

**Final Minutes of the Fifth Meeting of the Blue Ribbon Panel for Evaluation of
Inflatable Restraint Performance-Field Data Collection and Analysis**

August 12, 2002

Chairperson, Dr. Susan Ferguson called the meeting to order at 10:00 A.M. at the Offices of IIHS in Arlington, VA. All panel members and observers were present with the exception of member Dr. Mark Edwards and observer Mr. Chip Chidester. Dr. Ferguson asked for an around the table introduction since a guest was in attendance. Dr. Kennerly Digges introduced guest Dr. Paul Bedowi, who recently left Ford Motor Company and is now working with Dr. Digges at George Washington University. Dr. Digges explained that Dr. Bedowi has been working on some computer programs which facilitate the accessing and summarizing of NASS cases and that he would describe his work later in the meeting. Other panel members and observers in attendance, as noted above, introduced themselves.

Dr. Ferguson asked if everyone had a chance to review the draft minutes of the fourth meeting. Don Bischoff suggested that we add a parenthetical note to the end of the penultimate paragraph noting that the fourth meeting had been moved from the proposed date of July 29, 2002 to the actual date of August 12, 2002. Dr. Schneider noted a typo on page 2. With these corrections, Dr. Ferguson entertained a motion for approval of the draft minutes as written. It was so moved and the draft minutes were approved by unanimous voice vote.

Dr. Ferguson asked Dr. Carra to update the Panel on progress for the data collection efforts. Dr. Carra reviewed the case selection criteria and showed a chart of the expected vehicle population for the study. 201 cases have been initiated at the 3 Alliance funded PSUs since startup. About 80 of these cases are pilot cases which are currently under review for their suitability for inclusion in the NASS file. They will be grouped into one of three categories based on meeting all relevant criteria for a satisfactory NASS case. The startup appears to be progressing smoothly. There are now 5 fully trained researchers and a new researcher has been hired for the Dallas County, Texas PSU and he is in training at TSI. 383 cases are expected for calendar year 2002.

Dr. Carra asked if the Panel members had a chance to visit the new web site which contains the preliminary cases. The cases are now loaded to the web site as soon as the Zone Center completes their preliminary QC. Dr. Carra cautioned that some of the entries could change later on and that some of the medical data could be incomplete. The Panel noted that this new system, despite its warts, is by far preferable to the old system of waiting for the complete NASS file at years end. The new web site can be found at: <http://www-nass.nhtsa.dot.gov/NASS/PRAPPROVED/DISCLAIMER.HTML>.

Dr. Carra noted that the MOU between NHTSA and the Alliance is in the final stages of signoff. He also noted that progress is being made in the ability of NASS researchers to

readout the Event Data Recorders (EDRs) resident in many late model light duty vehicles. Tom Carr has established a sub-committee within the Alliance that is trying to facilitate the readout of EDRs for research purposes. It now appears that the NASS researchers will be able to readout EDRs in some Toyotas, BMWs and Daimler-Chrysler vehicles in addition to the previously available Ford and GM vehicles, thanks to the efforts of the Alliance sub-committee. Vern Roberts noted that former NHTSA Administrator, Ricardo Martinez, M.D., had petitioned the Agency to require that all vehicles be equipped with EDRs and asked if this was impeding vehicle manufacturer cooperation in terms of EDR readout for research purposes. Dr. Carra responded that he did not know the status within the Agency for responding to Dr. Martinez's petition and did not know if it was having a chilling effect on EDR readout cooperation.

Dr. Ferguson noted that the Panel had previously expressed concern over whether the new teams could collect the requisite case data for rental vehicles. The issue is that rental vehicles are often repaired quickly and the occupants are often from out-of-town. Dr. Carra did not know the status of rental vehicle data collection; Tom Carr volunteered to check into the issue and report back to the BRP.

Dr. Schneider expressed concern over the level of crash severity and crash type, noting that some of the cases appeared to be other than pure frontal. He also wanted to know the percent of vehicles that get inspected once a crash is chosen for inclusion in the NASS sample. Tom Carr said that prior studies of NASS had indicated that the case vehicle inspection rate was on the order of 85%. Tom volunteered to check into the rate for the 3 new PSUs.

Dr. Carra suggested that the BRP may want to consider holding its next meeting at the new Alabama PSU. He noted that the prior face-to-face meetings with the Dade County and San Antonio PSU personnel appeared to have a very positive impact on morale and gave the researchers a better understanding of exactly what the BRP was trying to do with the crash data.

Dr. Carra noted that NHTSA's National Center for Statistics and Analysis is conducting an analysis to look at airbag performance for short-stature/overweight individuals. Preliminary results indicate reduced effectiveness for this category of occupants compared to all occupants, as previously reported by the Agency.

Tom Carr suggested that NHTSA may want to issue a Press Release announcing the new web site and the earlier availability of NASS cases. Dr. Carra's initial reaction was that it did not meet the Agency's normal threshold for the issuance of a press release, but that he would raise the suggestion with the Agency's Office of Public and Consumer Affairs.

Dr. Ferguson noted that IIHS has been studying the performance of post-1997 airbags using the FARS file. IIHS does not believe that there is any evidence that the post-1997 airbags are providing any less protection for either belt-restrained or unbelted occupants as compared to prior airbag designs. Dr. Ferguson thanked Dr. Carra for his presentation and suggested that we post his presentation and the presentations to follow on the BRP

web site. There seemed to be consensus of the Panel that this was a good idea. Dr. Ferguson said she would post the presentations as well as the final version of the minutes for the fourth meeting of the BRP on the web site.

Dr. Ferguson invited Dr. Schneider to make a presentation to the BRP on UMTRI's analysis of in-depth crash investigations with regard to the injury mitigation potential of pre-1998 and post-1997 airbag systems. Dr. Schneider said that the analysis was trying to answer two basic questions: 1) Is there a reduction in airbag induced injuries? 2) Is there a reduction of overall effectiveness for post-1997 airbags as compared to pre-1998 airbags?

UMTRI has investigated 317 cases involving pre-1998 airbag systems and 210 cases with post-1997 systems. Dr. Schneider noted that they have many "success stories" where post-1997 systems have protected occupants in severe frontal crashes. Similarly, they have very few cases where an unbelted occupant in a post-1997 vehicle "overpowered" the airbag, such that it offered reduced protection to the head, face, and chest. For example in one case, a 210-lb unbelted driver of a full-size sedan sustained serious (AIS=3) face and chest injuries due to interaction with the upper instrument panel and steering wheel through the airbag, respectively, when the front of the vehicle struck a bridge abutment at 60 mph. Although the heavy unbelted occupant sustained serious injuries, the depowered airbag offered significant protection and he survived this very severe frontal crash.

Dr. Schneider noted that they do see, in both samples, some $AIS \geq 2$ injuries associated with unbelted occupants getting over or around the airbag because the occupant is leaning to the right or left prior to impact, or because of non-longitudinal vehicle kinematics. He also noted that they are seeing very little evidence of airbag-induced injuries from the post-1997 systems, although they do have two cases in which the airbag appears to have "flung" unbelted occupants rearward or upward, resulting in fatal head injuries

Logistical Regression analyses were conducted on the study data. The overall predictors of injury in order of importance are: crash severity, seat belt usage, and occupant age. The overall conclusion of the analysis is that the probability of injury in post-1997 vehicles for the body regions of greatest interest (head/face, neck, chest and abdomen) is at least as good as the pre-1998 vehicles. Dr. Schneider showed a variety of other results too numerous to detail here. The reader is referred to the BRP web site (<http://www.highwaysafety.org/presentations/brp/>) for additional details of the presentation.

Dr. Ferguson invited Dr. Digges to talk to the BRP about his work at GWU. Dr. Digges briefly reviewed the quasi-automated front-end computer program developed by his graduate students, for producing case summaries from the full NASS file. The program generates Excel spreadsheets for data on a group of cases and two-page summaries with pictures and scene diagrams for each case of interest. Dr. Digges said he had spoken to NHTSA and there was not a common objective between what the BRP wanted versus what the GWU front-end was providing. The GWU front-end does not allow open ended

searches of the NASS file using any NASS data parameter of interest. At this point, Dr. Digges asked Dr. Bedowi to describe his latest work to develop a search tool using NASS variables. The tool that Dr. Bedowi described is currently geared toward searching NASS for cases related to fire and fuel leakage, a study that GWU is currently undertaking for Ford Motor Company. When asked, Dr. Bedowi thought that, in about one month's time the tool could be enhanced to allow searches of all NASS cases using any NASS variables. Dr. Digges said they would begin to develop such a tool and let the BRP know when it was available for searching for airbag cases of interest.

Dr. Ferguson invited Dr. Segui-Gomez to talk to the BRP about sample size calculations that she had been asked to refine based on a presentation that she had made at a prior meeting. Dr. Segui-Gomez apologized for not having the time to complete the additional power calculations but felt that her time was better spent doing preliminary analyses of airbag effectiveness. In that regard, Dr. Segui-Gomez handed out copies of a paper that she co-authored for the upcoming AAAM annual meeting. The title of the paper is: "Changes In Injury Patterns In Frontal Crashes: Preliminary Comparisons of Drivers of Vehicles Model Years 1993-1997 to Drivers of Vehicles 1998-2001. The study concludes that drivers in model year 1998-2001 are less likely to be injured than drivers in older vehicles (30.0% vs. 25.3%, respectively). Also, drivers in more modern vehicles are less likely to sustain injuries to the extremities than drivers in older vehicles, although these differences are only borderline significant. The airbag deployment rate seems to be significantly lower in the later model vehicles, consistent with the announcement by vehicle manufacturers that they intended to raise deployment threshold levels. The paper will be published and presented at AAAM.

Following Dr. Segui-Gomez's presentation there was a discussion of the desirability of conducting the additional statistical power analyses on sample sizes. Don Bischoff thought that while power analyses were very instructive in the early stages of BRP discussions, when the Panel was deciding how much data would be needed to discriminate whether significant changes in airbag effectiveness were taking place, that their utility is minimal now (i.e., whatever data we get at this point is what we have to work with). While the rest of the Panel seemed to agree with this notion, it was noted that we should complete the statistical power analyses since they are still interesting in terms of understanding what kinds of analyses will be possible with data that will be available at the end of the study (of course one has to assume a priori the expected changes in effectiveness to utilize the power calculation results). Dr. Segui-Gomez agreed to finish the power calculations. Dr. Segui-Gomez announced that she would be returning to Spain, having accepted an academic position in her home country. She felt that she could continue to participate in BRP activities, particularly since she was continuing with a quarter-time appointment at Johns Hopkins, and would be returning to the U.S. on a periodic basis.

Dr. Ferguson initiated a discussion on the appropriate timeframe for an initial public meeting to discuss BRP progress and review specific cases. There was extensive discussion as to the content and participants for this public meeting. There was agreement that the meeting would be much more interesting and informative if we have

some preliminary analyses of the efficacy of the post-1997 airbag system field performance. There did not seem to be agreement on the size and scope for the meeting. Some argued that the BRP should present its progress and conclusions, while inviting outside critical review. Others argued to invite analyses by all accredited parties. Ultimately, it was decided to hold the public meeting in February/March, 2003 timeframe and have a BRP meeting in late October/early November, 2002 to plan details of the public meeting.

Dr. Ferguson pointed out that Dr. Edwards has only been able to attend one of the five BRP meetings. It was further pointed out that he retired from AAA last fall and that we may want to contact his replacement for possible substitution on the BRP. Dr. Ferguson said she would contact Bella Dinh-Zarr in that regard.

Dr. Ferguson entertained a motion for adjournment. It was so moved and approved by unanimous voice vote.