

NATIONAL TRANSPORTATION SAFETY BOARD
Public Meeting of October 8, 2002
(Information subject to editing)
Report of Pipeline Accident
Pipeline Rupture and Release of Gasoline, Olympic Pipeline Company
Bellingham, Washington
June 10, 1999
NTSB/PAR/02-02

This is a synopsis from the Safety Board's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. Safety Board staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing.

EXECUTIVE SUMMARY

About 3:28 p.m., Pacific daylight time, on June 10, 1999, a 16-inch-diameter steel pipeline owned by Olympic Pipe Line Company ruptured and released about 237,000 gallons of gasoline into a creek that flowed through Whatcom Falls Park in Bellingham, Washington. About 1 1/2 hours after the rupture, the gasoline ignited and burned approximately 1 1/2 miles along the creek. Two 10-year-old boys and an 18-year-old young man died as a result of the accident. Eight additional injuries were documented. A single-family residence and the city of Bellingham's water treatment plant were severely damaged. As of January 2002, Olympic estimated that total property damages were at least \$45 million.

The major safety issues identified during this investigation are as follows:

- Excavations performed by IMCO General Construction, Inc., in the vicinity of Olympic's pipeline during a major construction project and the adequacy of Olympic Pipe Line Company's inspections thereof;
- The adequacy of Olympic Pipe Line Company's interpretation of the results of in-line inspections of its pipeline and its evaluation of all pipeline data available to it to effectively manage system integrity;
- The adequacy of Olympic Pipe Line Company's management of the construction and commissioning of the Bayview products terminal;
- The performance and security of Olympic Pipe Line Company's supervisory control and data acquisition system; and
- The adequacy of Federal regulations regarding the testing of relief valves used in the protection of pipeline systems.

As a result of this investigation, the National Transportation Safety Board adopted safety recommendations to the Research and Special Programs Administration.

CONCLUSIONS

1. Had the accident pipeline not been weakened by external damage, it likely would have been able to withstand the pressure that occurred on the day of the rupture, and the accident would not have happened.
2. The damage to the Olympic pipeline that led to its failure on June 10, 1999, occurred

during IMCO General Construction, Inc., excavations associated with the Dakin-Yew water treatment plant modification project.

3. Olympic inadequately inspected excavation work performed by IMCO General Construction, Inc., during the water treatment plant project and consequently failed to identify and repair the damage done to the pipeline.
4. The in-line pipeline inspection data provided to Olympic, along with the excavation activity Olympic knew occurred in 1993 and 1994, were sufficient to justify the excavation and examination of the pipeline in the area of reported anomalies, but the company did not perform the work and thus did not identify the true extent of the damage.
5. If the supervisory control and data acquisition (SCADA) system computers had remained responsive to the commands of the Olympic controllers, the controller operating the accident pipeline probably would have been able to initiate actions that would have prevented the pressure increase that ruptured the pipeline.
6. The degraded SCADA performance experienced by the pipeline controllers on the day of the accident likely resulted from the database development work that was done on the SCADA system.
7. Had the SCADA database revisions that were performed shortly before the accident been performed and thoroughly tested on an off-line system instead of the primary on-line SCADA system, errors resulting from those revisions may have been identified and repaired before they could affect the operation of the pipeline.
8. Olympic did not adequately manage the development, implementation, and protection of its SCADA system.
9. Had Olympic investigated the failure of relief valve RV-1919 to operate consistently and prevent closure of the inlet block valve, it would have discovered that the valve was improperly configured, and it could have taken steps to correct the condition that may have prevented the pressure surge that ruptured the pipeline.
10. Olympic did not exercise effective management oversight of the construction and activation of the Bayview products terminal.
11. The Federal regulations establishing performance standards for the testing of relief valves and other safety devices installed on hazardous liquid pipelines provide insufficient guidance to ensure that test protocols and procedures will effectively indicate malfunctions of the relief valves and/or their pilot controls.
12. The emergency and environmental response to the release was effective and well managed.

PROBABLE CAUSE

The Safety Board determines that the probable cause of the June 10, 1999, rupture of the Olympic pipeline in Bellingham, Washington, was (1) damage done to the pipe by IMCO General Construction, Inc., during the 1994 Dakin-Yew water treatment plant modification project and Olympic Pipe Line Company's inadequate inspection of IMCO's work during the project; (2) Olympic Pipe Line Company's inaccurate evaluation of in-line pipeline inspection

results, which led to the company's decision not to excavate and examine the damaged section of pipe; (3) Olympic Pipe Line Company's failure to test, under approximate operating conditions, all safety devices associated with the Bayview products facility before activating the facility; (4) Olympic Pipe Line Company's failure to investigate and correct the conditions leading to the repeated unintended closing of the Bayview inlet block valve; and (5) Olympic Pipe Line Company's practice of performing database development work on the supervisory control and data acquisition system while the system was being used to operate the pipeline, which led to the system's becoming non-responsive at a critical time during pipeline operations.

SAFETY RECOMMENDATIONS

As a result of its investigation of the June 10, 1999, rupture of an Olympic Pipe Line Company pipeline in Bellingham, Washington, the National Transportation Safety Board makes the following safety recommendations:

To the Research and Special Programs Administration:

1. Issue an advisory bulletin to all pipeline operators who use supervisory control and data acquisition (SCADA) systems advising them to implement an off-line workstation that can be used to modify their SCADA system database or to perform developmental and testing work independent of their on-line systems. Advise operators to use the off-line system before any modifications are implemented to ensure that those modifications are error-free and that they create no ancillary problems for controllers responsible for operating the pipeline.
2. Develop and issue guidance to pipeline operators on specific testing procedures that can (1) be used to approximate actual operations during the commissioning of a new pumping station or the installation of a new relief valve, and (2) be used to determine, during annual tests, whether a relief valve is functioning properly