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GAMA QA-28218

**General Aviation  
Manufacturers Association**

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Federal Aviation Administration  
Office of Chief Counsel  
Attention: Rules Docket ( AGC-200 )  
Docket No. 28109  
800 Independence Avenue SW  
Washington, DC 20591

August 13, 1996

Reference: Docket No. 28109; Notice No. 96-7

Subject: Proposed Revisions to Digital Flight Data Recorder Rules

The General Aviation Manufacturers Association ( GAMA ) respectfully submit the following comments to the referenced docket. For ease of reference, the comments are in two sections-General and Specific.

**GENERAL COMMENTS:**

1. GAMA cannot support the draft NPRM as written in that it goes well beyond the NTSB Safety Recommendations A-95-25, A-95-26, and A-95-27 as applies to 10 -19 passenger airplanes. The action of including these airplanes is being done with little to no technical support. **FAA is requested to abide by the NTSB Safety Recommendations and to exclude the 10 -19 passenger airplanes from the NPRM.**
2. Citing the FAA's " Regulatory Evaluation, Initial Regulatory Flexibility Determination, and International Trade Impact Assessment" dated October 1995. Pages 33 and 34. The fleet retrofit costs submitted by FAA under the four (4) year time frame best case scenario discounted costs exceed benefits 1.54 to 1 ( \$272.4 to \$177.3 million ). Under the worst case scenario discounted costs exceed benefits by 3.77 to 1 ( \$272.4 to \$72.3 million ). **Based upon FAA's own analysis, this proposed rule change should not proceed.**
3. Again citing the document identified in 2 above, the risk reduction analysis on pages 27 and 28 identifies two ( 2 ) unexplained accidents of scheduled aircraft over a twenty-one ( 21 ) year period (1975-1995) for a .1 unexplained accidents per year rate among scheduled aircraft. FAA states that as a result of this rule it is estimated that over time, the .1 unexplained accidents per year will be reduced to zero unexplained accidents per year. The preponderance of evidence accumulated to date and used by FAA in support of this rule change in the general discussion of the proposal, does not support the theory of eventual zero unexplained accidents per year simply by increasing the number of parameters being monitored. Since this aggressive assumption is fundamental to the above cited cost-benefit analysis calculation, it could be argued the costs exceed the benefits even more than that identified by FAA.
4. FAA has not provided a cost-benefit analysis for newly manufactured airplanes ( 3 years after effective date) to be equipped with means for monitoring the first fifty-seven (57) parameters and for newly manufactured airplanes ( 5 years after effective date ) to be equipped with means for monitoring the total eighty-eight (88) parameters. GAMA is of the opinion such an analysis is not only required by law but becomes increasingly essential in that FAA contends the cost for creation of a new 256 WPS FDR is insignificant. Even if technology wise FAA is correct, such a recorder will likely face input porting design and data correlation issues which were not problems with ARINC 717 and earlier versions. The development of standards alone for such a product will require forming of AEEC committees with all attendant time and cost burdens, not to mention new hardware development time and cost. It is GAMA's opinion these costs

**NO PLANE NO GAIN**

3 pgs

5. One further comment on cost vs. benefit is appropriate in light of the various places of the background and summary information FAA has downplayed the cost factor and "upplayed" the benefit factor. The second paragraph of the section entitled Benefit states " Due to the very nature of the DFDR requirements ( i.e., that we currently do not know how or why certain accidents occur), the FAA is not able to quantify the likely benefits that will ultimately result from the proposal. Nevertheless, the FAA has determined, particularly in light of the NTSB recommendations, that information concerning enhanced parameters can be collected cost effectively". The incomplete and understated cost data presented in support of this NPRM does not support the above statement but in fact tends to refute the statement. **FAA should be required to conduct a full and complete cost analysis of the total NPRM impact prior to any rule change implementation.**
6. In the second paragraph under the section General Comments from the ARAC Executive Committee Members FAA discusses JAR-OPS and expresses the position that no disharmony with JAR-OPS is created with the required recording of the 57 and 88 parameters. FAA goes on to say that the 57 parameters ( and their values in proposed Appendix K to Part 121 ) were arranged so as to be the same as those required by JAR-OPS and are considered to be harmonized.

A comparison of the list of 57 with JAR-OPS reveals items 40, 41, 42 and 44 inserted ahead of some of the JAR-OPS prioritized suite. The JAR-OPS parameters of "retardation information" does not show up in the NPRM list until parameters 68 and 69.

Since the NPRM list does not line up any better against ED-55, it is not clear how these differences reflect complete harmonization or a lack of further conflict with European authorities.

#### SPECIFIC COMMENTS:

1. The General Discussion of the Proposal section ( last sentence of 3rd paragraph) states "proposed requirements for Part 135 would apply only to newly manufactured airplanes that will be used in scheduled service; there are no retrofit requirements proposed for on-demand nonscheduled airplanes". It is extremely difficult in reading the proposed rule itself to conclude the various facts relating to applicability and non-applicability of the proposed rules to newly manufactured airplanes that will not be used in scheduled service; or in other words newly manufactured airplanes that will be used in Part 135 on-demand, nonscheduled service. **Verbiage should be formulated for inclusion into the rule itself as to the exclusion of newly manufactured airplanes that will be used in on-demand nonscheduled service.**

Likewise, referring to this same area of the general discussion of the proposal section, it is extremely difficult to conclude from reading the rule that there are no retrofit requirements proposed for on demand, nonscheduled airplanes. **Verbiage should be formulated for inclusion into the rule itself as to the exclusion of retrofit requirements for airplanes that will be used in on demand nonscheduled service.**

2. The Part 135 discussion section of the NPRM first paragraph last sentence states " These amendments would not apply to any airplane Type Certified to be configured with nine or fewer passenger seats or rotocraft." No place in the proposed rule changes is reference made to status of airplanes "Type Certified" for nine or fewer passenger seats; all references in the rule are to airplanes having a seating configuration of so many passenger seats. Since "Type Certified" vs." seating configuration" are quite different matters, **the proposed rule changes should make it very clear, as intended, that Part 25 and Part 23 certified airplanes Type Certificate for nine or fewer passenger seats are excluded from Part 121 and 135 operating rule changes of this proposal.**
3. Several of the **NPRM Appendix parameters names or corresponding remarks are ambiguous and need to be clarified** to be meaningful for example:
  - A. Item (56) remarks of multi-function display format.

- B. Item (62) engine vibration. What kind of trip?
  - C. Item (78) loss of cabin pressure. What kind of trip?
  - D. Item (79) computer failure needs better explanation
  - E. Item (80 & 81) heads-up display and para-visual display. Why do these Appendix F and M parameters contain the words "when an information source is installed" when the qualifier would apply to a number of other parameters?
4. In the NPRM sections 121.344 (d) (1) and 121.344a (1) (iii) a statement exists similar to "parameters listed in paragraphs (a) (12) through (a) (14) each may be recorded from a single source." In the Appendix remarks for these parameters, they further qualify the possible need to record the inputs of both controls. **If the rule text was meant to provide relief from the Appendix remarks, the text should be amended to read "... each may be recorded from a single source even if the airplanes have a flight control break away capability."**
5. The FAA offers rationale for requiring recording of control inputs as well as mechanically linked control surfaces, but when put in context with the recording requirements in the NPRM this solution does not promise success. With a recording interval of .5 sec. for these parameters ( and even .25 sec. for the future) , the determination of which one - control or surface - moved first would likely be impossible. This determination would likely require much faster sampling. Also, it is understood that some features on some airplanes with mechanically linked control systems can cause a surface to move independent of a control input ( i.e. a yaw damper function linked to the rudder by an in- series linear actuator). However, these installations are somewhat rare and are usually features of a single control axis which can be treated, as exceptions, with the ' record both' technique. This would save the burden of recording both signal types for all airplane axes which have more conventional linkages. This approach most likely would increase overall FDR system reliability by eliminating excess hardware, especially state of the art sensors currently known to be of poor reliability. **GAMA proposes that this dual coverage requirement be deleted for conventional axes control, and that it be required only for aircraft axes which are augmented in a fashion similar to the above example.**
6. Section 121.344a. (b). (2) is not clear as to what action ( if any) must be taken by the OEM where there are differences between the OEM's previous parameter choices and items (58) and higher at the effective date of the rule plus four (4) years. Must the OEM cease recording parameters of choice, or those required by JAR-OPS and/or ED-55 ( since the lists are not totally harmonized) and now start recording the Appendix parameters which means another change. FAA is requested to clarify intent of the proposed rule change regards this matter.

GAMA appreciates the opportunity to comment on this matter of importance.

Very truly yours



W.H. Schultz  
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