INTRODUCTION

James L. Pline, Group 3 Council TRB, and Concept Review Supervisor, Idaho Transportation Department.

This morning we heard that there was some potential for a smaller vehicle, primarily because of buyer first cost and fuel economy. Safety did not appear to be a major item of buyer concern. It appears that we can expect a greater number of smaller vehicles in the traffic stream, particularly in and around some of the urban areas as a second vehicle, maybe for some of the younger drivers. If this occurs, what kind of problems can we expect? Our speakers this afternoon will point out some of these problems and maybe raise some additional questions relative to vehicle design. What features should we expect in this vehicle? What features would there be that might improve the safety? Are there some vehicle design features that would improve the compatibility between the vehicle, the driver and the roadway? What are the vehicle problems and how should they be resolved? The roadway, because of its cost, of course is slow to make transitions to accommodate vehicle changes. What are the roadway features that could be a problem with smaller vehicles? Can some of these problems be offset in cheap retrofit of roadway appurtenances? Is there a need for vehicle design and driver education to offset some of the problems? What is the scope of the costs when we talk about roadway revisions? The safety of smaller vehicles has recently been highlighted in the news, pointing out the problem. It appears to be quite a problem when we mix the smaller vehicles with the larger ones. Are there some items that could be taken care of to gear the driver for his operation of the smaller vehicle in the traffic stream? What has been the impact of these smaller vehicles as far as safety? Interwoven into these considerations, of course, are the existing laws, federal requirements, vehicle standards and liability considerations of smaller vehicles. Will there be a change in the vehicle safety standards? Can we expect some changes as far as liability? What approach is the insurance industry taking in this regard? Our speakers this afternoon will address these questions and raise some additional questions that we hope will generate research and answer some of these problems.

DESIGN NOTES FOR A SAFER HALF MEGAGRAM AUTOMOBILE

Dr. Carl Clark, Office of Passenger Vehicle Research, National Highway Traffic Safety Administration

JIM PLINE: Dr. Clark, our first speaker, is a biophysicist. He has taught at the University of Illinois and the University of Pennsylvania. He has also worked for the Library of Congress, has had some involvement in aeromedical research for the X-15 pilots and Mercury astronauts. He is currently working for the National Highway Traffic Safety Administration.

DR. CARL CLARK: May I note that I am speaking as an individual and not necessarily representing the National Highway Traffic Safety Administration policy.

In looking at the various ways of describing the small cars one recognizes that smallness finally gets down to the size of the human body. The dimension of the car, in order to have any crash survivability, gets down to the physics of the deceleration event. The engine power is related more to the attitude on acceleration that is desired than the actual efficiency in going across the road. We're hearing the advertisement for the new Chevrolet, that 12 horsepower will keep you at 50 miles an hour. Many of our cars are still over 100 horsepower. So I am urging that we indeed think of smaller sizes in terms of curb weight. Can we make a half megagram or the 1100 pound car safe. It can be made safer if some attention to these basic physics and biophysics principles are observed.

The Suzuki Alto at about 1100 pounds is near a half megagram. It's a four passenger car not yet available in the United States. The problem of the safety of an automobile falls into two categories; crash avoidance and crash protection. The small automobile crash avoidance aspects depend upon handling properties and braking particularly, and in both of those we can make improvements. It is very significant to note the discussions on the