24. Surface Haul Truck Research

C.M.K. Lani Boldt and Ron R. Backer
National Institute for Occupational Safety and Health, United States

NIOSH studies have focused on off-the-shelf technologies that would improve the field of vision of a haulage truck driver while he or she is backing up. From 1989 through 1991, the greatest number of accidents in surface coal and metal/nonmetal mines involved haulage trucks. In 1995, one of the most frequently cited factors contributing to the 100 fatalities recorded was powered haulage. In 1996, over 50% of the 84 fatalities were in surface mining. Some of the world's largest mobile equipment is used at surface mines. The kinds of proximity alarm technologies used in mines are highly relevant to the use of any large equipment, such as on-highway trucks, agricultural machinery, and construction equipment.

A series of laboratory tests, controlled simulated tests on small vehicles, and full-scale field tests on a 240-ton class, end-dump haulage truck were conducted to evaluate Doppler radar discriminating alarms. Although these devices show much promise for sensing objects within the blind spots of vehicles, they are not just bolt-on and plug-and-play units that are easy to adapt to various situations. During the tests, it was shown that mounting the units to achieve optimum sensing ability without interference and false alarms from other systems was, at the very least, a tedious and time-consuming job.

A black-and-white CCTV system was installed on a 190-ton haulage truck and tested at an operating mine. The rear-mounted camera successfully withstood a year's cycle of loading, hauling, and dumping, as well as the rigors of desert heat and cold. The mine's truck shop fabricated a floor-mounted frame to hold a 6- by 7.75-inch monitor as well as a two-way radio and a truck-monitoring terminal. The camera was mounted on the rear axle of the frame, and the camera monitor was wired into the dash light system to reduce monitor glare during night shifts. The screen remains black until the truck is shifted into reverse. There is also a manual mode in which the monitor is left on all the time.

Other proximity alarm technologies reviewed included an assortment of back-up mirrors and a blind area viewer that incorporated a fresnel lens. The blind area viewer is no longer manufactured; however, rectangular convex mirrors are standard safety equipment.

7th Joint Science Symposium on Occupational Safety and Health

26-29 October 1998
Hidden Valley, PA
USA

TTL-FIOH

NIOSH

Arbetslivsinstitutet

7th Joint Science Symposium on Occupational Safety and Health

26–29 October 1998
Hidden Valley, Pennsylvania
United States

Arranged by

National Institute for Working Life
SE–171 84 Solna, Sweden

Institute of Occupational Health
Topeliuksenkatu 41 a A
SF–00250 Helsinki, Finland

National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226–1998
United States