

Improving Safety at Intersections Controlled by Traffic Signal Lights

Principal Investigator: Dr. Lawrence T. Guzy, State University of New York

The purpose of the following research was to determine whether conspicuity of an illuminated traffic signal lens could be increased with a modulating incandescent light source. Experiments were conducted both in the laboratory and a controlled field setting under normal and degraded viewing conditions using both static and dynamic testing situations.

In the first experiment, drivers operated a simulated vehicle generated on a monitor by a microcomputer in the presence of simulated sun backlighting on a traffic signal face. A second experiment required subjects to identify their driving response (e.g., stop and wait, stop and go) when confronted with the standard non-modulating light, two patterns of a blinking light (one and two/sec), and a modulating light of 4/sec. The third experiment examined a driver's identification of range of modulation while wearing special glasses simulating early/moderate stages of cataract development. The fourth experiment involved a modulating bulb in a traffic signal face under degraded conditions of simulated fog produced by special "fog" glasses. These latter two studies were conducted at the automotive test track at the Pennsylvania Transportation Institute, Pennsylvania State University.

The results of the studies reported here showed that under degraded viewing conditions of sun backlighting the modulating bulb was more effective in increasing the conspicuity of the illuminated lens than the standard bulb now in use.



Concern was raised as to whether the modulating light source may initiate photosensitive induced epileptic seizures. Previous research was examined and neurological expert evaluations were sought to explore this possibility. Briefly, the literature and experts' opinions indicated that the unique lighting pattern would not trigger a photosensitive induced epileptic seizure.

Two of the experiments described in this final report were accepted for presentation at the Human Factors Annual Conferences (1990 and 1991). Copies of these two papers are appended. The latter paper was published in the Proceedings of the 35th Annual Conference of the Human Factors Society, 1991.

Sponsors: United States Department of Transportation

Completion Date: 1990

