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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM-115; Special Conditions No. 25-ANM-103]

#### Special Conditions: Modified Learjet Model 55, 55B and 55C Airplanes; High Intensity Radiated Fields (HIRF)

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Learjet Models 55, 55B, and 55C airplanes modified by Duncan Aviation, Inc., of Lincoln, Nebraska. These models will be equipped with a Flight Visions Corporation, FV-2000 Head-Up Display System (HUD) that will perform critical functions. The applicable regulations do not contain adequate or appropriate safety standards for the protection of the HUD from the effects of high-intensity radiated fields (HIRF). These special conditions provide the additional safety standards that the Administrator considers necessary to ensure that the critical functions performed by this system are maintained when the airplane is exposed to HIRF.

**DATES:** The effective date of these special conditions is July 26, 1995. Comments must be received on or before September 18, 1995.

**ADDRESSES:** Comments on these final special conditions, request for comments, may be mailed in duplicate to: Federal Aviation Administration, Office of the Assistant Chief Counsel, Attn: Rules Docket (ANM-7) Docket No. NM-115, 1601 Lind Avenue SW., Renton, Washington, 98055-4056; or delivered in duplicate to the Office of the Assistant Chief Counsel at the above address. Comments must be marked

“Docket No. NM-115.” Comments may be inspected in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4:00 p.m.

**FOR FURTHER INFORMATION CONTACT:** Mark Quam, FAA, Standardization Branch, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (206) 227-2145.

#### SUPPLEMENTARY INFORMATION:

##### Comments Invited

The FAA has determined that good cause exists for making these special conditions effective upon issuance; however, interested persons are invited to submit such written data, views, or arguments as they may desire. Communications should identify the regulatory docket and special conditions number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator. These special conditions may be changed in light of the comments received. All comments submitted will be available in the Rules Docket for examination by interested persons, both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Persons wishing the FAA to acknowledge receipt of their comments submitted in response to this request must submit with those comments a self-addressed, stamped postcard on which the following statement is made: “Comments to Docket No. NM-115.” The postcard will be date stamped and returned to the commenter.

##### Background

On May 2, 1995, Duncan Aviation, Inc., of Lincoln, Nebraska, applied for a supplemental type certificate to modify the Learjet Models 55, 55B, and 55C airplanes. The Learjet Model 55 series airplane is a business jet with two aft-mounted turbofan engines. The airplane can carry two pilots and 8 passengers, depending on the exit and interior configuration, and is capable of operating to an altitude of 51,000 feet. The proposed modification incorporates the installation of a digital avionics system that will present critical functions on the Head-up Display System (HUD), which is potentially

vulnerable to high-intensity radiated fields (HIRF) external to the airplane.

#### Supplemental Type Certification Basis

Under the provisions of § 21.101 of the Federal Aviation Regulations (FAR) Duncan Aviation, Inc., must show that the altered Learjet Model 55 Series airplane continues to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A10CE, or the applicable regulations in effect on the date of application for the change. The regulations incorporated by reference in the type certificate are commonly referred to as the “original type certification basis.”

The regulations incorporated by reference in Type Certificate No. A10CE include the following for the Learjet Model 55, 55B and 55C airplanes: 14 CFR part 25, dated February 1, 1965, as amended by 25-2 and 25-4.

In addition, for the Models 55 and 55B: Amendments 25-3, 25-7, 25-10, 25-12, 25-18, 25-21 and 25-30, plus § 25.955(b)(2) of Amendment 25-11; § 25.954 of Amendment 25-14; §§ 25.803(e), 25.811(f), 25-853(a), 25.853(b), and 25-855(a) of Amendment 25-15; § 25.1359 of Amendment 25-17; § 25.785(c) of Amendment 25-20; §§ 25.251(c), 25.251(d), 25.251(e), 25.303, 25.305(b), 25.307(d), 25.331(a)(3), 25.335(b), 25.335(f), 25.337(b), 25.349(b), 25.351(a), 25.363, 25.395(a), 25.395(b), 25.471(a)(1), 25.471(a)(2), 25.473, 25.493(b), 25.499(b), 25.499(c), 25.499(d), 25.509(a)(3), 25.561(b)(3), 25.581, 25.607, 25.615, 25.619, 25.625, 25.629, 25.677, 25.697, 25.699, 25.701, 25.721, 25.723, 25.725, 25.727, 25.729, 25.733, 25.735, 25.865, 25.867, 25.871, 25.903(d), 25.934, 25.994, 25.1103(d), 25.1143(e), 25.1303, 25.1307, 25.1331, and 25.1585(c) of Amendment 25-23; § 25.1013(e), 25.1305(c)(4), and 25.1305(c)(6) of Amendment 25-36; §§ 25.815, 25.1322, and 25.1403 of Amendment 25-38; § 25.903(e), 25.939, and 25.943 of Amendment 25-40, § 25.255 of Amendment 25-42; § 25.1326 of Amendment 25-43; Part 36 of the FAR effective December 1, 1969, as amended through Amendment 36-10; Special Federal Aviation Regulation (SFAR) 27 effective February 1, 1974, as amended through Amendment SFAR 27-2; and Special Conditions 25-99-CE-14.

For the Model 55 configured per ECR 2377A or modified per AAK 55-83-4: In addition to the basis listed above, Special Conditions 25-ANM-2 dated June 24, 1983.

For the Model 55C: Amendments 25-3, 25-7, 25-10, 25-12, 25-18, 25-21, and 25-30; plus § 25.955(b)(2) of Amend-Amendment 25-11; § 25.954 of Amendment 25-14; §§ 25.803(e), 25.811(f), and 25.855(a) of Amendment 25-15; § 25.1359 of Amendment 25-17; § 25.785(c) of Amendment 25-20; §§ 25.251(c), 25.251(c), 25.251(e), 25.303, 25.305(b), 25.307(d), 25.331(a)(3), 25.335(b), 25.335(f), 25.337(b), 25.349(b), 25.351(a), 25.363, 25.395(a), 25.395(b), 25.471(a)(1), 25.471(a)(2), 25.473, 25.493(b), 25.499(b), 25.499(c), 25.499(d), 25.509(a)(3), 25.561(b)(3), 25.581, 25.607, 25.615, 25.619, 25.625, 25.629, 25.677, 25.697, 25.699, 25.701, 25.721, 25.723, 25.725, 25.727, 25.729, 25.733, 25.735, 25.865, 25.867, 25.871, 25.903(d), 25.934, 25.994, 25.1103(d), 25.1143(e), 25.1303(a)(1), 25.1303(a)(3), 25.1303(b), 25.1303(c), 25.1307, 25.1331, and 25.1585(c) of Amendment 25-23; § 25.1013(e), 25.1305(c)(4), and 25.1305(c)(6) of Amendment 25-36; § 25.815, 25.1303(a)(2), 25.1322, and 25.1403 of Amendment 25-38; §§ 25.903(e), 25.939, and 25.943 of Amendment 25-40; §§ 25.255 and 25.703 of Amendment 25-42; § 24.1326 of Amendment 25-43; § 25.853 of Amendment 25-51; § 25.851 of Amendment 25-54; Part 36 of the FAR effective December 1, 1969, as amended through Amendment 36-15; SFAR 27 effective February 1, 1974, as amended through Amendment SFAR 27-6; Special Conditions 25-ANM-2 dated June 24, 1983; and Special Conditions 25-99-CE-14 dated March 10, 1981.

Compliance with structural provisions of § 25.801(b) through (e) and § 25.807(d) has not been shown for Models 55, 55B, and 55C.

For Ice Protection: § 25.1419. When ice protection system is installed per ECR 1906, Model 55, 55B, and 55C.

For Noise Standards: Part 36 of the FAR. Compliance with Noise Standards, Part 36, has been established for Models 55, 55B, and 55C airplanes, when modified according to ECR 1511.

For Equivalent Level of Safety: § 25.201(c)(2) (except Model 55C); § 25.773(b)(2); § 25.1305(r); § 25.1505(b)(1) (except Model 55C).

In addition, under § 21.101(b)(1), the following sections of the FAR apply to the HUD installation: § 25.1309; § 25.1321(a)(b)(d), and (e); § 25.1331, 25.1333, and 25.1335, as amended by Amendment 25-41. These special conditions will form an additional part

of the supplemental type certification basis.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 25, as amended) do not contain adequate or appropriate safety standards for the Learjet Model 55 Series airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16 to establish a level of safety equivalent to that established in the regulations.

Special conditions, as appropriate, are issued in accordance with § 11.49 of the FAR after public notice, as required by §§ 11.28 and 11.29, and become part of the type certification basis in accordance with § 21.101(b)(2).

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, the special conditions would also apply to the other model under the provisions of § 21.101(a)(1).

**Discussion**

There is no specific regulation that address protection requirements for electrical and electronic systems from high-intensity radiated fields (HIRF). Increased power levels from ground-based radio transmitters, and the growing use of sensitive electrical and electronic systems to command and control airplanes, have made it necessary to provide adequate protection.

To ensure that a level of safety is achieved equivalent to that intended by the regulations incorporated by reference, special conditions are needed for the modified Learjet Model 55 Series airplanes that would require that the HUD be designed and installed to preclude component damage and interruption of function due to the effects of HIRF.

**High-Intensity Radiated Fields (HIRF)**

With the trend toward increased power levels from ground-based transmitters, plus the advent of space and satellite communications, coupled with the electronic command and control of the airplane, the immunity of critical digital avionics systems, such as the Head-Up Display, to HIRF must be established.

It is not possible to precisely define the HIRF to which the airplanes will be exposed in service. There is also uncertainty concerning the effectiveness of airframe shielding for HIRF. Furthermore, coupling of

electromagnetic energy to cockpit-installed equipment through the cockpit window apertures is undefined. Based on surveys and analysis of existing HIRF emitters, an adequate level of protection exists when compliance with the HIRF protection special condition is shown with either paragraphs 1 or 2 below:

1. A minimum threat of 100 volts per meter peak electric field strength from 10KHz to 18 GHz.

a. The threat must be applied to the system elements and their associated wiring harnesses without the benefit of airframe shielding.

b. Demonstration of this level of protection is established through system tests and analysis.

2. A threat external to the airframe of the following field strengths for the frequency ranges indicated:

Frequency	Peak (V/M)	Average (V/M)
10 KHz—100 KHz .....	50	50
100 KHz—500 KHz .....	60	60
500 KHz—2000 KHz .....	70	70
2 MHz—30 MHz .....	200	200
30 MHz—100 MHz .....	30	30
100 MHz—200 MHz .....	150	33
200 MHz—400 MHz .....	70	70
400 MHz—700 MHz .....	4,020	935
700 MHz—1000 MHz .....	1,700	170
1 GHz—2GHz .....	5,000	990
2 GHz—4GHz .....	6,680	840
4 GHz—6GHz .....	6,850	310
6 GHz—8GHz .....	3,600	670
8 GHz—12GHz .....	3,500	1,270
12 GHz—18GHz .....	3,500	360
18 GHz—40GHz .....	2,100	750

As discussed above, these special conditions are applicable to the Learjet Model 55 Series airplane, modified by Duncan Aviation. Should Duncan Aviation apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A10CE to incorporate the same novel or unusual design feature, the special conditions would apply to that model as well, under the provisions of § 21.101(a)(1).

**Conclusion**

This action affects only certain unusual or novel design features on Learjet Model 55, 55B, and 55C airplanes modified by Duncan Aviation. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of this feature on these airplanes.

The substance of these special conditions has been subjected to the notice and comment procedure in several prior instances and has been derived without substantive change from those previously issued. It is

unlikely that prior public comment would result in a significant change from the substance contained herein. For this reason, and because a delay would significantly affect the certification of the airplane, which is imminent, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions immediately. Therefore, these special conditions are being made effective upon issuance. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

#### List of Subjects in 14 CFR part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. app. 1344, 1348(c), 1352, 1354(a), 1355, 1421 through 1431, 1502, 1651(b)(2), 42 U.S.C. 1857f-10, 4321 et seq.; E.O. 11514; and 49 U.S.C. 106(g).

#### The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the supplemental type certification basis for the Learjet Model 55, 55B, and 55C airplanes, as modified by Duncan Aviation:

1. *Protection from Unwanted Effects of High-Intensity Radiated Fields (HIRF).* Each electrical and electronic system that performs critical functions must be designed and installed to ensure that the operation and operational capability of these systems to perform critical functions are not adversely affected when the airplanes is exposed to high intensity radiated fields external to the airplane.

2. The following definition applies with respect to this special condition: *Critical Function.* Functions whose failure would contribute to or cause a failure condition that would prevent the continued safe flight and landing of the airplane.

Issued in Renton, Washington, on July 26, 1995.

**Darrell M. Pederson,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service, ANM-100.*

[FR Doc. 95-19140 Filed 8-2-95; 8:45 am]

BILLING CODE 4910-13-M

#### 14 CFR Part 39

[Docket No. 95-CE-12-AD; Amendment 39-9318; AD 95-15-12]

#### Airworthiness Directives; Jetstream Aircraft Limited (JAL) HP137 Mk1 and Jetstream Series 200 Airplanes

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule

**SUMMARY:** This amendment adopts a new airworthiness directive (AD) that applies to Jetstream Aircraft Limited (JAL) HP137 Mk1 and Jetstream series 200 airplanes. This action requires incorporating operating limitations that revise the maximum flap operating speed for DOWN flaps to 120 knots indicated airspeed (KIAS), and prohibit extending the flaps beyond the take-off position if ice is visible on the airplane. An incident where an airplane of similar type design to the affected airplanes experienced sudden pitch down because of the accumulation of over one inch of ice prompted the proposed action. The actions specified by this AD are intended to prevent sudden pitch down of the airplane during icing conditions, which could lead to loss of control of the airplane.

**DATES:** Effective September 19, 1995.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of September 19, 1995.

**ADDRESSES:** Service information that applies to this AD may be obtained from Jetstream Aircraft Limited, Manager, Product Support, Prestwick Airport, Ayrshire, KA9 2RW Scotland; telephone (44-292) 79888; facsimile (44-292) 79703; or Jetstream Aircraft Inc., Librarian, P. O. Box 16029, Dulles International Airport, Washington, D.C., 20041-6029; telephone (703) 406-1161; facsimile (703) 406-1469. This information may also be examined at the Federal Aviation Administration (FAA), Central Region, Office of the Assistant Chief Counsel, Attention: Rules Docket 95-CE-12-AD, Room 1558, 601 E. 12th Street, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Mr. Sam Lovell, Project Officer, Small Airplane Directorate, Airplane Certification Service, FAA, 1201 Walnut, suite 900, Kansas City, Missouri

64105; telephone (816) 426-6932; facsimile (816) 426-2169.

**SUPPLEMENTARY INFORMATION:** A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to JAL HP137 Mk1, and Jetstream series 200 airplanes was published in the **Federal Register** on March 2, 1995 (60 FR 11635). The action proposed to incorporate operating limitations that revise the maximum flap operating speed for DOWN flaps to 120 KIAS, and prohibit extending flaps beyond the take-off position if ice is visible on the airplane. Accomplishment of the proposed action would be in accordance with Jetstream Service Bulletin (SB) 27-A-JA 911044, dated January 31, 1992.

Interested persons have been afforded an opportunity to participate in the making of this amendment. No comments were received on the proposed rule or the FAA's determination of the cost to the public.

After careful review of all available information related to the subject presented above, the FAA has determined that air safety and the public interest require the adoption of the rule as proposed except for minor editorial corrections. The FAA has determined that these minor corrections will not change the meaning of the AD and will not add any additional burden upon the public than was already proposed.

The FAA estimates that 10 airplanes in the U.S. registry will be affected by this AD, that it will take approximately 1 workhour per airplane to accomplish the required action, and that the average labor rate is approximately \$60 an hour. Parts (placards fabricated from local resources) cost approximately \$30 per airplane. Based on these figures, the total cost impact of the AD on U.S. operators is estimated to be \$900. This figure is based upon the assumption that no affected airplane owner/operator has accomplished the proposed inspection.

All 10 of the affected airplanes are HP137 Mk1 airplanes; there are no Jetstream series 200 airplanes registered in the United States, but they are type certificated for operation in the United States. According to FAA records, none of these HP137 Mk1 airplanes are in operation. Since there are no airplanes currently in operation, the cost impact of the proposed AD would be narrowed to only those owners/operators returning their airplane to operation.

The regulations adopted herein will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and