

DEPARTMENT OF TRANSPORTATION**Research and Special Programs Administration****49 CFR Part 192**

[Docket No. RSPA-00-7666; Notice 3]

RIN 2137-AD64

Pipeline Safety: High Consequence Areas for Gas Transmission Pipelines

AGENCY: Office of Pipeline Safety (OPS), Research and Special Programs Administration (RSPA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking.

SUMMARY: The Research and Special Programs Administration (RSPA) is proposing to define areas of high consequence where the potential consequences of a gas pipeline accident may be significant or may do considerable harm to people and their property. This proposed rule is the first step in a two step process to address the integrity management programs for gas pipelines.

RSPA created the proposed definition from the comments received on the notice that invited further public comment about integrity management concepts as they relate to gas pipelines (Information Notice). Additionally, RSPA gathered information through a series of discussions and meetings with representatives of the gas pipeline industry, research institutions, State pipeline safety agencies and public interest groups. The proposed definition does not require any specific action by pipeline operators, but will be used in the pipeline integrity management rule for gas transmission lines that RSPA is currently developing.

DATES: Interested persons are invited to submit written comments by March 11, 2002. Late-filed comments will be considered to the extent practicable.

ADDRESSES:**Filing Information**

You may submit written comments by mail or delivery to the Dockets Facility, U.S. Department of Transportation, Room PL-401, 400 Seventh Street, SW., Washington, DC 20590-0001. It is open from 10 a.m. to 5 p.m., Monday through Friday, except federal holidays. All written comments should identify the docket and notice numbers stated in the heading of this notice. Anyone desiring confirmation of mailed comments must include a self-addressed stamped postcard.

Electronic Access

You may also submit written comments to the docket electronically. To submit comments electronically, log on to the following Internet Web address: <http://dms.dot.gov>. Click on "Help & Information" for instructions on how to file a document electronically.

General Information

You may contact the Dockets Facility by phone at (202) 366-9329, for copies of this proposed rule or other material in the docket. All materials in this docket may be accessed electronically at <http://dms.dot.gov>.

FOR FURTHER INFORMATION CONTACT:

Mike Israni by phone at (202) 366-4571, by fax at (202) 366-4566, or by E-mail at mike.israni@rspa.dot.gov, regarding the subject matter of this proposed rule. General information about the RSPA/OPS programs may be obtained by accessing OPS's Internet page at <http://ops.dot.gov>.

SUPPLEMENTARY INFORMATION:**Background**

We are issuing integrity management program requirements for pipelines in several steps. RSPA began the series of rulemakings by issuing requirements pertaining to hazardous liquid and carbon dioxide pipeline operators. A final rule which applies to hazardous liquid operators with 500 or more miles of pipeline was published on December 1, 2000 (65 FR 75378). That rule applies to hazardous liquid and carbon dioxide pipelines that can affect high consequence areas, which include populated areas defined by the U.S. Census Bureau as urbanized areas or places, unusually sensitive environmental areas, and commercially navigable waterways. We issued a similar proposed rule for hazardous liquid operators with less than 500 miles of pipeline (66 FR 15821; March 21, 2001).

We are now beginning the integrity management rulemakings for gas transmission lines by first proposing a definition of high consequence areas. This definition will be entirely separate from the definition established for hazardous liquid pipelines. We will then propose requirements for gas transmission pipeline operators to develop and implement integrity management programs to provide additional protections to those areas. We are proceeding in two steps for several reasons. We gathered and reviewed a great deal of information on where the potential consequences of a gas pipeline accident may be significant

or may do considerable harm to people and their property. We compared this information to the areas we currently require enhanced protections. We are, however, still collecting information on and verifying the validity of pipeline assessment methods other than internal inspection devices and pressure testing. Information on viable alternative assessment methods for gas transmission pipelines is critical to our proposal for an integrity management program. Unlike hazardous liquid pipelines, a large percent of gas transmission pipelines are not configured for the use of internal inspection devices or cannot be taken out of service for any length of time due to the disruption of critical gas supply to customers. Therefore, we must complete this work before we issue a proposal to address protections for gas pipelines in high consequence areas.

Additionally, while a consensus standard on implementing an overall integrity management program is complete, many consensus standards on pipeline integrity management that could be incorporated into an integrity rulemaking are still under development. Therefore, we decided to proceed with a definition based on information we analyzed, and continue work on proposed assessment and protection requirements for an integrity management program.

RSPA created this definition through a process which began with the goal of improving the assurance of pipeline integrity in those geographic areas where a rupture could have the most significant consequence on people. We thought it necessary to focus on those geographic areas to ensure that operators would expend resources in the areas where the benefits would be greatest, while the regulatory agencies and the industry continued to learn how to effectively improve integrity for the entire pipeline system.

We next assembled technical information to support development of rules to define the geographic areas of focus and prescribe the process to be used to increase the assurance of pipeline integrity. This was accomplished through a series of discussions and meetings with representatives of the gas pipeline industry, research institutions, State pipeline safety agencies and public interest groups. We digested the technical information from these meetings and developed preliminary hypotheses about how the rules should be structured. These hypotheses were documented in the Information Notice (66 FR 34318; June 27, 2001), which invited public comment both on the

hypotheses and on the technical issues requiring resolution.

We developed the definition that we are proposing in this rulemaking based on the technical input received during the series of stakeholder meetings and the comments received on the **Federal Register** Notice. The use of this definition for areas of high consequence, in conjunction with implementation of future integrity management requirements, represents a major step in increasing the assurance of integrity for gas pipeline systems. Once integrity management program requirements are in place for the high consequence areas, RSPA will review the benefits achieved for future consideration of whether to extend integrity management requirements to other areas on pipelines. This review will also help us formulate effective practices to further enhance the integrity of the entire pipeline infrastructure.

RSPA's goal in developing the gas pipeline integrity management rules is to provide the regulatory structure required for operators to focus their resources on improving pipeline integrity in the areas where a pipeline failure would have the greatest impact on public safety. The RSPA philosophy toward gas pipelines is to build on current Class location regulations which require the operator to know what people by location would be impacted by a pipeline rupture, and to require added assurance of pipeline integrity in the areas where the population density is greatest.

These current Class location regulations, which are unique to gas pipelines, require an operator to periodically (typically done annually) monitor and record data on increases in population near its pipelines. Data monitoring gives a current and very accurate picture of where people live and work who could be affected by a pipeline release.

Since January 2000, RSPA has met with State agencies, representatives of the Interstate Natural Gas Association of America (INGAA), the American Gas Association (AGA), Battelle Memorial Institute, the Gas Technology Institute (GTI), Hartford Steam Boiler Inspection and Insurance Company, and operators covered under 49 CFR part 192. (See DOT Docket No. 7666 for summaries of the meetings.) We also met with the Western States' Land Commissioners, National Governors Association, National League of Cities, National Council of State Legislators, Environmental Defense, Public Interest Reform Group, and Working Group on Communities Right-To-Know.

From these meetings we gained a clearer understanding of four significant characteristics of gas pipelines that we used in developing a proposed definition of high consequence areas. First, the effects of a gas pipeline rupture and subsequent explosion are highly localized. The physical properties of natural gas dictate that it rises upward from a rupture or hole in the pipeline as the gas expands into the air. The observation of damage at the sites of pipeline ruptures confirmed this behavior of gas. Second, the zone of damage from an explosion and burning of gas following a pipeline rupture is related to the line's diameter and the pressure at which the pipeline is operated. Again, RSPA confirmed these patterns from observing the heat affected zone surrounding actual pipeline ruptures and explosions. We correlated these observations using a simplified mathematical model relating the properties of the gas, the pipe diameter, and the operating pressure to the predicted heat affected zone. Third, the size of the heat affected zone from pipeline ruptures where pipe diameter was less than 36 inches and operating pressures were at or below 1000 psig, was limited to a diameter of approximately 660 feet.

RSPA corroborated the size of the heat affected zone by observing the sites of actual ruptures. The size of the zone is also consistent with the current Class location definitions. This consistency is not surprising. Thirty-some years ago when the Class location regulations were developed, the 660 foot-wide zone around a pipeline was based on available data about a heat affected zone. However, at that time data only existed on pipeline failures where the pipe diameter was less than 36 inches and the operating pressures were lower than 1000 psig. The fourth piece of information relevant to our proposed definition is that the heat affected zone for pipelines of diameter equal to or greater than 36 inches, operating at pressures in excess of 1000 psig, can extend to as much as 1000 feet from the pipeline. The size of the zone for larger pipelines is based on mathematical models verified by comparison with data on the areas burned around actual gas pipeline ruptures.

On the dates of February 12–14, 2001, we held a public meeting in Arlington, VA, to discuss integrity management requirements for gas pipelines in high consequence areas, and ways to enhance communications with the public about hazardous liquid and gas pipelines. This meeting featured reports on the status of industry and government activities to improve the integrity of gas pipelines.

Meeting attendees also participated in in-depth discussions on the integrity of gas pipelines. The reports can be found in the DOT docket (#7666) and on the RSPA Web site under Initiatives/Pipeline Integrity Management Program/Gas Transmission Operators Rule.

At the public meeting, industry and State representatives presented their perspectives on a number of issues relating to integrity management. Several members of the public also made comments. Topics included:

- Considerations for defining high consequence areas affected by gas pipelines;
- Evaluation of design factors currently used for gas transmission pipelines;
- Evaluation of performance history and experience with the impact zone in gas transmission failures;
- Integrity management best practices and relationship between incident causes and industry practices;
- Options for various forms of direct assessment of the integrity of gas pipelines, including costs and effectiveness;
- Basis for establishing test pressure intervals;
- Appropriateness of using pressure (stress) to differentiate integrity standards for pipelines
- Status of research activities; and
- Status of development of new national consensus standards.

These presentations can be viewed on the RSPA Web site under Initiatives/Pipeline Integrity Management Program/Gas Transmission Operators Rule.

We integrated the results from this meeting with the list of technical perspectives and issues that RSPA developed during the stakeholder meetings held over the previous twelve months. We then formulated the hypotheses on which we expected to base an integrity management rule and questions related to these hypotheses. We published both in a **Federal Register** Notice that we discuss in the next section.

Notice of Request for Comments

On June 27, 2001, RSPA issued a notice of request for comments (66 FR 34318) which asked for further information and clarification, and invited further public comment, on defining high consequence areas and developing integrity management requirements for gas transmission lines. In the notice, RSPA stated its objective to develop a rule on gas pipeline integrity management to address threats posed by pipeline segments in areas where the consequences of potential pipeline accidents pose the greatest risk

to people and property, and provides additional protections for these areas. We had a similar objective when we developed the rules on liquid pipeline integrity management programs, although environmental protection played a larger role in those rules. We also advised on our intention to minimize any actual adverse impact of a new safety requirement on the supply of natural gas to customers.

In the notice, we described the seven elements we believed should be included in any gas pipeline integrity management rule. We used similar elements in developing the liquid pipeline integrity management rules. These elements were based on certain hypotheses we discussed in detail in the notice. Then, we invited comment about these elements and hypotheses. The notice further summarized the areas where RSPA was seeking further information before proposing an integrity management program rule for gas operators. We categorized these information needs into nine categories, seven of which were the elements we described as essential to any integrity management program rule. The other two categories were to seek information about the costs of an integrity management rulemaking, and the rule's potential impact on gas supply.

The first element we discussed was how to define high consequence areas, i.e., those areas where the potential consequences of a gas pipeline accident may be significant or may do considerable harm to people and their property. We put forth the following hypotheses for comment:

- Data from sites where gas pipelines ruptured and exploded show that the range of impact of such explosions is limited. Therefore, the area in which nearby residents may be harmed or there may be property damaged by potential pipeline ruptures, can be mathematically modeled as a function of the physical size of the pipeline and the material transported (typically, but not exclusively, natural gas).

- Because we require gas pipeline operators to maintain data on the number of buildings within 660 feet of their pipelines, the definition of potentially high consequence areas where additional integrity assurance measures are needed should incorporate these data.

- The range of impact from the rupture and explosion of very large diameter (greater than 36 inches) high pressure (greater than 1000 psi) gas pipelines is greater than the 660 feet currently used in the regulations.

- Special consideration must be given to protect people living or working near

gas pipelines who would have difficulty evacuating the area quickly (e.g., schools, hospitals, nursing homes, prisons).

- Due to the relatively small radius of impact of a gas pipeline rupture and subsequent explosion, and the behavior of gas products, environmental consequences are expected to be limited. At this time, RSPA has little information to indicate the definition of high consequence areas near gas pipelines should include environmental factors.

- Given that pipeline operators maintain extensive data on the distribution of people near their pipelines, RSPA intends for operators to use these data, together with a narrative definition of a high consequence area (defined by RSPA), to identify the specific locations of high consequence areas.

Electronic Discussion Forum

To promote greater discussion of these issues, RSPA also initiated an electronic discussion forum which was open from June 27 through August 13, 2001, at the RSPA Web site under the subheading "More Information Needed on Gas Integrity Management Program." A transcript of the electronic discussion forum is placed in this docket. Comments received relevant to a definition of high consequence areas are discussed here.

Comments to FR Notice on Integrity Management Concepts and Hypotheses (Gas Transmission Pipelines)

Comments to the docket were provided by one state public service agency, five industry associations (including one association of industrial gas consumers), sixteen companies or groups of companies that operate gas pipelines, one company that operates hazardous liquid pipelines, and one company that builds pipeline bridges. In this document we summarized the comments relating to the first element—Defining High Consequence Areas. We will summarize and discuss comments on the remaining elements when we propose a rule on requirements for gas pipeline integrity management programs.

Define the Areas of Potentially High Consequence

This element of a rule would define the areas where the potential consequences of a gas pipeline accident may be significant or may do considerable harm to people and property. In the Information Notice, we discussed a model that was presented at the February public meeting relating gas

pipeline diameter and operating pressure to the physical boundaries of the area impacted by the heat from a gas pipeline rupture and subsequent fire. C-FER, a Canadian research and consulting organization, developed the model which predicted the extent of the heat affected zone would be 660 feet for pipelines of up to 36 inches diameter and operating at pressures up to 1000 psig, and 1000 feet for larger pipelines operating at 1000 psig or higher. The model used 5000 BTU/hr-ft² as the critical heat flux for defining the impact radius. We requested comment on the validity of this model, and of any other models that could be used in developing a definition. We requested comment on the validity of limiting an impact zone to areas where there are more than 25 houses or a facility housing people of limited mobility.

We requested comment on the feasibility of including all populous areas where the impact radius could exceed 660 feet, and of including high traffic roadways, railways and places where people are known to congregate, such as, churches, beaches, recreational facilities, museums, zoos, and camping grounds. We also requested further information on the impacts of a gas release on areas of environmental significance, and for comment on including any of these areas in a definition.

Comments

AGA and APGA, trade associations representing investor-owned and municipally-owned gas utilities, submitted joint comments. They stated that high consequence areas should be defined by class location, census-based population data and the zone of influence analysis in the C-FER report. They commented that operators collect and use information establishing class location and that such data can be readily incorporated into a definition, but they believe census data should also be an option.

While AGA and APGA agreed with providing special protection for facilities housing people with limited mobility, they maintained that identifying these facilities may be very difficult if they are not licensed and listed by a city or state. They further maintained that it is not appropriate to analyze every place where people may congregate or every roadway intersection, because this information is very dynamic and would be very difficult to keep current. These associations also argued against including commercially navigable waterways or environmentally sensitive areas because Congress did not mandate

these areas be included in a gas pipeline integrity rule, and a gas release would not present a significant risk to these areas.

AGA and APGA argued that requiring operators to maintain and submit detailed population data is inefficient. They pointed out that some operators do not keep current data on populations near their pipelines, but rather treat all lines as though they were Class 4. Also, that for older pipelines, the most available record would be the class location distribution along their pipelines.

AGL Resources, Inc., a parent company of Atlanta Gas Light Co., Chattanooga Gas Co., and Virginia Natural Gas, supported using the current definitions of Class 3 and 4 locations because the large majority of their transmission lines are designed to operate in class 4 locations.

The Association of Texas Intrastate Natural Gas Pipelines commented that using class locations to define high consequence areas would be appropriate since operators already maintain this information. The Association recommended we only include additional criteria that can be applied uniformly across all pipeline systems, such as class locations where the impact radius exceeds 660 feet. The Association argued against including high traffic roadways and places where people are known to congregate because these areas would be too subjective and therefore difficult to interpret or enforce uniformly. The Association maintained that although gas pipelines pose insignificant environmental risks, it would be appropriate to require operators to evaluate their systems to determine areas where condensate or other liquids are known to accumulate, and where a rupture would lead to release of these liquids near sensitive wildlife areas or bodies of water.

Baltimore Gas & Electric Company (BG&E), a natural gas distribution system operator, commented that a definition should incorporate non-population factors, particularly those based on the risk posed by a pipe segment, not simply the consequences of failure. BG&E also stated that the definition should differentiate transmission pipelines which are part of a distribution system where they are closely coupled to the distribution process, but did not suggest how to do this.

Chevron Pipe Line Company (CPL) supported protecting areas with facilities housing people unable to evacuate the area quickly. CPL was not in favor of including places where people congregate, because CPL thought

the term too broad and it could easily encompass the entire length of a pipeline thereby diluting the focus on enhancing integrity in high risk areas.

Consumers Energy Company did not agree with defining high consequence area primarily by population density. Rather, Consumers Energy thought other factors that affect the overall risk a pipeline poses should be considered, such as pipeline operations, performance history and wall thickness.

El Paso Pipeline Group, an operator of five major natural gas transmission pipelines, commented that a definition should protect those areas where population density is greatest. El Paso urged RSPA to develop a workable definition which would take into consideration that operators have been collecting land use data relating to dwellings and other structures located within 660 feet of their pipelines. El Paso further urged RSPA to rely on the Gas Research Institute (GRI) study, dated December, 2001 (GRI-00/0189—"A Model for Sizing High Consequence Areas Associated With Natural Gas Pipelines") because this study shows that the impact on the heat-affected zone depends on many factors beyond the heat flux value. Due to many factors involved, El Paso was in favor of the value used in the C-FER analysis as a reasonable value.

Enron Transportation Services (ETS) commented that using the current definitions of Class 3 and 4 locations would allow operators to integrate the existing population data they maintain (data on populated areas within 660 feet of a pipeline) into an integrity management plan. ETS maintained that the current definitions of class 3 and 4 areas should pick up less densely-populated areas on the fringe of these areas. ETS recommended that a definition include locations of facilities housing people of impaired mobility because these locations are consistent with the purpose of the class location process. ETS further added that many operators are already locating these facilities as part of their class location survey determination. ETS also supported the critical heat flux value used in the C-FER analysis as a reasonable value for evaluating a high consequence area.

ETS was against including crossings of roads and railways because of the low relative risk posed by pipelines at these locations, compared to the risk presented by vehicle and train traffic. ETS maintained that patrols of these locations, as the pipeline safety regulations currently require, will identify any potential problems. ETS further argued that places where the

public congregates are already treated as populated areas requiring an increased level of protection. As for environmental areas, ETS commented that natural gas presents little threat to water and many pipeline rights-of-way have already had cultural resource clearance. Although ETS did not dispute that a threatened species or habitat could be affected, it did not want such areas generally included. ETS recommended operators treat such areas on a case-by-case basis, but such areas not be mapped for security reasons (e.g., the sole remaining habitat of a threatened or endangered species).

INGAA, a trade organization which represents interstate natural gas transmission pipeline companies, offered several comments about the hypotheses for the high consequence area definition. INGAA explained the 660-foot radius used in developing part 192 was based on photographs of actual burn areas from the ignition of a pipeline rupture; however, in 1970, few pipelines larger than 30 inches in diameter or operating at pressures higher than 1000 psig existed. INGAA further explained that the 5000 BTU/hr-ft² radiation heat flux used in the C-FER model was developed as part of an integrated analysis to define the heat affected zone around a ruptured natural gas pipeline and the results of this analysis were validated against data on the extent of the burn zone from actual pipeline ruptures. INGAA explained that this model produced a 660-foot radius circle for a 30-inch diameter pipeline operating at 1000 psig. INGAA did not see why the methodology could not be applied to a pipeline transporting hydrogen.

INGAA stated that a 25-house limit for a high impact zone is consistent with the definition for hazardous liquid pipelines, where a population density of 1000 people or more per square mile was used. INGAA maintained that this translates to 25 houses within a circle of 660-foot radius, assuming two people per house. INGAA further argued that based on typical Class 3 population density, 25 houses is an appropriate number and consistent with class location regulations.

INGAA argued that it would be too expensive to collect data on areas beyond the 660-foot radius. However, INGAA would support extending the area of protection beyond the 660-foot corridor for structures containing concentrations of people with limited mobility, such as, hospitals, schools, childcare facilities, retirement communities or prisons. INGAA explained that this is consistent with the current draft of the Integrity

Management Appendix to American Society of Mechanical Engineers (ASME) B31.8 Std.

INGAA argued that current definitions for Class 3 and 4 areas probably cover many areas where people congregate. INGAA acknowledged that high traffic roadways and railways would not be covered if they were not already in Class 3 and 4 areas, but thought these areas are probably addressed through design, construction, operation and maintenance requirements.

INGAA was opposed to including any environmental areas in the definition. INGAA explained that methane releases would inflict very limited collateral damage to wildlife and would not impact water supplies.

Keyspan Energy Delivery, a local distribution company (LDC), was in favor of defining high consequence areas as Class 3 and 4 locations because its lines comply with the requirements for these class locations. Keyspan was also in favor of clearly defined areas, but wanted any definition to recognize that LDCs cannot precisely evaluate and re-evaluate such areas. Keyspan recommended a definition which would allow for performance-based variables but did not provide any examples.

Kinder Morgan, Inc., a large midstream energy company, favored a definition of high consequence areas which uses a model, such as the one C-FER developed, relating pipeline diameter and operating pressure to the physical boundaries of the area of impact. Kinder Morgan recommended further that we use a sliding approach where high consequence areas would be defined as areas of high population density within the C-FER defined hazard area. Kinder Morgan maintained that areas where people congregate are currently covered in the definition of Class 3, and that these areas should be included in the high consequence area definition only if they are located within the defined hazard area for a given pipeline.

MidAmerican Energy Company, a combination gas and electric utility, generally agreed with the definitions recommended by AGA/APGA and INGAA, because these definitions would not impact its operations. MidAmerican commented that if high traffic roadways are included they need to be clearly defined, and suggested definitions. MidAmerican also clarified that including places where people congregate would have minimal impact on its operations.

The New York Gas Group (NYGAS), a natural gas utility trade association, suggested we replace the term high

consequence area with a less inflammatory term such as Affected Area. NYGAS agreed with including Class 3 and 4 locations but argued that it will be virtually impossible for local distribution companies to identify facilities housing people with impaired mobility unless such facilities are licensed or are on a list that an operator can obtain. NYGAS was opposed to using census data to determine a high consequence area, because they believe the data is not accurate and is updated every ten years. NYGAS did not support including high traffic roadways, railways and places where people congregate in the definition because of the uncertainty and complexity of trying to include these elements.

New York State Department of Public Service (NYDPS) commented that in addition to facilities housing people with limited mobility, consideration should be given to special features near pipelines, such as places of public assembly, historical landmarks, parks, bridges, power line corridors, other pipeline facilities, major roadways, and railways.

NYDPS supported the concept of an impact radius for determining high consequence areas, but contended that the C-FER model (using 5000 BTU/hr-ft²) conveniently results in an impact radius of about 660 feet. Based on this outcome, NYDPS believes the impact zone will never extend beyond the current class location for most operators. NYDPS suggested defining a more appropriate critical heat flux value (one lower than the C-FER model) so the impact radius could extend beyond the 660 feet.

The Energy Distribution Segment of NiSource Inc. (NiSource EDG), which is comprised of ten distribution companies, expressed concern that basing a high consequence area on the potential for considerable harm, would be too expansive to be of any practical value. NiSource EDG thought that a definition should consider the number of persons who might be harmed, as well as the potential significance of the harm, and that it should also include identifiable physical locations where people are unable to evacuate or to take protective actions.

NiSource EDG was against basing an impact zone on the number of houses, because data from which an operator could extrapolate the number of houses might not exist. NiSource explained that because many local distribution companies design their systems to be consistent with the requirements of a Class 4 location, they do not monitor housing distribution data near their pipelines. Therefore, NiSource EDG

argued, imposing criteria which would require local distribution companies to initiate class location surveys would delay implementation of a rule, increase administrative and record-keeping burdens, and be extremely expensive.

NiSource argued against including an environmental component in the definition, and against including what it maintained were nebulous areas, i.e., high traffic roadways, railways, and places where people congregate.

Pacific Gas and Electric Company (PG&E), a utility subsidiary of PG&E Corporation, supported the use of structure data but noted that once a class location reaches 3, the structure data is no longer accumulated or may not be kept current. PG&E proposed that operators be allowed to use third party data sources which address the location of high consequence structures, as well as census data to determine whether housing density could reach or exceed 25 structures within a circle defined by an analysis such as the C-FER model. PG&E supported use of the C-FER model for larger diameter pipelines, and supported allowing more extensive models for operators that choose to perform a more detailed analysis of the impact zone following a pipeline rupture. PG&E supported including day-care facilities with more than 25 people, but was opposed to including any environmental component in a definition.

Tosco Corporation, an independent refiner and marketer of gasoline and other petroleum products, and a pipeline owner and operator, was in favor of using existing class 3 and 4 location criteria. Tosco also believed that other relevant factors must be considered in determining how to protect an area beyond 660 feet from the pipeline, such as line diameter, line pressure and local environmental conditions. Tosco was opposed to micro-determining a high consequence area down to a foot basis, as maintaining data on such precise areas could be unmanageable. Tosco was not in favor of using census data to define its high consequence areas, rather, it favored counting structures within 660 feet of a pipeline.

Electronic Forum Comments

A commenter to the electronic forum reminded RSPA that the Carlsbad, New Mexico, failure happened in a low consequence area, and high consequence areas should be defined as areas where there is a high probability that the pipeline could be damaged by outside forces.

Another commenter from a school facilities planning division argued that

schools are extremely high consequence areas and should be explicitly mentioned.

The Proposed Rule

RSPA's goal for the gas integrity management rules (the definition and the integrity program requirements) is to provide greater assurance of pipeline integrity in geographic areas where a gas pipeline rupture could do the most harm to people. Through our proposed definition of high consequence areas, and the integrity management program requirements now under development, we will ensure that an operator's resources are expended on areas where the benefits will be the greatest. Once we propose and implement the integrity management program requirements for the areas we define, we will study the results and consider how effective it would be to extend added protection to other areas.

The areas we propose to define as high consequence areas for gas transmission pipelines are different from those we defined for hazardous liquid pipelines (see 49 CFR 195.450). The areas we defined for hazardous liquid pipelines were without regard to where the pipeline was located; whereas the proposed areas for gas transmission pipelines are defined with respect to a zone around a pipeline. Furthermore, certain sensitive environmental areas were included in the high consequence areas for hazardous liquid pipelines but are not included in the proposed definition for gas pipelines. The differences are due to differences in the physical properties of the products and consequences of a gas release versus a hazardous liquid release, and the benefits of having accurate data on population already maintained by gas transmission operators.

Due to the physical properties of gas, the rupture of a gas pipeline impacts a very limited area adjacent to the location of the rupture. In contrast, when a liquid pipeline ruptures, the liquid can flow a greater distance from the site of the rupture. Furthermore, unlike a liquid release, the rupture of a gas pipeline cannot lead to far-reaching damage to habitats of threatened or endangered species. Moreover, gas released from a pipeline rupture flows upward into the air following a rupture, and so cannot pollute drinking water or ecological resources.

RSPA based the population component of the definition for hazardous liquid pipelines on the U.S. Census Bureau's definition of urbanized areas and places. As hazardous liquid operators are not required to maintain population data, we decided to use the

U.S. Census Bureau's definitions because they were the best available data on population adjacent to hazardous liquid pipelines. In contrast, because gas pipeline safety requirements are structured according to class location (i.e., population density), gas pipeline operators already maintain current data on the location of people in areas adjacent to their pipelines. We are confident this data is accurate. Thus, it seemed logical to structure a definition that would use the data pipeline companies already collect and maintain.

Nonetheless, even though the we structured the gas pipeline high consequence areas differently from the hazardous liquid high consequence areas, the inclusion of both Class 3 and 4 locations in the proposed definition is consistent with the census-defined areas encompassing population density of approximately 1000 people per square mile. In Class 3 locations, the lower limit on occupied buildings in a sliding mile is 46 (i.e., an area one mile long and 1320 (2 x 660) feet wide), which is equivalent to a population density of 460 people per square mile assuming 2.5 people per building. Other populated areas included in the hazardous liquid definition are picked up in the proposed definition by the lower population density value used in the Class 3 location definition and by including isolated buildings near a pipeline that house people with limited mobility.

RSPA's proposed definition of high consequence areas for gas transmission pipelines extends to areas beyond current class locations, or in other words, beyond areas where operators are currently required to have data. Our analysis of data on the area affected by a pipeline accident, demonstrated the need for special consideration of buildings located more than 300 feet from the pipeline that house people with limited mobility. It also demonstrated a need for consideration of areas near gas pipelines of diameter greater than 30 inches and operating at pressures in excess of 1000 psig. Therefore, we are including in the proposed definition, areas out to 660 feet from a pipeline (1000 feet from a pipeline with a diameter greater than 30 inches and operating at a pressure greater than 1000 psig) where there are buildings housing people with limited mobility and areas where people congregate. Although operators are not currently required to maintain data on these areas, operators are required to patrol their pipeline right-of-way. Based on these requirements, we believe operators should have knowledge of where people congregate near their

pipeline. Additionally, this information should be available from local public safety officials.

Our basis for extending the area to 1000 feet is based on the C-FER model, previously discussed in this document. (Their report is in Docket #7666). The C-FER Model demonstrated that large diameter pipe (greater than 30 inches) operated at pressures greater than 1000 psig has the potential to impact an area greater than 660 feet from the pipeline. The C-FER analysis was based on a simplified model of a gas pipeline rupture. The model included simplified mathematical treatment of several phenomena important to characterizing the extent of damage following a pipeline rupture (for example, critical heat flux, the time of ignition of the escaping gas, the height of the burning jet, the pipe decompression rate). The model also included estimates of several important parameters associated with the phenomena. Due to the simplifications in the model and the need to select values for the key parameters, the model was validated by comparing its predictions with the results of actual incidents for which the burn radius (area around the rupture which experienced damage) associated with a pipeline rupture and ignition could be measured. The C-FER report shows these comparisons between model predictions and observed burn areas. The comparisons appear to validate the predictive ability of the model.

High Consequence Areas

We considered the comments and information received in response to the hypotheses presented in the Information Notice. We developed a proposed definition of high consequence areas for gas transmission pipelines based on the hypotheses and comments, as well as our extensive analysis of technical information from diverse sources. Our primary concern is with protecting populated areas from a gas release. Therefore, we are proposing to include the following class location areas, which are already defined in part 192. We concluded that these areas will encompass about 85% of populated areas, which is comparable to the percentage of populated areas picked by the hazardous liquid definition using the Census Bureau's definitions. These are the areas where gas transmission pipeline operators maintain data on population and buildings near their pipelines.

- Class 3 areas. Class 3 areas are defined in the pipeline safety regulations as a class location unit with 46 or more buildings intended for

human occupancy. A class location unit is an area that extends 220 yards on either side of the centerline of any continuous one-mile length of pipeline. A class 3 area is also 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 theater, or other place of public assembly, which is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. Neither the days nor the weeks need be consecutive.

- Class 4 areas. Class 4 areas are any class location unit which include buildings with four or more stories.

We are proposing to extend the definition of areas of high consequence beyond the class location areas. We analyzed the C-FER model against RSPA accident data and concluded that a release from most pipelines would not affect an area greater than 660 feet. However, we also want to ensure that areas where there are facilities with people who may not be able to evacuate an area quickly are better protected from the likelihood of a pipeline release. Therefore, we propose to define these areas as follows:

An area where a pipeline lies within 660 feet of a hospital, school, day-care facility, retirement facility, prison or other facility having persons who are confined, are of impaired mobility, or would be difficult to evacuate.

With the use of a commercial database, we are collecting data on the locations of these facilities to help identify these areas.

Our research further demonstrates that a rupture or release from a larger-sized pipeline would likely affect an area beyond 660 feet, i.e., those pipelines that are more than 30 inches in diameter and operate at pressures greater than 1000 psig. Therefore, we are defining a larger high consequence area for areas where there are larger high pressure pipelines. We propose to define these areas as follows:

An area where a pipeline lies within 1000 feet from a hospital, school, day-care facility, retirement facility, prison or other facility having persons who are confined, are of impaired mobility or would be difficult to evacuate, where the pipeline is greater than 30 inches in diameter and operates at an maximum allowable operating pressure (MAOP) of 1000 psig or greater.

As with the previously described areas, we are using a commercial database to help identify these areas.

In light of recent accident history, particularly, the explosion near Carlsbad, New Mexico, RSPA recognizes that the class location definitions may not cover all areas where a pipeline may

pose a risk to the public. There are areas where people may not live, but they gather regularly for recreational or other purposes. We propose to define these areas as follows:

An area where a pipeline lies within 660 feet (or within 1000 feet where the pipeline is greater than 30 inches in diameter and operates at a MAOP of 1000 psig or more) where 20 or more persons congregate at least 50 days in any 12-month period. (The days need not be consecutive.) Examples of such areas include, but are not limited to, beaches, recreational facilities, camping grounds, and museums.

The 20-person number is used in the current definition of a class 3 location. We believe it is representational of the number of people that typically frequent a recreational area. This component of the proposed high consequence area definition should pick up most recreational areas or other areas where the public gathers on a regular basis. We have explicitly included camping areas to ensure that areas like those where the people were camping near the pipeline in Carlsbad will receive additional protection. Also, based on the C-FER model calculations, we propose to increase the area of the impacted zone from the current 300 feet to 660 feet (or 1000 feet for larger diameter pipelines).

As we previously mentioned, gas transmission operators are not currently required to maintain data on areas where people congregate near their pipelines. However, because operators are required to patrol their pipeline rights-of-way, they should have knowledge about these areas. This information should also be available from local public safety officials.

These proposed areas go beyond those specified in current regulations in the following ways:

1. A current Class 3 location includes buildings or areas where people congregate located within 300 feet of the pipeline. The proposed definition extends these areas from the pipeline out to 660 feet for most pipelines and out to 1000 feet for larger pipelines (those greater than 30 inches in diameter and operating at pressures greater than 1000 psig).

2. Current Class location regulations consider people located within 660 feet of a pipeline. The proposed definition includes an impact zone of 1000 feet from the pipeline for pipelines greater than 30 inches in diameter operating at pressures greater than 1000 psig.

3. Current Class location regulations include no explicit provision for facilities housing people with limited mobility. The proposed definition includes these facilities.

4. The proposed definition more explicitly references areas where people congregate near a pipeline, particularly, camping grounds.

We received no comment encouraging the inclusion of environmental areas as high consequence areas. In the proposed definition, we did not include sensitive environmental areas due to the highly localized impact of a gas pipeline rupture and explosion. Since a release from a gas pipeline accident is airborne, it is unlikely any major damage will occur to a threatened or endangered species. We received a similar response to our question on whether to include high traffic areas. We did not include such areas in the proposed definition because special attention is already given to these areas in the design and maintenance of pipelines near road crossings. Furthermore, the number of drivers that could be affected by a gas transmission pipeline accident is limited due to the highly localized effect of a gas release.

Regulatory Analyses and Notices

Executive Order 12866 and DOT Regulatory Policies and Procedures.

DOT considers this action to be a non-significant regulatory action under section 3(f) of Executive Order 12866 (58 FR 51735; October 4, 1993). Therefore, the Office of Management and Budget (OMB) has not reviewed this rulemaking document. This proposed rule is also not significant under DOT's regulatory policies and procedures (44 FR 11034; February 26, 1979).

This proposed rule has no cost impact on the pipeline industry or the public, as it is only a definition. A regulatory evaluation is available in the Docket. The High Consequence Areas definition will be used in the forthcoming rulemaking on "Pipeline Safety: Pipeline Integrity Management in High Consequence Areas (Gas Transmission Operators)." When we issue that proposed rule, we will then fully evaluate all the associated costs and benefits.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) RSPA must consider whether a rulemaking would have a significant impact on a substantial number of small entities. This proposed rulemaking will not impose additional requirements on pipeline operators, including small entities that operate regulated pipelines. As this action only involves a definition, there are no cost implications, and thus, we determined it had no impact on small entities. Costs

are likely to result once we issue requirements for actions that use this definition at a later date. RSPA will soon propose integrity management requirements for gas transmission pipelines in high consequence areas; at that time will examine the costs and benefits of that rulemaking. Based on this information demonstrating that this rulemaking will not have an economic impact, I certify that this proposed rule will not have a significant economic impact on a substantial number of small entities.

Paperwork Reduction Act

This notice of proposed rulemaking contains no information collection subject to review by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3507 (d)). Therefore, RSPA concludes the proposed rule contains no paperwork burden and is not subject to OMB review under the paperwork Reduction Act of 1995.

This proposed rule is simply a definition of high consequence areas. The definition will be used in the forthcoming rulemaking on "Pipeline Safety: Pipeline Integrity Management in High Consequence Areas (Gas Transmission Operators)". RSPA will prepare a paperwork burden analysis for that proposed rule.

Executive Order 13084

This proposed rule was analyzed in accordance with the principles and criteria contained in Executive Order 13084 ("Consultation and Coordination with Indian Tribal Governments"). Because this proposed rule does not significantly or uniquely affect the communities of the Indian tribal governments and does not impose substantial direct compliance costs, the funding and consultation requirements of Executive Order 13084 do not apply.

Executive Order 13132

This proposed rule was analyzed in accordance with the principles and criteria contained in Executive Order 13132 ("Federalism"). This proposed rule does not propose any regulation that:

(1) Has substantial direct effects on the States, the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government;

(2) Imposes substantial direct compliance costs on States and local governments; or

(3) Preempts state law.

Therefore, the consultation and funding requirements of Executive Order 13132 (64 FR 43255; August 10,

1999) do not apply. Nevertheless, in public meetings on November 18–19, 1999, and February 12–14, 2001, RSPA invited the National Association of Pipeline Safety Representatives (NAPSR), which includes State pipeline safety regulators, to participate in a general discussion on pipeline integrity. Since then RSPA held conference calls with NAPSR to receive their input before proposing a definition of high consequence areas.

Unfunded Mandates

This proposed rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of \$100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector, and is the least burdensome alternative that achieves the objective of the rule.

National Environmental Policy Act

We analyzed the proposed rule for purposes of the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) and preliminarily determined the action would not significantly affect the quality of the human environment. The Environmental Assessment of this proposal is available for review in the docket.

The Environmental Assessment (EA) considered the impacts of the proposed definition, in conjunction with future requirements of an integrity management rule. The EA found that the proposed definition by itself, did not by itself have any impact on the environment. When integrity management program requirements are issued which will incorporate the definition, there should be positive environmental benefits for the areas receiving additional protection.

However, because the environmental consequences from a gas release are limited, any impact is expected to be minimal. Therefore, the proposed definition of high consequence areas for gas pipeline integrity management will not have a significant environmental impact.

List of Subjects in 49 CFR Part 192

High consequence areas, Integrity assurance, Pipeline safety, and Reporting and recordkeeping requirements.

In consideration of the foregoing, RSPA proposes to amend part 192 of title 49 of the Code of Federal Regulations as follows:

PART 192—[AMENDED]

1. The authority citation for part 192 continues to read as follows:

Authority: 49 U.S.C. 60102, 60104, and 60108; and 49 CFR 1.53.

2. A New §192.761 would be added under a new heading of "High Consequence Areas" in subpart M to read as follows:

Subpart M—Maintenance

* * * * *

High Consequence Areas

§ 192.761 Definitions.

The following definitions apply to this section and § 192.763:

High consequence area means any of the following areas:

(a) A Class 3 area as defined in §§ 192.5(b)(3) and 192.5(c);

(b) A Class 4 area as defined in §§ 192.5(b)(4) and 192.5(c);

(c) An area where a pipeline lies within 660 feet of a hospital, school, day-care facility, retirement facility, prison or other facility having persons who are confined, are of impaired mobility or would be difficult to evacuate;

(d) An area where a pipeline lies within 1000 feet from a hospital, school, day-care facility, retirement facility, prison or other facility having persons who are confined, are of impaired mobility or would be difficult to evacuate, if the pipeline is greater than 30 inches in diameter and operates at a maximum allowable operating pressure (MAOP) greater than 1000 psig; or

(e) An area where a pipeline lies within 660 feet (or within 1000 feet where the pipeline is greater than 30 inches in diameter and operates at a MAOP greater than 1000 psig) where 20 or more persons congregate at least 50 days in any 12-month period. (The days need not be consecutive.) Examples of such areas include, but are not limited to, beaches, recreational facilities, camping grounds, and museums.

Issued in Washington, DC, on January 3, 2002.

Stacey L. Gerard,

Associate Administrator for Pipeline Safety.
[FR Doc. 02–543 Filed 1–8–02; 8:45 am]

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