

## **I. Background:**

On April 7, 1992, an uncontrolled release of highly volatile liquids from a salt dome storage cavern in the Seminole Pipeline System near Brenham, Texas, formed a large, heavier-than-air gas cloud that exploded. Three people died from injuries sustained either from the blast or in the fire. An additional 21 people were treated for injuries at area hospitals. Damage from the accident exceeded \$9 million.

During its investigation of this accident, the National Transportation Safety Board (NTSB) found several deficiencies in the design of Brenham station, the most important of which was the lack of a fail-safe cavern shutdown system. In addition, a comprehensive safety analysis of the station had not been conducted to identify potential points of failure and product re-lease.

Following its accident investigation, NTSB published pipeline safety recommendation No. P-93-9 regarding under-ground storage. Recommendation P-93-9 asks RSPA to develop safety requirements for storage of highly volatile liquids and natural gas in underground facilities, including a requirement that all pipeline operators perform safety analyses of new and existing underground geologic storage systems to identify potential failures, determine the likelihood that each failure will occur, and assess the feasibility of reducing the risk. The recommendation also suggests that RSPA require operators to incorporate all feasible improvements.

In response to the recommendation, RSPA held a public meeting on underground storage of gas and hazardous liquids on July 20, 1994, in Houston Texas (Docket PS-137; 59 FR 30567; June 14, 1994). The purpose of the meeting was to gather information on the extent of current regulation, and to help determine the proper action for RSPA to take regarding regulation of underground storage of gas and hazardous liquids. At the meeting, representatives of industry, state governments, and the public presented statements on safety issues, industry practices, the status of state underground storage regulations, and the need for additional federal regulations. While different views were expressed on whether RSPA should begin to regulate "down hole" pipe and under-ground storage, most persons spoke favorably of industry safety practices and state regulation, and did not recognize an immediate need for federal regulatory action.

After the meeting, RSPA surveyed a cross section of underground storage facilities in the U.S. to learn their existing safety systems, potential safety and environmental problems, staff expertise, and the extent of state regulation. A report<sup>1</sup> of the survey says that while all surveyed facilities train personnel in operating and emergency safety, operational procedures was the leading safety concern of both operators and state regulators. The report further says that about 85 percent of surveyed facilities are under some sort of state regulation. In addition, the report gives pros and cons of federal regulation and notes that additional data and site investigations would be needed to correlate increased safety with increased regulation.

Since the accident, RSPA has actively participated with the Interstate Oil and Gas Compact Commission (IOGCC) to develop standards. The IOGCC represents the governors of 36 states--29 members and seven associate states--that produce virtually all the domestic oil and natural gas in the United States. The mission of IOGCC is to promote conservation and efficient recovery of domestic oil and natural gas resources while protecting health, safety, and the environment through sound regulatory practices. Regulatory coordination and government efficiency are chief interests of IOGCC.

IOGCC formed a subcommittee composed of federal and state regulators, including representatives from the Department of Energy, the National Association of Regulatory Utility Commissioners, American Gas Association, National Gas Supply Association, and Gas Research Institute. The subcommittee developed a report entitled "Natural Gas Storage in Salt Caverns--A Guide for State Regulators" (IOGCC Guide). The IOGCC Guide provides safety standards for the design, construction, and operation of gas storage caverns. The standards are useful to the industry as well as state agencies. Copies of the IOGCC Guide can be obtained from the Interstate Oil and Gas Compact Commission, 900 N.E. 23rd Street, Oklahoma City, Oklahoma 73152-3127 (phone: 405/525-3556; [communications@iogcc.ok.gov](mailto:communications@iogcc.ok.gov)).

In addition, the American Petroleum Institute (API) has published guidelines for the underground storage of liquid hydrocarbons. RP 1114, Design of Solution-Mined Underground Storage Facilities, June 1994, provides basic guidance on the design and development of new solution-mined underground storage facilities. All aspects of solution-mined storage are covered, including selecting an appropriate site, physically developing the cavern, and testing and commissioning the cavern. Also covered are plug and abandonment practices. RP 1115, Operation of Solution-Mined Underground Storage Facilities, September 1994, provides basic guidance on the operation of solution-mined underground hydrocarbon liquid or liquefied petroleum gas storage facilities. All aspects of solution-mined underground storage operation, including cavern hydraulics,

brine facilities, wellhead and hanging strings, and cavern testing are covered. Both documents are available from API, 1220 L Street NW., Washington DC 20005 (phone: 202/682-8000; e-mail: publications@api.org).

## **II. Advisory Bulletin (ADB-97-04)**

RSPA believes the IOGCC Guide and API documents are appropriate for use by pipeline operators and by state regulatory agencies concerned about the safety of those portions of underground salt cavern storage facilities not covered by RSPA pipeline safety regulations. Through prior direct communication, RSPA has urged state agencies to use these resources in their safety programs so as to make new RSPA regulations unnecessary. And at this time, we urge operators of underground storage facilities that serve interstate gas or hazardous liquid pipelines to comply not only with the IOGCC Guide and API documents but also with the appropriate state under-ground storage regulations to the extent feasible.

We also remind facility operators that current RSPA safety standards for gas and hazardous liquid pipelines require operators to take preventive actions that include system safety analyses and follow-up. In particular, under 49 CFR 192.605(c)(1)(v) and 195.402(d)(1)(v), operators must identify any foreseeable malfunction of a component that may result in a hazard to persons or property and take steps to reduce the risk. Also, under §§ 192.617 and 195.402(c) (5) and (6), operators must analyze failures to learn their causes and minimize the possibility of a recurrence. We believe these standards substantially satisfy the need that NTSB recognized for a comprehensive safety analysis as it relates to piping at underground storage facilities.