



Technology News



From the Bureau of Mines, United States Department of the Interior

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Anticollision Systems for Large Mine-Haulage Trucks

Objective

Prevent collisions between large mine-haulage trucks and smaller vehicles parked in areas not visible to the haulage-truck operator.

Approach

Two electronic systems were developed to detect the presence of vehicles in the blind areas of a parked haulage truck. The systems can warn haulage-truck operators of presence of vehicles that are blocked from view. The systems do not apply for trucks in travel.

How It Works

The systems use electronic transmitting techniques—one system is based on low-frequency radio waves and the other on very-high-frequency radio waves. Each system requires that a signal transmitter be mounted on the smaller vehicle to be detected. Continuous signals from this transmitter are sensed by receiving antennas mounted on the right front and rear of the large haulage truck. Upon receiving a signal, the receiver energizes warning lights and a buzzer in the cab of the haulage truck, alerting the operator to a possible collision hazard. Detection distance is adjustable, depending upon the size of the haulage truck, but a minimum of 30 feet was the design goal.

Test Results

In-mine testing and debugging of each system took place over several years at both surface metal and surface coal mines. Each system type performed well and accomplished the goal of monitoring the blind areas of a

parked haulage truck. During testing the low-frequency system prevented a possible accident by alerting a haulage-truck operator to the presence of a pickup in the blind area of the truck.

The systems tested address only the problem of relatively restricted blind areas around large mine-haulage trucks. The detection distances are intended to be small, which restricts the systems to use when the haulage truck first starts moving.

Each system offers an approach to collision protection. Additional system improvements with respect to costs, maintenance, and ruggedness would be desirable, and further private sector product development efforts are recommended.

Patent Status

The United States Department of the Interior is not applying for a patent on this development.

For More Information

More information on the Bureau's hardware development and in-mine evaluation is available in Report of Investigations (RI) 9212, "Anticollision Systems for Large Mine-Haulage Trucks." For single copies of this RI or additional technical information, contact the principal investigator:

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Vehicles in the blind areas of large mine-haulage trucks represent a potential collision hazard if their presence is undetected.