[Federal Register Volume 59, Number 212 (Thursday, November 3, 1994)]
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From the Federal Register Online via the Government Publishing Office [www.gpo.gov]
[FR Doc No: 94-27227]

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DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

Pipeline Safety Advisory Bulletin ADB-94-05; Pipelines Affected by Flooding

AGENCY: Research and Special Programs Administration (RSPA), DOT.

ACTION: Advisory to each owner or operator of a hazardous liquid or natural gas transmission pipeline operating in areas that may be subject to severe flooding.

SUMMARY: This advisory is for all operators of pipelines which may be affected by flooding. It provides observations from RSPA, Texas Railroad Commission (TRC), and other federal and state agencies as a result of the recent floods near Houston. This advisory also includes actions that operators should consider taking to assure the integrity of pipelines in case of flooding.

Background

As the result of unprecedented flooding of rivers and streams in the Houston area, seven natural gas and hazardous liquid pipelines failed in or near the San Jacinto River over the three day period October 19-21, 1994. These failures included: an Exxon 8-inch diameter LPG line; an Exxon 8-inch diameter fuel line; an Exxon 20-inch diameter hazardous liquid line; a Colonial 40-inch diameter products (gasoline) line; a Colonial 36-inch diameter products (heating oil) line; a Texaco 20-inch diameter crude oil line; and a Valero 12-inch diameter natural gas line. While no determination of cause of failure has been made for any of these lines, RSPA and the TRC believe that the extreme flooding by the San Jacinto River was probably a substantial contributing factor in each of the failures.

The damage to pipelines caused by the flood may have resulted either from the extreme force of the flowing water, as the San Jacinto carved new temporary channels, or from pipelines being struck by heavy debris that was reported as having flowed down river at the height of the flooding. Because RSPA and the TRC cannot at this time determine the exact effects of the flooding, operators should consider the potential effects of flooding as posing a possible threat to the integrity of their lines.

Advisory

As the result of seven natural gas and hazardous liquid pipeline flood-related failures in or near the San Jacinto River in Texas on October 19-21, 1994, operators should consider the actions recommended in this Advisory Bulletin for application to pipelines located in any area of the United States subject to widespread flooding. RSPA pipeline safety regulations in 49 CFR 192.613 for natural gas pipelines, and 49 CFR 195.401 for hazardous liquid pipelines, require an operator to maintain continuing surveillance of its facilities and to correct damage to its pipeline that could affect the safe operation of the pipeline (such as damage that may result from extreme flood conditions). If the operator of a natural gas pipeline determines that the pipeline is in unsatisfactory condition and no immediate hazard exists, the operator must recondition or phase out the segment involved, or reduce the maximum allowable operating pressure. For hazardous liquid pipelines, if the condition presents an immediate hazard to persons or property, the operator may not operate the affected part of the system until the unsafe condition is corrected. In summary, if the operator has reason to believe that flooding has adversely affected, or will adversely affect, its pipeline, the operator must take corrective or preventative action.

In addition, operators must consider the application of RSPA's reporting requirements in 49 CFR Part 191, and subpart B of 49 CFR Part 195, as well as applicable state requirements, that require operators to submit telephonic and written reports when natural gas or hazardous liquids are released causing damages meeting the reporting thresholds. Finally, RSPA regulations also require operators to submit reports of safety-related conditions involving potentially unsafe conditions on natural gas and hazardous liquid pipelines (49 CFR 191.23 and 191.25, and 49 CFR 195.55 and 195.56). Operators need to direct their resources in a manner that will enable them to determine the potential effects of the flooding on their systems, and take the following actions as appropriate:

1. Deploy personnel so that they will be in position to take emergency actions, such as shut down, isolation, or containment.
2. Extend regulator vents and relief stacks above the level of anticipated flooding, as appropriate.
3. Evaluate the accessibility of pipeline facilities that may be in jeopardy, such as valve settings, needed to isolate water crossings or other sections of a pipeline.
4. Perform frequent patrols, including overflights as appropriate, to evaluate right-of-way conditions at water crossings during flooding and after waters subside. Determine if flooding has exposed or undermined pipelines as a result of new river channels cut by the flooding or by erosion or scouring.
5. Coordinate with emergency and spill responders on pipeline location and condition, and provide maps and other relevant information to them.
6. Coordinate with other pipeline operators in the flood area and establish emergency response centers to act as liaison for pipeline problems and solutions.

7. Determine if facilities which are normally above ground (e.g., valves, regulators, relief sets, etc.) have become submerged and are in danger of being struck by vessels or debris; if possible, such facilities may be marked with an appropriate buoy with Coast Guard approval.
8. Perform surveys to determine the depth of cover over pipelines and the condition of any exposed pipelines, such as those crossing scour holes. Where appropriate, surveys of underwater pipe should include the use of visual inspection by divers or instrumented detection. Information gathered by these surveys should be shared with landowners.
9. Agricultural agencies may help to inform farmers of the potential hazard from reduced cover over pipelines.
10. Assure that line markers are still in place or are replaced in a timely manner, and notify contractors, highway departments, and others involved in post-flood restoration activities of the presence of pipelines and the risks posed by reduced cover.
11. If a pipeline operator has suffered damage to its line, or has shut in the line, or has operated at a reduced pressure as a precautionary measure during the flood, the operator should advise the State Pipeline Safety Office (for intrastate lines), or RSPA's Regional Pipeline Safety Office (interstate lines) prior to returning the line to service, on increasing the operating pressure, or otherwise changing the operating status of the line. The State Safety Division or the RSPA Regional Pipeline Safety Office, as appropriate, will advise on a case-by-case basis whether, and under what conditions, a line can safely be returned to full service.

Issued in Washington, D.C. on October 28, 1994.

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Associate Administrator for Pipeline Safety.

[FR Doc. 94-27227; Filed 11-2-94; 8:45 am]

BILLING CODE 4910-60-P