The Hazards of On-line Maintenance:
A Case Study of a Multiple Fatality Incident at the Tosco Avon Refinery, Martinez, California

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ABSTRACT

On February 23, 1999, a fire occurred at the Tosco Avon Refinery in Martinez, California. Workers were attempting to replace piping attached to a 150-foot tall tower while the process unit was in operation. The piping, which had developed a pinhole leak, contained flammable naphtha liquid that was not successfully drained, purged and isolated during the thirteen-day period before the removal work began. Piping was still connected to the system and under process pressure because a closed valve was leaking through significantly. During the removal of the piping, naphtha was released onto the hot fractionator tower where it ignited. The flames engulfed five workers located at different heights on the tower. Four were killed and one sustained serious injuries. The U.S. Chemical Safety and Hazard Investigation Board initiated an incident investigation.

The CSB is examining the following safety issues in the Tosco case:
1. The shutdown of process equipment to safely conduct repairs
2. Management oversight of process operations and maintenance activities
3. Maintenance and operating procedures, including process equipment isolation, drainage and opening
4. Corrosion control and monitoring program
5. Safety personnel mission and deployment

This paper presents a summary of the results of the investigation to date, including a review of the incident, causes identified by the CSB and recommendations to prevent future similar incidents.