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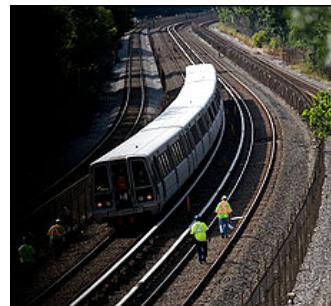
## Metro Discovers Problems in Additional Track Circuits

By Lena H. Sun and Lyndsey Layton  
Washington Post Staff Writers  
Wednesday, July 22, 2009

The train control system designed to prevent Metro crashes is malfunctioning across the railroad, suggesting that a technological failure at the heart of last month's fatal crash might be widespread, according to officials and documents.

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Tests are run to learn when the train operator in the crash would've seen the one in front of hers. Rail chief Dave Kubicek says none of the circuit issues found are anything close to the magnitude of the one at the crash site. (Marcus Yam - The Washington Post)

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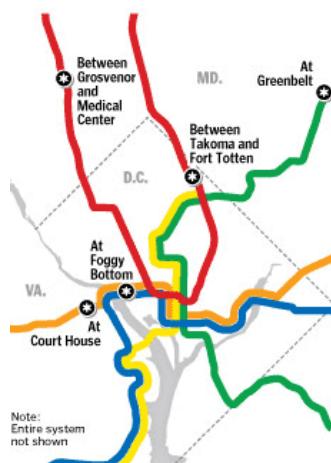
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At least a half-dozen track circuits on four of the transit system's five lines have failed to properly detect the presence of trains in recent weeks, records show. The safe operation of a transit system requires that the location of trains be known at all times.

In addition to the continuing failure of a track circuit at the accident site between the Takoma and Fort Totten stations, the agency found "anomalies" in six other track circuits, Metro rail chief Dave Kubicek said. In some instances, workers troubleshooting the problematic circuits have taken the unusual step of turning off those which could not be immediately fixed. Officials are closely monitoring circuits between Grosvenor and Medical Center on the Red Line and at Foggy Bottom on the Orange/Blue Line, Greenbelt on the Green Line and Court House on the Orange Line. The Greenbelt circuit was put back into service early Tuesday and the circuit at Court House was disabled Monday, officials said.

Kubicek said Metro officials do not know what is causing the problems. He also said that none of the problems are anything close to the magnitude of the track circuit problem at the crash site. Some malfunctions might be related to track maintenance, he said. In a statement Tuesday night after The Washington Post article appeared online, Metro said that "the rail system is safe" and that it is a "gross exaggeration" to suggest that the problem is



SOURCE: | The Washington Post - July 22, 2009

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widespread.

When crews disable track circuits, they create "dark" stretches. That means trains have to proceed one at a time through the affected section of track at a maximum speed of 15 mph, which is creating delays. It also means that controllers in Metro's downtown operations center can't "see" the train as it moves through the affected area and that the safe operation of the train is entirely in the hands of the operator.

Track circuits range in length from 400 to 500 feet up to about 1,000 feet, with shorter circuits closer to the stations.

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A disabled track circuit would also not be able to detect a broken or cracked rail, which can cause a train to derail.

Some of the circuits were shut down last week after the agency intensified reviews of recorded track circuit data, conducting them after each rush period. It is unclear how long they will be disabled, Kubicek said.

In addition, The Post obtained internal agency documents that show at least six other problematic track circuits, including

ones near stations at Clarendon, Farragut North, Metro Center and the Green Line platform at Fort Totten, which was not involved in the crash. Kubicek said that it was possible that the additional problems were found as part of regularly scheduled maintenance and that he would look into them.

The documents show that Metro technicians have detected malfunctions since at least July 11. Metro General Manager John B. Catoe Jr. said publicly as recently as Thursday that the agency physically inspected all 3,000 circuits and did not note any problems.

Since last month's accident, the agency has switched from running a computerized report monthly to twice a day to check track circuitry. "Any little thing that we see, we follow up -- immediately," Metro's statement said. The computerized report is "an added layer of inspection" beyond the physical inspection done earlier.

The Metro system relies on track circuits to maintain a safe distance between trains. The circuit system detects the presence of trains using audio frequencies transmitted between the train and the steel rails and automatically transmits signals to the next train down the line. If the following train gets too close, the system sends a "zero" speed signal that forces it to stop.

Bill Petit, an independent consultant in automatic train control, said Metro's actions were highly unusual. "Turning off the track circuits means you have to run the trains through under [absolute block] every time -- I've never heard of anything like that," Petit said. "It would slow things down substantially."

On Monday, for example, a Red Line train heading toward Shady Grove just before 7 p.m. had to stop repeatedly between Woodley Park and Medical Center because of the disabled track circuit at Grosvenor. The dark stretch creates delays down the line.

Kubicek said the additional tests began early last week to look for instances in which track circuits fail to detect the presence of a train for longer than one second. He said the agency was exercising extra caution.

Other than the track circuit at the crash site, where a key piece of equipment was replaced five days before the accident, officials have not done the deeper record review to determine whether circuits were malfunctioning before the June 22 crash. "This system has never been scrutinized at this level," Kubicek said. Metro officials have informed investigators from the National Transportation Safety Board, he added. In some cases, federal investigators have accompanied Metro crews to inspect the malfunctioning track circuits.

Federal investigators have not pinpointed the cause of the crash, which killed nine and injured 80 when one train rammed into another between the Takoma and Fort Totten

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stations. The NTSB has said it appears that the train control system did not detect the stopped train and that the following train did not receive a command to slow or stop. On July 13, the NTSB said Metro's train protection system is inadequate and urged the transit agency to add a real-time backup.



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