

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 9, 1982

Forwarded to:

Mr. Charles J. DiBona
President
American Petroleum Institute
2101 L Street N.W.
Washington, D.C. 20037

SAFETY RECOMMENDATION(S)

P-82-24 through -27

At 1:38 p.m., c.d.t., on September 27, 1981, near Ackerly, Texas, the Chaparral Pipeline, a refined petroleum products 12-inch steel pipeline owned by the Santa Fe Pipeline Company, was damaged by a rathole drill bit; the wall of the pipe was weakened, and it ruptured under the 1,100 psig operating pressure. The ethane-propane mixture in the pipeline began to escape and was ignited by the drilling rig engine. The ensuing explosion and fire killed three persons; critically burned one person, who died 4 days later; destroyed the rathole drilling rig, a pickup truck, a road grader, a compactor, and 60 acres of cotton; and burned 12,749 barrels (535,458 gallons) of ethane-propane mixture.^{1/}

After acquiring the lease, the Jet Oil Company sought a title opinion to assure that a clear title existed on the 480 acres of land which comprised the west half and the southwest quarter of Section 37, Township 3 North, Block 35, Texas & Pacific Railroad Survey. The title search disclosed that a right-of-way (ROW) had been granted to the Reef Corporation covering the entire section, but was never utilized. This row was utilized to construct a gathering line in the northeast of Section 37. However, the presence of the 12-inch Chaparral pipeline located in the southeast corner of the section, was not uncovered in the title search.

On August 24, 1981, a surveyor staked a location for a well, Jet Oil Company Hale "B" No. 1, to be drilled for Jet at a spot located 660 feet north and 660 feet west of the southeast corner of Section 37. Knee-high cotton covered most of Section 37 and the adjacent sections. The property owner and a friend were at the site at the time, but neither person mentioned the presence of a pipeline, and no request was made for such knowledge. The surveyor saw no evidence of a pipeline.

On August 26, the plat prepared by the surveyor and an application for a permit to drill the well were submitted to the Oil and Gas Division of the Texas Railroad Commission (TRRC). Aerial surveillance of the Chaparral pipeline was conducted on September 15 and 16 by Griffin Pipeline Patrol Company. At that time, there was no evidence of impending activity on the property.

^{1/} For more detailed information, read Pipeline Accident Report—"The Chaparral Pipeline, Explosion and Fire, Ackerly, Texas, September 27, 1981" (NTSB-PAR-82-2).

The drilling permit was issued on September 17, 1981. However, Jet decided to move the stake for the well closer to a newly completed producing well. Although the change in location was within the tolerance provided by TRRC Spacing Rule 37, Jet was required to submit a revised plat with an application for an amended drilling permit. The permit for the new location was issued on September 21, 1981.

Britt Trucking and Construction Company (Britt) moved onto location on September 21 and began preparation of the wellsite and the caliche access road. Two Britt supervisors, looked for evidence of a pipeline in the immediate vicinity but found none. Both were experienced in preparing wellsite locations and were former pipeliners. Britt's initial activity of clearing the location and leveling the drill site revealed no trace of a backfilled pipeline trench.

On Sunday morning, September 27, while Britt employees were completing work on the wellsite and access road, a truck-mounted rathole drilling rig was moved in on location by C.B. Harris Rathole Service (Harris) to drill the shallow surface hole, the mousehole, and the rathole for Jet's rotary drilling contractor. Harris' two-man crew completed drilling a surface hole and a mousehole, and then began drilling a 12 1/4-inch diameter rathole. At 1:38 p.m., c.d.t., the rathole drill-bit encountered a 12-inch steel pipeline which was at a depth of 43 inches and was operating at a pressure of 1,100 psig. The pipeline ruptured and escaping ethane-propane mixture was ignited by the rathole drilling rig's engine.

This is not an isolated incident; there have been other similar pipeline accidents involving drilling activities:

On September 4, 1981, a drilling rig, operated by a crew core-drilling for coal near Belle, West Virginia, punctured a 12-inch gas transmission line. The transmission line was operated by Columbia Gas Transmission Corporation, and at the time of the accident, was operating at a pressure of 600 psig. The rig operator was injured, the rig and a truck were destroyed, and an estimated volume of 3,433,000 cubic feet of gas was lost.

On October 2, 1981, a rathole rig drilling near Andrews, Texas, ruptured a crude oil gathering line. Sour crude oil escaped from the line. No one was injured.

On May 27, 1980, near Cartwright, Louisiana, an anhydrous ammonia pipeline operated by Santa Fe's Gulf Central Pipeline Company, was struck by a bulldozer which was being used to prepare a wellsite, and the pipeline ruptured. Over 100 people were evacuated from the area. 2/

Over 500 rotary drilling rigs are currently operating in the Permian Basin of West Texas and New Mexico, where 12 percent of the drilling activity in the United States takes place. A majority of the drilling is for development wells that are located in areas densely underlain by pipelines, many of which are unmarked. The surveyor, who staked the jet well location, stated that he had staked and moved another location for the third time because of pipeline conflicts. The pipeline surveillance reports for the Chaparral right-of-way were also indicative of the extent of drilling activity. The preaccident patrol report noted, "MP 171 Drilling rig with slush pits 50 yards south of ROW," and the postaccident patrol report stated: "MP 4 1/2 Drill pads on north edge of ROW."

2/ "Pipeline Accident Report--Summary Format, Issue Number 1--1982" (NTSB-PAR-82-1).

The Texas Railroad Commission's Oil and Gas Division requires that an application for a permit to drill a well shall be made under the provisions of its Rule 37, or an exception thereto, and that the permit application be accompanied by a plat, or a sketch, drawn to scale showing the property, the well location, and the location of any existing wells. There are no requirements that the survey plat show the location of any hazard within a prescribed distance of the drilling. However, the survey plat is prepared by the surveyor, who is usually a person well qualified to determine the location of pipelines and who stakes the well location before any excavation or drilling activity on the property.

The Safety Board is concerned about damage to pipelines caused by drilling activities and the use of outside excavation equipment since the location of a pipeline can be ascertained in several ways: on a title as a rights-of-way encumbrance; on various maps used by the petroleum industry; from the property owner or others; as a trace on the ground; by use of a pipe locator or metal detector; by the pipeline company in response to notification through use of a one-call system where one exists; or by markings at its intersections with roads, in accordance with the requirements of 49 CFR 195.410.

The effectiveness of the "one-call" notification system has been proven; however, no statewide, "one-call" system exists in Texas. Current efforts by the pipeline industry to formulate and implement a "one-call" system in the State of Texas merit the support of the entire petroleum industry.

Comprehensive procedures for the selection of drilling sites and their preparation are contained in the American Petroleum Institute's Recommended Practice No. 52: "Recommended Land Drilling Operating Practices for Protection of the Environment," and Recommended Practice No. 54: "Recommended Practices for Operational Safety and Health for Oil and Gas Well Drilling and Servicing Operation." If these recommended practices were amended to include considerations for determining the location of pipelines in conflict with well locations, it would serve to alert operators and provide guidance for detecting the presence of pipelines before commencing any excavation or drilling activities. Similarly, if API's model form drilling contracts were also amended to include identification of pipelines in conflict with well locations, it would provide an additional means of alerting operators to this potential hazard.

As a result of this investigation, the National Transportation Safety Board recommends that the American Petroleum Institute:


Advise member exploration and production companies of the circumstances of this accident and urge them to adopt procedures for determining the location of any pipelines which may be in conflict with their drilling activities. (Class II, Priority Action) (P-82-24)

Urge member companies to participate in the current effort to establish a "one-call" notification system in the State of Texas. (Class II, Priority Action) (P-82-25)

Amend the model form drilling contract and ancillary documents to require that the location of any pipeline which potentially may be in conflict with the drilling location and access roads be identified. (Class II, Priority Action) (P-82-26)

Amend Recommended Practices No. 52, "Recommended Land Drilling Operating Practices for Protection of the Environment" and No. 54, "Recommended Practices for Occupational Safety and Health for Oil and Gas Well Drilling and Service Operations" to include consideration for the location of pipelines in staking a drilling site. (Class II, Priority Action) (P-82-27)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS and BURSLEY, Members, concurred in these recommendations.


By: Jim Burnett
Chairman