DASSAULT
AVIATION

Division FALCON

SUBJECT : Mystère-Falcon 900 and Falcon 900EX – Petition for Rulemaking Regarding FAR Part 121.344a and 135.152 Flight Data Recorder requirements

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AVIATION
DIRECTION GÉNÉRALE TECHNIQUE

Division FALCON

Mérignac, October 11th, 2002

Rules Docket (AGC-10)
Federal Aviation Administration
800 Independence Avenue
WASHINGTON DC 20591

DGT-DTF/NAV 275315
LH

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Dear Sir or Madam,

You will find enclosed two copies of Dassault document DGT-DTF/NAV 88176 dated October 11, 2002, which is a petition for rulemaking to modify the resolution requirements for two parameters recorded by digital flight data recorders installed on Mystère-Falcon 900 and Falcon 900EX model aircraft.

This petition for rulemaking is submitted in accordance with FAR Part 11.25.

If you have any question on this matter, please do not hesitate to contact us at the following address :

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Thank you for your assistance,

L. HUCHER G. GARROUSTE

Att : Two copies of Dassault document DGT-DTF/NAV 88176 dated 11-Oct-02 (2 x 3 pages)

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1. Summary of the Petition for Publication

Dassault Aviation, France, petitions for permanent amendments to 14 CFR 121 Appendix M, 14 CFR 125 Appendix E and 14 CFR 135 Appendix F to permit minor deviations from the specific detailed quantitative recording requirements for flight data recorder information as installed on the Mystère-Falcon 900 (with modifications M1975 or M2695 installed) and Falcon 900EX aircraft models (hereafter MF900 and F900EX respectively).

The resolution for two recorded parameters – parameter n°5, Normal Acceleration and parameter n°26, Radio Altitude – as implemented on these aircraft, differs slightly from the current regulation.

2. Background

The rulemaking implemented by the FAA in August of 1997 (62 FR 38362) substantially increased the requirements for recording up to 88 parameters of flight data for diagnostic use in the event of an accident or serious incident.
These new FDR requirements were scheduled to be met in stages, with the first 34 parameters being implemented first (at the next heavy maintenance check after 18-Aug-99 but no later than 20-Aug-01), followed by parameters 35-57 (for aircraft manufactured after 18-Aug-00), and finally for parameters 58-88 (for aircraft manufactured after 19-Aug-02).

During the certification process of the 57 parameters D-FDR, we have found that the Honeywell Data Acquisition Unit (DAU) on the Avionics Standard Communication Bus (ASCB) used for the Honeywell PRIMUS 2000 avionics installed on the MF900 (with modifications M1975 or M2695 installed) and F900EX, does not permit our FDR installation to comply with the resolution requirements of 14 CFR 121 Appendix M, 14 CFR 125 Appendix E and 14 CFR 135 Appendix F, because two parameters - parameter n°5 Normal Acceleration and parameter n°26 Radio Altitude – do not meet the required resolution :

Parameter 5 : resolution 0.00655 g available versus 0.004 g required,
Parameter 26 : resolution 1.25 ft available versus 1 ft required.

It should be noted that all other required parameters are recorded with the required accuracy and sampling rate.

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In response to a previous Petition regarding this situation, the FAA issued the Special Federal Aviation Regulation (SFAR) No. 89 on August 22, 2001 (refer to Docket No. FAA-2001-10428) which temporary permitted these aircraft models to operate until August 18, 2003 under FAR Part 121, 125 or 135 without meeting the resolution requirements for parameter n°5 and n°26.

3. Substance Of The Rules From Which Exemption Is Sought [per FAR 11.25(b)(3)]

The recording requirements for DFDR's are contained in Appendix M of 14 CFR 121, Appendix E of 14 CFR 125 and Appendix F of 14 CFR 135. Specifically, Dassault Aviation seeks minor technical changes as specified herein to the recording requirements for parameter n°5 (Normal Acceleration) and parameter n°26 (Radio Altitude).

4. Interests Of The Petitioner [per FAR 11.25(b)(4)]

Dassault Aviation is a manufacturer of transport category aircraft with customers located worldwide, including many in the U.S. For this reason, Dassault Aviation is required to gain certification from the FAA for any of its aircraft that are to be operated by its customers in accordance with either Part 121, Part 125, Part 129 and Part 135 of the Federal Aviation Regulations. The new D-FDR requirements present, for the MF900 and F900EX operated by a number of US customers, recording requirements for Normal Acceleration and RadAlt that are incompatible with the equipment installed on those aircraft.

Rather than seek, on behalf of its customers, permanent exemption from these requirements, Dassault Aviation petitions herein for a minor regulatory change that would obviate the need for such exemptions.

5. Discussion

As stated in the original rulemaking, the FAA, in promulgating the new D-FDR recording resolution requirements, did not intend to require equipment redesign or retrofit.

The design of the DAU installed on the MF900 and F900EX is not able to meet the resolution requirements for parameters n°5 and n°26, whereas the range, accuracy and seconds per sampling intervals are fully achieved.

For parameter n°5 – Normal Acceleration (Vertical) – the resolution recorded is 0.00655 g, instead of the 0.004 g required. However, the recorded resolution should not impact post-event investigation, as far as the difference is very small (0.00255 g).

For parameter n°26 – Radio Altitude – the resolution recorded is 1.25 ft, instead of the 1 ft required. The difference of 0.25 ft is so insignificant, when taking into account the size of the aircraft and the terrain overflown, that this should not impair post-event investigation.

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Therefore, none of the above deviations in resolution present any degradation in safety nor do they present any degradation with regard to post-event diagnosis. In this case, with respect to these two specific parameters, adding the expense of modifying equipment in order to meet the regulatory specification would not add any benefit to the public.

Specific regulatory language that would effect these changes is suggested in the following tables :

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
5. Normal Acceleration (Vertical)	-3g to +6g	+/-1% of max range excluding datum error of +/-5%	0.125	0.00655g	
26. Radio Altitude	-20ft to 2,500ft	+/-2ft or +/-3% whichever is greater below 500ft and +/-5%above 500ft	1	1.25ft + 5% above 500ft	For autoland / category 3 operations. Each radioaltimeter should be recorded, but arranged so that at least one is recorded each second.

6. Public interest [per FAR 11.25(b)(5)]

As the FAA has noted in the course of the original rulemaking, it was not intented that the new recording parameters would result in requirement to retrofit or modify existing equipment. The changes requested in this Petition are minor and technical in nature. None of the changes would significantly affect the ability of accident investigators to perform their tasks. The changes will not adversely affect the safety of the aircraft, hinder the investigations of accidents or incidents, nor compromise the intent of the D-FDR rules. Their sole purpose is to account for the differences in MF900 and F900EX D-FDR equipment when compared to the precise regulatory requirements.

A large cost to U.S. Operators would obviously be involved in redesigning and retrofitting new equipment to comply with the resolution requirements of the current regulations. In addition, with the existence of one family of aircraft having two different models of DAU equipment installed, a second set of parts would need to be instituted with the consequence of increased costs to all parties. These added costs would not be balanced by any gain in safety or investigative capability deriving from such changes. It is, therefore, in the public interest to make the requested regulatory modifications so as to obviate an unnecessary and unproductive expenditure by U.S. Operators.

Respectfully submitted,

L. HUCHER

G. GARROUSTE

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