LOG OF MEETING
DIRECTORATE FOR ENGINEERING SCIENCES

SUBJECT: Retroreflective Bicycle Helmet Demonstrations

DATE OF MEETING: June 4, 1995 **PLACE**: National Institute for Standards and Technology (NIST), Gaithersburg, MD

LOG ENTRY SOURCE: Scott Heh, ESME

COMMISSION ATTENDEES: Scott Heh-ESME, Celestine Trainor-EPHF, Andrew Stadnik-ES, Suad Nakamura-EHHE

NON-COMMISSION ATTENDEES: Larry Buckley-3M, David Engler-3M, Lori Kuller-3M, Joe Osterstetter-3M, Randy Swart-Bicycle Helmet Safety Institute, Dean Fisher-Bell Sports, Don L'Heureux-Bell Sports, John Muhlner-Giro Sports, Dan Switalski-Trek Bicycle

SUMMARY OF MEETING

3M representative set up a demonstration to provide a practical "real world" retroreflective performance comparison of bicycle helmets that were mocked up with various types and amounts of retroreflective tape. Approximately 1000 feet of roadway was blocked off on the grounds of NIST to use for the demonstration course. Two bicyclists wore retroreflective helmets and rode in circles at one end of the course. Observers rode in a car that slowly moved toward the bicyclists starting from 1000 feet away. The observers remarked at what point they first caught site of the reflective helmets and remarked on the comparative brightness between the two helmets during each trial.

Most often, observers first noticed the reflectors on the bicycles before noticing the retroreflective helmets. However, the retroreflective tape on the helmets did help to provide another reference point to aid in identifying the object as a bicyclist. The helmets' retroreflective performance was much better when the bicyclist was riding perpendicular to the car's path of travel. Retroreflective performance decreased markedly when the bicycle was traveling either directly toward or directly away from the car. In these positions, the smaller width and increased curvature of the helmet shell create a much smaller area of retroreflective tape facing the light source.

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