REPORT: FE-01-97

RAILROAD: Soo Line Railroad (SOO)

LOCATION: Milwaukee, Wisconsin

DATE, TIME: Jan. 8, 1997, 11:25 a.m., CST

PROBABLE CAUSE: Vapors from an oxygen/acetylene gas tank set in an enclosed area were ignited by flying sparks from a rail saw which caused an explosion within the compartment. This resulted in debris striking the nearby employee.

FATALLY INJURED EMPLOYEE:

Craft..... Maintenance of Way

Activity..... Repair of track damaged by derailment

Occupation..... Assistant Foreman

Age..... 52 years

Length of Service..... 32 years

Last Rules Training..... March 28, 1996

Last Safety Training..... March 28, 1996

Last Physical Examination.... Oct. 20, 1995

Circumstances Prior to the Accident

On Jan. 8, 1997 at 7:00 a.m., the Glendale Yard Section Gang (Gang A), comprising a Foreman, an Assistant Foreman, and a Laborer, reported for duty at Glendale Yard, Milwaukee, Wisconsin. The assignment for the day was to repair Yard Track No. 2, which had been damaged by a derailment that occurred on Jan. 6, 1997.

Gang A secured the tracks that they would occupy and set the F-800 hi-rail truck on the north yard lead heading north. Gang A backed down Track No. 3 and began work on Track No. 2. They removed 600 feet of rail that had been dislodged during the derailment. The east rail of this section of Track No. 2 was removed and laid in the middle of Track No. 2. As Gang A completed this task, Gang B, consisting of a Foreman and three Trackmen, arrived at the south end of the yard. The Gang B truck was on Track No. 3. After the two Foremen discussed the

job, Gang B began pulling spikes and cleaning the plates to relay the rail. Gang A began doing

the same after the rail was removed.

The Gang A Crew worked south with their hydraulic spike puller toward Gang B. The plate cleaning was completed about 10:45 a.m. The two gangs then laid about six rail lengths of rail into the plates starting from the south end of the damaged track. The Assistant Foreman of Gang A used the cutting torch to cut track bolts from two rail joints and let a Gang A Laborer cut one of the bolts. The Laborer asked to cut some bolts for the experience. The Gang B Foreman took the torch and was cutting bent bolts out of the west rail. He then gave the Laborer a chance to cut some additional bolts.

The Laborer cut one bolt before the torch flame was extinguished. The Laborer tried unsuccessfully to reignite the torch and, after two attempts, was told by the Gang B Foreman to put the torch away.

The Laborer said he thought he heard the Gang A Assistant Foreman say "The tanks are off." The Laborer asked the Gang B Foreman to check the torch to assure that the torch valves were properly turned off, which the Gang B Foreman did. The Laborer said he did not check the tanks to see if they had been shut off. The Laborer did say he purged the gas lines. The Laborer put the torch and hoses away and shut the oxygen/acetylene compartment (gas compartment) door. The truck was moved about 100 feet north to a rail joint from which bars had been cut.

The Gang A Assistant Foreman was going to saw off about three inches of rail to eliminate a broken rail end. The Gang B Foreman told the Assistant Foreman he would saw this rail end, as the Assistant Foreman had sawed the previous ones. The saw, hydraulic-powered from the F-800 truck, was operated from the same side of the truck as the gas compartment. The hydraulic hose reel was in a rear compartment on the left side of the truck. The rail was being cut ten feet away from the gas compartment.

The temperature was 25º F, and the weather was clear with a light breeze from the southwest.

The Accident

The Gang B Foreman ran the saw, and the Laborer from Gang A assisted him in setting up the saw. This Laborer was about two to three feet south of the Gang A Assistant Foreman. The Gang A Assistant Foreman was standing between Tracks Nos. 2 and 3 in front of the gas compartment with his back to the truck. Shortly after the saw started cutting rail, the gas compartment exploded. The top of the gas compartment blew off, and the door blew out, striking the Assistant Foreman. The Gang A Assistant Foreman was thrown up in the air about six to nine feet. He landed on his chest and face on the frozen ground between Tracks Nos. 1 and 2.

Immediately after the explosion, two Laborers aided the Gang A Assistant Foreman and said he was breathing and had a pulse. They covered him with their coats. At the same time, the Gang

B Foreman ran to call for help, and the Gang A Foreman turned off the section truck. The Gang A Foreman saw a small fire burning the mat on the floor of the exploded gas compartment, and he put the fire out with an extinguisher.

Please see the attached diagram of the Glendale Yard to better visualize the accident scene and chain of events leading up to the fatality.

Post-Accident Investigation

An examination of the gas compartment showed little carbon on the walls of the cabinet. The acetylene tank was turned off, but the oxygen tank shut-off valve was a half turn open. Oxygen may have accumulated in the bottom of the gas compartment and mixed with a small amount of acetylene. The saw produced sparks that were thrown toward the truck. The gas compartment doors were closed, but a 2-inch drain hole in the bottom of the gas compartment may not have had a plastic plug in place. The location of the small fire in the bottom of the gas compartment was near the drain hole. A spark from the saw could have caused a mixture of oxygen and acetylene vapors in the gas compartment, exiting through the drain hole, to explode.

The gas compartment lacked a poster on Oxyacetylene Operation Safety, and neither torch hose was equipped with back flow valves.

The U. S. Department of Labor and the Occupational Safety and Health Administration (OSHA) conducted a concurrent investigation. OSHA issued a citation for non-compliance with the following:

> 29 CFR Part 1910.252 (a)(2)(xiii)(C): The employer did not recognize its responsibility for the safe usage of cutting or welding equipment, and did not insist that cutters or welders and their Supervisors were adequately trained in the safe operation of their equipment and the safe use of the process:
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> (a) The employer did not assure that his Supervisors and Railroad Crew (employees) were properly trained in the safe operation and/or usage of oxygen/acetylene equipment for cutting in areas where a potential source of ignition was present.

FE-01-97

GLENDALE YARD (B-YARD)
MILWAUKEE, WISCONSIN
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