

On renewed services ———

On both new and renewed services ———

Other (Please elaborate) ———

5. Please provide for EFVs installed by your company between 1980–1984:

a. The total number of EFVs installed. ———

b. The approximate number of events (incidents), 1980 to the present, where these EFVs were installed and should have closed. ———

c. The approximate number of these EFVs that closed as a result of these events, 1980 to the present. ———

d. The approximate number of these EFVs that failed to close as a result of these events, 1980 to the present. ———

e. The approximate number of these EFVs that closed improperly, 1980 to the present. —

f. For d. and e., indicate the reason(s) or cause(s), if known. ———

6. Please provide for EFVs installed by your company from 1985 to the present:

a. The total number of EFVs installed. ———

b. The approximate number of events (incidents), 1985 to the presnt, where these EFVs were installed and should have closed. ———

c. The approximate number of these EFVs which closed as a result of these events, 1985 to the present. ———

d. The approximate number of these EFVs that failed to close as a result of these events, 1985 to the present. ———

e. The approximate number of these EFVs that closed improperly, 1985 to the present. —

f. For d. and e., indicate the reason(s) or cause(s), if known. ———

For questions 7 & 8, please provide a cost breakout for the total costs shown; for example, itemize costs for labor, parts, equipment use, removal and restoration of pavement, rock excavation, frost removal or other considerations. Do not include overhead charges.

7. What is the difference in cost of installing a service line with an EFV compared to installing a service line without an EFV? ———

8. What is your unit cost to remove and replace an existing EFV? ———

9. Please list the benefits associated with use of EFVs on service lines. ———

10. Please list the drawbacks associated with use of EFVs on service lines. ———

11. What is the minimum inlet service line pressure at which EFVs open and close properly? ———

12. Under what service line conditions should EFVs be installed? ———

13. Under what service line conditions should EFVs not be installed? ———

14. What is the upper capacity limit for EFVs currently available? ———

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BILLING CODE 4910-60-M

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB52

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the Plant Sisyrinchium dichotomum (White Irisette)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to list *Sisyrinchium dichotomum* (white irisette), a perennial herb limited to three populations in North Carolina, as an endangered species under the authority of the Endangered Species Act (Act) of 1973, as amended. *Sisyrinchium dichotomum* is endangered by suppression of natural disturbance, conversion of habitat for industrial/residential development, encroachment by exotic species, and highway construction and improvements. This proposal, if made final, would implement Federal protection provided by the Act for *Sisyrinchium dichotomum*. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by February 19, 1991. Public hearing requests must be received by February 4, 1991.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, Asheville Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, room 224, Asheville, North Carolina 28801. Comments and materials received will be available for public inspection by appointment during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Ms. Nora Murdock at the above address (telephone 704/259-0321; FTS 672-0321).

SUPPLEMENTARY INFORMATION:

Background

Sisyrinchium dichotomum, described by Eugene P. Bicknell (1899) from material collected in North Carolina, is a perennial herb. The dichotomously branching stems grow approximately 11 to 20 centimeters tall. The basal leaves, usually pale to bluish green, are from one-third to one-half the height of the plant. The tiny (7.5 millimeters long) white flowers appear from late May through July in clusters of four to six at the ends of winged stems. The fruit of this species is a round, pale to medium brown capsule containing three to six round or elliptical black seeds (Bicknell 1899, Hornberger 1987).

Sisyrinchium dichotomum is endemic to the upper piedmont of North Carolina, where it is currently known from three locations in Polk, Henderson, and Rutherford Counties. The species occurs on rich, basic soils probably weathered from amphibolite. It grows in clearings and the edges of upland woods where the canopy is thin and often where down-slope runoff has removed much of the deep litter layer ordinarily present on these sites.

White irisette is dependent upon some form of disturbance to maintain the open quality of its habitat. Currently, artificial disturbances, such as power line and road right-of-way maintenance (where they are accomplished without herbicides and at a season that does not interfere with the reproductive cycle of this species), are maintaining some of the openings that may have been provided historically by native grazing animals and naturally occurring periodic fires.

Sisyrinchium dichotomum has always been known as a narrow endemic, limited to an area in North Carolina bounded by White Oak Mountain, Sugarloaf Mountain, and Chimney Rock. Two of the remaining populations are within highway rights-of-way—one maintained by the North Carolina Department of Transportation, and one inside a commercial recreation area where roads are privately maintained. The third population is within an area recently subdivided for residential development; most of the plants in this latter population are also along private road rights-of-way, with some also being underneath power lines. Colonies within these populations have been observed to be adversely impacted by road maintenance operations, erosion of steep roadbanks, natural succession due to suppression of disturbance, bulldozing as part of residential/industrial development, complete removal of the tree canopy (this species appears to prefer thin shade rather than complete sun), and trampling by tourists and sightseers. The continued existence of *Sisyrinchium dichotomum* is threatened by these activities, as well as by herbicide use, highway expansion and improvements, and by encroachment of exotic species. Kudzu (*Pueraria lobata*), Japanese honeysuckle (*Lonicera japonica*), and *Microstegium vimineum* are aggressive exotic weeds which threaten populations at all three sites.

Federal government actions on this species began with the publication of the February 21, 1990, revised Notice of Review for Native Plants in the **Federal Register** (55 FR 6184), in which this species appeared as a category 2 candidate for listing. Category 2 comprises taxa for which information now in possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threats are not currently available to support proposes rules. Additional surveys recently have been conducted by Service and State personnel, and the Service now believes sufficient information exits to proceed with the proposal to list *Sisyrinchium dichotomum* as endangered.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Sisyrinchium dichotomum* Bicknell are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range. Sisyrinchium dichotomum* has been and continues to