FAMA Chassis Technical Committee Minutes
2006 FRI–Dallas 09-16-06
R. Lackore

Tanker Stability

The following wording has been proposed for inclusion in NFPA 1901:

4.12.3 The following minimum stability requirements shall apply to all apparatus with a combined water/foam agent tank exceeding 1,250 gallons in capacity. The finished vehicle, ~~fully~~ loaded with fuel, firefighting agents, and the minimum NFPA equipment allowances, including hose, ladders and personnel, shall meet one of the following criteria:

a) The calculated center of gravity shall be no higher than 85% of the rear axle track width with the rear track width measured from the center of the rear wheel assembly on one side of the vehicle to the center of the rear wheel assembly on the other side of the vehicle.

b) Demonstrate by tilt table test conducted by SAE J2180 test procedures that the vehicle is capable of being tilted to 26 degrees before lifting a front or rear tire.

c) Demonstrate dynamic balance by achieving a minimum speed of 16 mph on a 100 foot radius flat circle driving course.

Lackore presented data showing that of three large custom tankers, only two would pass the tilt table criteria of 26 degrees. All three trucks, however, were able to negotiate the 100 ft radius at 16 degrees. This suggests that we need to further refine these numbers to provide better consistency. Lackore and Salmi suggested that we chose a lower target for the tilt table initially, and refine it upwards as we gather more data. Members who build tankers should put some serious thought and research into this issue before the Orlando meetings.

Black Box

The following wording has been proposed for inclusion in NFPA 1901:

12.2.1 All apparatus shall be equipped with an on-board event data recorder. The EDR shall be capable of recording the following data: vehicle longitudinal acceleration, change in velocity, travel speed, engine RPM, engine throttle position (%), service brake status, ignition cycle, and safety belt status. The EDR will have a triggering mechanism that records data related to vehicle dynamics and safety systems surrounding any abnormal vehicle function or collision. All data stored in the EDR shall be downloadable to a lap top computer.

Substantiation
Installation of this type of technology has proven to provide many benefits to businesses that operate heavy vehicles. Benefits attributed to this technology include safety, increased fuel efficiency, longer lasting brakes, reduction of vehicle down time and overall operating costs. The installation of a “black box” can serve as a preventive measure as well as a tool to use when an accident occurs. The information recorded will assist in controlling any liability issues.

The above specification still lacks definition on how much data will be stored (sampling frequency) and how long it will be stored for.

In addition to these items, members suggested that retarder activation be added to the list.

Action: Charlie Smith and Toh Meng of Fire Research Corporation will review the specification and suggest wording that will further define the intentions of the system.

Trailer Chapter

A small group of interested parties met on 09-14-06 to review the first half of a draft trailer chapter written by Neil Bjornstad. The group will meet again on October 25, 2006 in Chicago. Time and place to be determined. Members interested in participating should contact Neil at 920 832 4244

DPF Control

Lackore presented the latest wording of the common DPF strategy. The group agreed with the text of the new proposal. Bob Neitzel will pursue International's ability to comply with the 5 mph criteria.

Proposed tail pipe insulation criteria will be discussed in January in Orlando as follows:

Exhaust pipes and tail pipes shall be insulated so that no exposed surface exceeds 325°F under any operating condition.
The exhaust pipe shall be oriented so that the exhaust gas is not directed at the ground.

Anthropometric Study Prioritization

The NFFF may be willing to sponsor a study through NIOSH relative to firefighter anthropometrics and ergonomics. Members agreed to the following prioritization of possible studies:

Study 1- Range of Motion
Further define the ergonomics around donning the seat belt, as well as providing data to create standards for entrance, egress, and climbing. This study would encompass the aspects of the man-machine interface that we feel would have the greatest potential for reducing injuries (in relation to slips and falls) and fatalities (in relation to seat belt use).

Study 2 – Stowing and Retrieving
Provide data to address what we perceive to be the next most significant aspect of potential injury, that being back strains from lifting. This data could be used in apparatus design, and could also be used by fire departments to plan their equipment storage both during the apparatus specification stage, and on in-service equipment.

Study 3 – Entrance and Egress Openings
Provide better data for designing means of escape, and for providing adequate space for working in confined areas. This could influence cab entrance and egress areas, top-mount pump panel designs, and interior areas in homeland security type command vehicles. Additional value would be gained from using the results in search and rescue planning and confined space procedures. Results would also potentially be applicable in architectural design to improve firefighter access to burning buildings.

Study 4 – Driver Position
Provide better ergonomic design of driver positions. Some of these answers might be obtained from the planned NIOSH truck driver study, especially if it could be modified to include some number of subjects wearing bunker gear, or at least heavy clothing. The study would also need to consider the COE style of cab used by custom fire apparatus which is more similar to a transit or coach bus orientation than a class 8 conventional truck.

Study 5 – Body Scan
Provide electronic manikins that can supplement the workspace studies 1 through 4. The fact that the manikins cannot be manipulated limits their usefulness in the design process, but would add legitimacy to the less rigorously gathered data from our current FAMA measurements.

Cab Integrity

All cabs will need to meet the SAE or the ECE cab strength requirements. This will have the greatest effect on commercial chassis which may not have been tested. The commercial chassis manufacturers in attendance felt that their cabs are already tested to SAE standards and would comply. Nee to be sure that NFPA is worded to include both the appropriate COE and conventional cab SAE standards. All present felt that SAE was a more appropriate standard than ECE.

Should we move to remove the ECE reference.

Ran out of time for discussion

Engine Classification

The group agreed that engine horsepower is no longer a definitive method of reporting. The committee will recommend that we begin reporting by engine size (10 liters and larger, and less than 10 liters). **Ran out of time for discussion**