

Log P-255

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 18, 1984

Forwarded to:

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Executive Director
Transportation Research Board
of the National Academy of Sciences
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SAFETY RECOMMENDATION(S)
P-84-30

About 7:25 p.m., c.s.t., on March 15, 1983, an 8-inch-diameter liquefied petroleum gas (LPG) pipeline operated by the Mid-America Pipeline System (MAPCO) was damaged by a rotating power auger being used to drill holes in rocky terrain to plant trees on Lot 8, Section 5, Block 43 of the Chaparral Estates housing development near West Odessa, Texas. The damaged pipeline ruptured and within 3 minutes, LPG, which was being transported at 1,075 psig, escaped, vaporized, and was ignited by an undetermined source. In the resultant fire, five persons were killed and five persons were seriously injured—one person died 5 days later. Two mobile homes, a small frame house, an auger truck, two cars, and a pickup truck were destroyed; 9,375 barrels of LPG were burned.

When the pipeline was installed in 1960, the area west of Odessa was undeveloped and uncultivated land. The Grant of Easement entered into in 1960 between MAPCO and the former owner of the land now known as Chaparral Estates provided permanent rights for MAPCO to clear and keep clear an area along the route of the pipeline which extended 25 feet on each side of the center of the pipeline. The easement was recorded in Vol. 369, page 1 of the deed records of Ector County. Additionally, the easement precluded the grantor of the easement from building or allowing others to build upon the easement in any way "that will interfere with the normal operation and maintenance" of the pipeline. With the growth of Odessa after 1960, surrounding acreage has been developed into unincorporated residential communities, many of which have been built over existing oil gathering, natural gas transmission, and liquefied petroleum pipelines.

In the late 1970's and early 1980's, the area known as Chaparral Estates was subdivided into residential lots. Many conventional and mobile homes have been placed on the lots. Block 43 of Section 5, the portion of Chaparral Estates in which the rupture occurred, was subdivided in 1981, and 11 of the residential lots overlay MAPCO's LPG pipeline easement. The two mobile homes destroyed in the fire were located on 2 of these 11 lots, and the mobile home on Lot 8 encroached 15 feet into MAPCO's easement and

1/ For more detailed information read Pipeline Accident Report—"Mid-America Pipeline System Liquefied Petroleum Gas Pipeline Rupture, West Odessa, Texas, March 15, 1983" (NTSB/PAR-84/01).

was within 10 feet of the pipeline. Since the development of Block 43 of Chaparral Estates, roads have been graded over the pipeline, and numerous excavations have been made adjacent to the pipeline for installing buried telephone cables, septic tanks, and poles for electric power lines.

Chaparral Estates, like many other land subdivisions, was planned without consideration of the hazards that might be posed to future residents by damage to pipelines transporting hazardous materials. Moreover, Ector County officials approved the plans for Chaparral Estates without consideration of the effect of the development upon the safety of MAPCO's pipeline and also without consideration of the possible hazard to future residents posed by the pipeline. Because neither the developer nor land planning officials recognized the location of the pipeline within the planned subdivision as a potential threat to the safety of future residents, 11 lots in Block 43 were allowed to be developed over the land occupied by MAPCO's pipeline easement. Dwellings could not be erected or placed on some of these lots without siting the dwelling over the pipeline. MAPCO's first knowledge of the development was provided by its aerial surveys when construction activity was noted.

The Safety Board recognizes that high-pressure pipelines underlie many residential lots throughout the nation and that houses have been built over them. These potentially adverse conditions will be difficult to abate easily or economically; however, there is no justification for local land use and planning agencies or land developers to continue to add to the problem. Local governments should establish land development standards which will preclude subdividers from creating lots over pipelines or lots in which construction cannot be undertaken without encroaching on pipeline easements. Such standards might even be tailored to force land developers to subdivide lands so that the high-pressure pipelines lie within an area to be used as streets or clear areas within the community. If these alternatives are not possible, the developer should be required to arrange with the owner of a pipeline for its relocation away from the residential development or to provide a necessary margin of safety by other means.

This accident raises several public safety issues related to the potential hazards posed by pipelines. First, how can a reasonable degree of public awareness of the presence of buried pipelines be maintained? Most pipelines are buried and their presence is virtually unknown except for markers placed along the route by operators of the pipelines; these markers are subject to damage, loss, and wear. Thus, pipelines are subject to less scrutiny and probably the exercise of fewer precautions by the general public than are other means of transporting hazardous materials. The Safety Board is aware that many pipeline companies erect more than the required number of markers along the routes of their pipelines. Moreover, many conduct programs to inform the public along the routes of pipelines about their location, how to recognize hazardous situations, what to do in emergencies, etc. While such actions are commendable, they most often benefit those already occupying land adjacent to these pipelines. They are much less capable of informing new or prospective purchasers of such land.

The second issue relates to the public safety responsibility of land developers with respect to the development of land adjacent to pipelines that transport hazardous commodities. Pipeline easements are recorded on documents filed in county courthouses throughout each State. MAPCO had recorded its easement across the land subsequently developed as Chaparral Estates. Therefore, the developer of Chaparral Estates was alerted to the easement and its conditions before developing the land MAPCO's pipeline crossed; but he demonstrated no overt consideration for the safety of prospective purchasers of the land adjacent to the pipeline in the development of the land into residential lots. The approximate location of the pipeline was represented on the

subdivision plat by a single, inconspicuous line without further reference to the easement, the depth of the pipeline, the product transported, the terms of the easement, or the potential hazards presented to persons who resided adjacent to the pipeline.

The third issue concerns the responsibility of local government land use and planning officials for the safety of the public who may reside adjacent to pipelines that transport hazardous commodities. When the proposed subdivision of the land crossed by MAPCO's pipeline was presented to the Ector County officials for approval, specific information pertinent to the potential hazards presented by the proximity of the pipeline to prospective residents of the subdivision were not made known by the developer—nor was he required to provide it. As examples, the county officials were not provided with information about the depth of the pipeline, the design of the pipeline or its current physical condition, inspection and maintenance practices of the pipeline owner for maintaining the safety of the pipeline, anticipated excavation or other construction activities which might endanger the pipeline, the means to be used for notifying prospective purchasers about the pipeline, products carried by the pipeline, life expectancy of the pipeline, or the effect of the easement upon the use of the land by prospective purchasers. Had such information been made available to Ector County officials, the need for specific action by the developer for the protection of future residents of the subdivision might have been identified.

The last issue concerns the responsibility of real estate agents, title researchers, loan agencies, and land sellers to pursue information about the existence of pipelines that may pose threats to prospective purchasers of property and to provide that information to prospective purchasers. The MAPCO easement and its restrictions were recorded as a public document as were the transactions related to development of Chaparral Estates. Neither filing in the public records described the specific product transported by the pipeline and the potential hazards presented by the pressurized LPG. While the public records are open for inspection and study, practically speaking the records normally are not consulted by or useful to individual members of the public prior to purchase to inform them about restrictions and hazards imposed upon residential lots. Unless the owner of a property or a real estate agent provides information about the existence of easements, restrictions, proximity to hazardous facilities, etc., before purchase, a buyer would likely first learn of such negative aspects only after receiving a report of a title search where used. Such an event normally occurs soon after negotiations for purchase of residential property have been completed. While this post-purchase notification generally is too late for a prospective purchaser to alter the course of events, it at least provides positive notification. The contract-for-deed method of purchase used for the property involved in this accident did not incorporate any written notification to the purchasers about the existence of the LPG pipeline.

The Safety Board recognizes that in developing answers to the above questions many existing public policy positions will have to be reconciled. The Board also recognizes the fact that determining what future actions should be taken for improving public safety as it relates to the proximity of people to pipelines may require development of new public policy. Among the many interrelated points which must be addressed in resolving the public safety problem are: the institution of restrictions on the use of land adjacent to pipelines; responsibility for informing prospective purchasers about the existence of and potential hazards of nearby pipelines; the role of Federal, State, and local governments concerning land planning for land adjacent to pipelines; and the types of information which should be communicated to prospective purchasers about adjacent pipelines.

Crafting a future public policy for guiding the development of land adjacent to pipelines will require extensive research and the incorporation of views from the general public, pipeline companies, land developers, real estate organizations, financial institutions, representatives of local, State, and Federal government agencies, and other interests. Two organizations which can be instrumental in advancing the necessary studies are the National Academy of Science's Transportation Research Board (TRB) and the American Public Works Association (APWA). Both agencies have shown previously their ability to bring together diverse interest groups in order to formulate practical public safety policy. Research and development activities of the TRB and implementing activity by the APWA could result in the early achievement of improved safety for persons residing on lands adjacent to pipelines that transport hazardous commodities.

In fact, the APWA through its Utility Location and Coordination Council (ULCC) has scheduled a separate session on land use planning for its 1984 International Public Works Congress in Philadelphia, Pennsylvania, in September. This session will cover the safety problems of developing property that is located adjacent to and above pipelines that transport hazardous commodities. It is expected to include presentations and discussion by representatives of the pipeline industry, land use planning agencies, land developers, and State pipeline safety regulatory agencies.

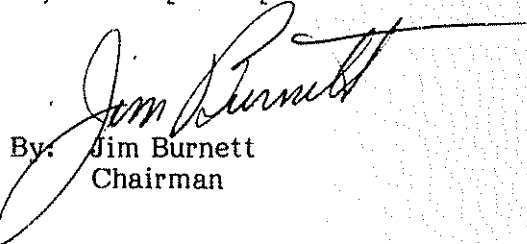
The issues involved lie beyond the special expertise of the Safety Board and accordingly no express recommendations are being made regarding the direction which the long-term solution of the safety problem should take. The Board believes, however, that a wide-ranging examination of the problem by a broad spectrum of the affected interests is a matter of high urgency.

Therefore, the National Transportation Safety Board recommends that the Transportation Research Board of the National Academy of Sciences:

Assess the adequacy of existing public policy for surface and subsurface use of land adjacent to pipelines that transport hazardous commodities to provide reasonable public safety. Based on the findings of the assessment, develop a recommended policy to correct identified deficiencies in current policy. (Class II, Priority Action) (P-84-30)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "...to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (P.L. 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter.

BURNETT, Chairman, and BURSLEY and GROSE, Members, concurred in this recommendation. GOLDMAN, Vice Chairman, did not participate.


By: Jim Burnett
Chairman