

**DEPARTMENT OF TRANSPORTATION****Federal Aviation Administration****14 CFR Part 25**

[Docket No. FAA-2011-1108; Special Conditions No. 25-456-SC]

**Special Conditions: Learjet Inc., Model LJ-200-1A10 Airplane, Pilot-Compartment View Through Hydrophobic Windshield Coatings in Lieu of Windshield Wipers**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions.

**SUMMARY:** These special conditions are issued for the Learjet Model LJ-200-1A10 airplane. This airplane will have a novel or unusual design feature associated with hydrophobic windshield coatings in lieu of windshield wipers. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** *Effective Date:* March 8, 2012.

**FOR FURTHER INFORMATION CONTACT:** Paul Bernado, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone (425) 227-1209; facsimile (425) 227-1149.

**SUPPLEMENTARY INFORMATION:**

**Background**

On January 11, 2008, Learjet Inc. applied for a type certificate for a new Model LJ-200-1A10 airplane. This airplane is 68 feet long with a 65-foot wing span and accommodates up to 10 passengers. The LJ-200-1A10 airplane uses a hydrophobic windshield coating, in lieu of windshield wipers, for an unobstructed outside view from the pilot compartment.

**Type Certification Basis**

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.17, Learjet Inc. must show that the Model LJ-200-1A10 airplane meets the applicable provisions of part 25, as amended by Amendments 25-1 through 25-123.

If the Administrator finds that the applicable airworthiness regulations (*i.e.*, 14 CFR part 25) do not contain adequate or appropriate safety standards for the Model LJ-200-1A10 airplane because of a novel or unusual design

feature, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the Model LJ-200-1A10 airplane must comply with the fuel-vent and exhaust-emission requirements of part 34, and the noise-certification requirements of part 36, and the FAA must issue a finding of regulatory adequacy pursuant to § 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.17(a)(2).

**Novel or Unusual Design Features**

The Learjet Model LJ-200-1A10 airplane will incorporate the following novel or unusual design features:

The Model LJ-200-1A10 airplane flight deck design incorporates a hydrophobic windshield coating to provide, during precipitation, an adequate outside view from the pilot compartment. Sole reliance on such a coating, without windshield wipers, constitutes a novel or unusual design feature for which the applicable airworthiness regulations do not contain adequate or appropriate safety standards. Therefore, a special condition is required to provide a level of safety equivalent to that established by the regulations.

**Discussion**

Section 25.773(b)(1) requires a means to maintain a clear portion of the windshield for both pilots to have a sufficiently extensive view along the flight path during precipitation conditions. The regulations require this means to maintain such an area during heavy-rain precipitation at airplane speeds up to 1.5  $V_{SR1}$ . Hydrophobic windshield coatings may depend to some degree on airflow to maintain a clear-vision area. The heavy rain and high speed conditions specified in the current rule do not necessarily represent the limiting condition for this new technology. For example, airflow over the windshield, which may be necessary to remove moisture from the windshield, may not be adequate to maintain a sufficiently clear area of the windshield in low-speed flight or during surface operations. Alternatively, airflow over the windshield may be disturbed during such critical times as the approach to land, where the airplane is at a higher-than-normal pitch attitude. In these cases, areas of airflow disturbance or separation on the

windshield could cause failure to maintain a clear-vision area on the windshield.

**Discussion of Comments**

Notice of proposed special conditions no. 25-11-16-SC for the Learjet Model LJ-200-1A10 airplane was published in the **Federal Register** on October 14, 2011 (76 FR 63851). No comments were received, and the special conditions are adopted as proposed.

**Applicability**

As discussed above, these special conditions are applicable to the Model LJ-200-1A10 airplane. Should Learjet Inc. apply at a later date for a change to the type certificate to include other type designs incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

**Conclusion**

This action affects only certain novel or unusual design features on the Model LJ-200-1A10 airplane. It is not a rule of general applicability.

**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:** 49 106(g), 40113, 44701, 44702, 44704.

**The Special Conditions**

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type-certification basis for Learjet Inc. Model LJ-200-1A10 airplanes.

The airplane must have a means to maintain a clear portion of the windshield, during precipitation conditions, enough for both pilots to have a sufficiently extensive view along the ground or flight path in normal taxi and flight attitudes of the airplane. This means must be designed to function, without continuous attention on the part of the crew, in conditions from light misting precipitation to heavy rain, at speeds from fully stopped in still air, to 1.5  $V_{SR1}$  with lift and drag devices retracted.

Issued in Renton, Washington, on January 30, 2012.

**K.C. Yanamura,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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