

#### IV. RECOMMENDATIONS

(Listed after the recommendations are numbers of conclusions upon which such recommendations are based.)

The Safety Board recommends that:

1. The Office of Pipeline Safety of the Department of Transportation take the following actions:

- 70-1 (a) Conduct a study to determine the feasibility of requiring that pressure regulators in series be placed in separate vaults or buildings for protection against fires and explosions, and determine the minimum distance of separation of regulators. (Conclusion 3.)
- 70-2 (b) Include in its proposed standards a requirement that before valves separating gas systems of different pressures are operated, gauges be tapped in on both sides of the valve so that changes in pressure before, during, and after operation of the valves can be determined. (Conclusion 1.)
- 70-3 (c) Include in its proposed standards a specified minimum safe distance between a regulator and its shutoff valve, and a requirement that emergency shutoff valves be placed in underground valve boxes or other readily accessible locations separate from regulator vaults or enclosures. (Conclusion 3.)
- 70-4 (d) Include in its proposed standards a requirement that gas companies establish educational programs to enable customers and the general public to recognize gas emergency situations and, further, to provide necessary information to notify companies immediately. (Conclusion 6.)

- 70-5
- (e) Use the corrosion standards of the National Association of Corrosion Engineers entitled "Control of External Corrosion in Underground or Submerged Metallic Pipeline Systems" as a guideline in formulating Federal standards. (Conclusion 15.)
- 70-6
- (f) Conduct a study to determine the feasibility of requiring gas shutoff valves on all services, located outside of buildings in readily accessible locations for use in emergencies. Further, use the results of such study in formulating Federal standards and in consultations with the States in connection with their standards for existing systems. (Conclusion 18.)
- 70-7
- (g) Include in its proposed standards a requirement that relief devices be provided for low-pressure distribution systems which could be over-pressured by interconnected high-pressure gas. If relief devices would present a hazard, an automatic shutoff device should be installed at each unprotected source of high-pressure gas. It is not intended that this recommendation apply to high-pressure gas connected to a low-pressure system by means of a regulator station provided with a suitable device to prevent accidental overpressuring. (Conclusion 2.)
- 70-8
- (h) Include in its proposed standards a requirement that surveys be made of existing systems to determine the extent of corrosion damage and to replace or further cathodically protect those facilities found corroded beyond a specified minimum and, further, use the National Association of Corrosion Engineers standard as a guide. (Conclusion 15.)
- 70-9
- (i) Include in its proposed standards a requirement that existing regulator stations be upgraded to comply with the USAS B31.8 standards for newly constructed regulator stations. (Conclusions 2, 3.)

70-10 (j) Include in its proposed standards a requirement that a leakage survey, as presently defined in section 852.21 of USAS B31.8, be conducted prior to conversion of low-pressure distribution systems to higher pressure systems; also, that such surveys be conducted at one or more pressure increments and, finally, after the desired pressure has been attained. (Conclusion 9.)

70-11 (k) Include in its proposed standards the requirement that all gas utilities use written plans for conversions of low-pressure distribution systems to higher pressure. (Conclusion 8.)

2. The Indiana Public Service Commission take the following actions:

70-12 (a) Review the training procedures used by NIPSCO to determine their adequacy. (Conclusion 13.)

70-13 (b) Determine whether NIPSCO's Emergency Plan complies with section 850.6 of USAS B31.8 "Emergency Plan." This plan should include direct communications between NIPSCO and the fire and police departments in emergencies. (Conclusion 12.)

70-14 (c) Review NIPSCO's facilities and require correction of all regulators supplying distribution systems if those regulator stations are not in compliance with USAS B31.8, section 846.22 for new installations, and NIPSCO's "Gas Standards." (Conclusions 10, 11.)

3. NIPSCO take the following actions:

70-15 (a) Meet with representatives of the various police and fire departments in the area which it serves in order to acquaint them with the hazards and characteristics of natural gas and methods used to control emergencies. (Conclusions 12, 6.)

70-16 (b) Establish an educational program which would enable its customers and the general public to recognize a gas emergency situation, promptly notify NIPSCO, and take measures to reduce hazards of an emergency. (Conclusion 6.)

70-17 (c) Install relief devices on all its low-pressure distribution systems which could be over-pressured by interconnected high-pressure gas. If relief devices would present a hazard, an automatic shutoff device should be installed at each unprotected source of high-pressure gas. It is not intended that this recommendation apply to high-pressure gas connected to a low-pressure system by means of a regulator station provided with a suitable device to prevent accidental overpressuring. (Conclusion 2.)

70-18 (d) Furnish information to the City Engineer of Gary with respect to location of all gas lines in the city. (Conclusion 17.)

4. The USAS B31.8 Committee take the following actions: ASME

19 (a) Include in its standards a requirement that relief devices be provided for low-pressure distribution systems which could be over-pressured by interconnected high-pressure gas. If relief devices would present a hazard, an automatic shutoff device should be installed at each unprotected source of high-pressure gas. It is not intended that this recommendation apply to high-pressure gas connected to a low-pressure system by means of a regulator station provided with a suitable device to prevent accidental overpressuring. (Conclusion 2.)

20 (b) Include in its standards a requirement that surveys be made of existing systems to determine the extent of corrosion damage

and to replace or further cathodically protect those facilities found corroded beyond a specified minimum, and further, use the National Association of Corrosion Engineers Standards as a guideline. (Conclusion 15.)

21 (c) Include in its standards a requirement providing that existing regulator stations be upgraded to comply with the standards for newly constructed regulator stations. (Conclusion 2.)

22 (d) Include in its standards an additional requirement that a leakage survey, as defined in section 852.21 of USAS B31.8, be conducted prior to conversion of low-pressure distribution systems to higher pressure systems, that such surveys be conducted at one or more pressure increments, and, finally, after the desired pressure has been attained. (Conclusion 9.)

5. All States, the District of Columbia, and Puerto Rico take the following actions:

23 (a) Include in their standards a provision that existing regulator stations supplying low-pressure distribution systems be upgraded to comply with the standards for newly constructed regulator stations as specified in USAS B31.8. (Conclusion 2.)

24 (b) Include in their standards a requirement that relief devices be provided for low-pressure distribution systems which could be over-pressured by interconnected high-pressure gas. If relief devices would present a hazard, an automatic shutoff device should be installed at each unprotected source of high-pressure gas. It is not intended that this recommendation apply to high-pressure gas connected to a low-pressure system by means of a regulator station provided with a suitable device to prevent accidental over-pressuring. (Conclusion 2.)

- 25
- (c) Foster the use of "rumor line" telephone numbers throughout the States in cities and communities for use in emergencies to obtain accurate information and to reduce fear and panic. (Conclusion 7.)
- 26
- (d) Institute a program with telephone companies to list emergency numbers for gas companies, along with listings for police, fire, FBI, etc. (Conclusion 19.)
- 27
- (e) Require all gas utilities to use written plans for conversions of low-pressure distribution systems to higher pressure to insure that appropriate safety precautions are taken to protect the public. (Conclusion 8.)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

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