

**Minutes of the Meeting of the Blue Ribbon Panel (BRP) for Evaluation of Advanced
Airbags**

February 26, 2007

Chairperson, Dr. Susan Ferguson, called the meeting to order at 8:30 A. M. on February 26, 2007 in the Atlantic Room of the Surfcomber Hotel in Miami Beach, FL. Panel members Susan Ferguson, Bill Windsor, Dainius Dalmotas, Kennerly Digges, Jeffrey Augenstein, Larry Schneider and Don Bischoff were in attendance as well as observers Chip Chidester and Joe Carra from NHTSA and Tom Carr from the Alliance. Also in attendance were: Dr. Elisa Braver, University of Maryland, Robert Woodill, NASS Region I manager, Steve Mavros, NASS Region II manager, Niko Alexandrou, Operations Director for NASS at the DOT Volpe Center, Robert Shelton, consultant to the Alliance, Carol Flannagan, UMTRI statistician, and Lynda Anderson, Executive Administrative Assistant with IIHS. Dr. George Bahouth of PIRE participated by teleconference.

Chairwoman Ferguson asked if there were any comments on the draft minutes for the November 3, 2006 meeting of the BRP. Larry Schneider offered a small amendment. Dr. Ferguson asked for approval of the minutes subject to the discussed amendment. It was so moved and approved. Dr. Ferguson asked Lynda Anderson to make the change and then post the minutes to the BRP web site as per usual practice.

Dr. Ferguson turned the floor over to Niko Alexandrou, for a presentation on the status of ongoing NASS related activities at the Volpe Center in Cambridge, Mass. Niko talked about the status of the XML data sets and viewer. The BRP had asked that the NASS files be made more user friendly by adding a viewer, which would facilitate “smart” searches of the files. Niko noted that they have now completed XML files of the complete 2004 and 2005 NASS and he supplied the BRP members with DVDs containing the files. He said that the ultimate goal is to go all the way back to 1997 NASS and create XML files which would then be put online for everyone to use. Niko demonstrated the flexibility of the viewer by showing that a researcher could print the case summary or the entire case complete with photographs. He noted that the viewer can be trained to locate cases on your hard drive, a network server, MAP server, etc.

Chip Chidester noted that XML was used so that researchers could analyze series of cases as opposed to a single case. Chip said that the viewer is still in the Beta test phase and welcomed comments from the Panel. Chip said that training on the viewer and files will be conducted in Detroit and Washington D.C. Tom Carr will coordinate the training in Detroit and Chip will coordinate the D.C. training, which will be open to the public.

Joe Carra noted that access to the NASS data was sorely needed and that the BRP focus on the need enabled NHTSA to accomplish the task. Dr. Ferguson thanked Niko for the presentation and thanked NHTSA for developing this valuable tool.

Dr. Ferguson introduced Dr. Elisa Braver of the University of Maryland and asked her to update the BRP on the analyses that she is conducting on their behalf. Dr. Braver presented data from two draft papers developed by the study team at the National Study Center for Trauma and Emergency Medical Systems at the University of Maryland School of Medicine. The first was a matched-pair cohort analysis of driver deaths in head-on collisions involving vehicles with sled-certified airbags versus first-generation airbags. The second paper combined data from the Fatality Analysis Reporting System and the General Estimates System to examine fatality risk among drivers and right-front passengers. Evidence is consistent that sled-certified airbags have not increased the risk of death among front-seat occupants. Evidence also is pointing toward a marked decrease in deaths among child passengers riding in front seats of vehicles with sled-certified airbags compared with first-generation airbags. Members of the panel and observers generally felt that the analyses were sound and made suggestions for improved clarity in the presentation of findings.

Dr. Braver also presented some attempts to analyze data from the National Automotive Sampling System/Crashworthiness Data System (NASS/CDS) by using unweighted analysis techniques. These methods are limited by small numbers, resulting in wide confidence intervals. Dr. Braver noted the difficulty in determining the exact make/model of some vehicles in the NASS file due to missing VINs.

Chip Chidester said that a new requirement in the DOT Appropriations Bill ties 408 funding to compliance with Model Minimum Uniform Crash Criteria guidelines, which specify that the VIN be included on the Police Accident Report (PAR). Chip expects that this will lead all states currently without the VIN on the PAR to include it in the future.

Dr. George Bahouth presented a summary of analyses conducted by the PIRE team to identify injury cost differences for occupants protected by sled-certified airbags relative to barrier-certified vehicles. The presentation was given in 4 steps. First, the presentation described data sources and selection criteria for the crash populations analyzed. During this step, the treatment and impact of missing data including unknown injuries and crash severities was discussed. It was determined that some refinement of the treatment of AIS 7 injuries should be considered. Next, a brief review of relevant crash characteristics and outcome variables considered during the analysis was conducted. The treatment of outcome variables including Maximum Abbreviated Injury Severity (MAIS) and injury costs per person and by body region was described. Methods used to calculate odds of injury and mean injury costs were discussed and alternative approaches were considered.

Overall results were presented including mean injury costs by airbag type and injury costs stratified by safety belt usage, crash severity and airbag deployment. The presentation also outlined methods applied to quantify changes in injury frequency by body region using odds ratios and changes in injury severity using mean injury costs. Following the presentation of analysis results, there was some discussion regarding the impact of large weighting factors within NASS CDS and the small sample size for some populations analyzed. The panel indicated that they would further consider the draft

publication submitted by the PIRE team as well as the methods applied and provide comments on each to the team shortly. Dr. Ferguson requested that all Panel members get their comments on the PIRE paper in to her within one week.

Final papers will be submitted toward the end of March and will be discussed at a meeting with the panel on April 9, 2007.

Dr. Ferguson introduced Dr. Carra of NHTSA, who briefed the BRP on: “An Evaluation of the 1998-1999 Redesign of Frontal Air Bags” an analysis authored by Charles Kahane, Ph.D., NCSA. The Kahane analysis was designed to answer the following questions: “Did redesigned (sled certified, 1998-99) air bags reduce harm to children and out-of-position adults?” and “Did they preserve the life-serving benefits of barrier-certified, pre-1998 air bags for other adults?” The published analysis also compares airbags that were actually depowered to pre-1998 airbags, but this portion of the analysis was not discussed. The analyses use data from NHTSA’s Special Crash Investigations (SCI) program and all FARS frontal fatalities. SCI fatality rates with barrier certified airbags in calendar years 1990-1997 were compared to the fatality rates in 1998-2003 to determine the behavioral effect of moving children to the back seat, restraint use and sitting further from the steering wheel. Fatality rates with barrier-certified and sled-certified airbags were compared in the same calendar years to determine the benefit of redesigned airbags. There was a 60% reduction in the fatality rate for moving children to the back seat and an 83% reduction for redesigned airbags for an overall reduction of 93%.

In the FARS analysis the frontal fatality risk of sled-certified airbags was compared to the same make/models with barrier-certified airbags. Overall for adults and teens, there was no statistically significant change in the risk reduction with sled-certified airbags relative to barrier-certified airbags. Some unrestrained drivers had significantly higher risk with redesigned airbags but this was offset by benefits for other unrestrained drivers. For children ages 0-12 there was a 45% risk reduction with sled-certified airbags relative to barrier-certified airbags. Overall conclusions of the study were:

1. Redesigned air bags substantially reduced airbag-related fatalities to children and out-of-position adults in frontal crashes.
2. Nevertheless, they did not completely eliminate that risk. Advanced airbags are needed.
3. Redesigned and barrier-certified airbags are about equally effective overall for adult and teen-age drivers and passengers. Redesigned airbags preserved the life-saving benefits of barrier-certified airbags.
4. Possibly increased risk for some groups of unrestrained drivers appears to be offset by benefits for others.

Dr. Ferguson invited Chip Chidester to update the Panel on data available from SCI and NASS. Chip noted that as of January 1, 2007 the rate of children and adults fatally injured by a passenger or driver airbag normalized by million registered vehicle years has essentially dropped to zero for the most recent 12-month period. Further, the SCI is not aware of any cases with a fatal or life-threatening injury related to the deployment of a

certified advanced compliant (CAC) airbag. The 2006 NASS CDS produced 4943 cases of which there were 996 vehicles with CAC certified airbags. 5% of the CAC vehicles were involved in crashes with a delta V greater than 25 mph. 89% of the occupants in CAC vehicles sustained MAIS 0 to 2 injuries; 85% of these occupants were restrained. 59% of the occupants who sustained MAIS 3 to 6 injuries were restrained. 151 EDR downloads in CAC cases by NASS and SCI provided valuable information about the decision logic of key safety features. Chip reminded everyone that the NASS and SCI cases are available for viewing on the WWW.

Dr. Ferguson asked for a discussion of potential invitees to the public meeting scheduled for May 7th, 2007. She distributed a list of attendees at the last public meeting. No additional invitees were put forth. Dr. Ferguson asked that everyone provide her with any further suggestions for invitees within a week, since she would like to get the letter of invitation out by the middle of March.

Dr. Ferguson asked for a discussion of potential presentations at the public meeting. All agreed that the University of Maryland, PIRE and Kahane analyses would make wonderful contributions to understanding the efficacy of changes to airbag effectiveness associated with the FMVSS rule changes that allowed sled certification. There was a discussion and agreement that it might be informative to start out the session with an overview of the FMVSS 208 rule changes over time. Chip Chidester said he would look into preparing such a presentation. Tom Carr agreed to report back on whether the auto industry would be amenable to preparing presentations on the most recent advancements in occupant restraint technology and progress toward making EDR readouts available to crash researchers. Dr. Ferguson said she would contact the Principal Investigators at CHOP to see if they would be able to present updated results on the impact of airbag and other restraint system design changes on injuries to children. Dr. Ferguson also queried Drs. Digges and Augenstein and Dr. Schneider about updated analyses from Ryder Trauma and University of Michigan respectively. Dr. Schneider said that he thought that in light of all the new analyses UMTRI would likely pass, but that he would get back with a final word. Dr. Augenstein said that he would like to update the Miami experience. Danius Dalmotas said that he would like to update the experience in Canada, but that he was unsure of his ability to do that since his retirement from Transport Canada (TC). Danius said that he would check with TC and report back. All agreed it would be nice to have a presentation from NHTSA detailing changes to their data collection systems as a result of input from the BRP. Dr. Carra agreed to arrange such a presentation.

Dr. Ferguson noted that it would be beneficial to have another meeting of the BRP prior to the public meeting to discuss further refinement of the PIRE analyses based on input from the Panel. This meeting has been scheduled for April 9th in Washington D.C. at a location to be announced.

A motion was made and approved and the meeting was adjourned at 4:00 P.M.