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 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 Cessna 550 series airplanes that would require that new technology electrical and electronic systems, such as the HUD, be designed and installed to preclude component damage and interruption of function due to both the direct and indirect 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 electronic command and control of the airplane, the immunity of critical digital avionics systems, such as the HUD, to HIRF must be established.

It is not possible to precisely define the HIRF to which the airplane 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 10 KHz 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– 2 MHz	70	70
2 MHz–30 MHz	200	200
30 MHz–70 MHz	30	30
70 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–1 GHz	1,700	170
1 GHz–2 GHz	5,000	990
2 GHz–4 GHz	6,680	840
4 GHz–6 GHz	6,850	310
6 GHz–8 GHz	3,600	670
8 GHz–12 GHz	3,500	1,270
12 GHz–18 GHz	3,500	360
18 GHz–40 GHz	2,100	750

As discussed above, these special conditions are applicable to Cessna 550 series airplanes, modified by Elliott Aviation Technical Products Development, Inc. Should Elliott Aviation Technical Products Development, Inc. apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A22CE 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 Cessna 550 series airplanes modified by Elliott Aviation Technical Products Development, Inc. of Moline, Illinois. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on modified Cessna 550 series airplanes.

The substance of the special conditions for these airplanes 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 have not 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 condition is issued as part of the supplemental type certification basis for Cessna 550 series airplanes modified by Elliott Aviation Technical Products Development, Inc.

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 airplane is exposed to high-intensity radiated fields external to the airplane.

2. The following definition applies with respect to this special condition: *Critical Functions.* 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 February 13, 1995.

Darrell M. Pederson,

Assistant Manager, Transport Airplane Directorate, Aircraft Certification Service, ANM–101.

[FR Doc. 95–4772 Filed 2–24–95; 8:45 am]

BILLING CODE 4910–13–M

---

14 CFR Part 25

[Docket No. NM–103; Special Conditions No. 25–ANM–94]

Special Conditions: Dassault Aviation Model Falcon 2000 Airplane; Automatic Takeoff Thrust Control System

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the Dassault Aviation Model Falcon 2000 airplane. This new airplane will have an unusual design feature associated with an Automatic Takeoff Thrust Control System (ATTCS), for which the applicable airworthiness regulations do not contain appropriate safety standards for approach climb

performance using an ATTCS. 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.

EFFECTIVE DATE: February 3, 1995.

FOR FURTHER INFORMATION CONTACT: Stephen Slotte, FAA, Standardization Branch, ANM–113, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055–4056, telephone (206) 227–2797.

SUPPLEMENTARY INFORMATION:

Background

On September 13, 1989, Dassault Aviation, B.P. 24, 33701 Mérignac Cédex, France, applied for a new type certificate in the transport airplane category for the Model Falcon 2000 airplane. The Dassault Aviation Model Falcon 2000 is a medium-sized transcontinental business jet powered by two General Electric/Garrett CFE 738 turbofan engines mounted on pylons extending from the aft fuselage. Each engine will be capable of delivering 5,600 lbs. thrust. The airplane will be capable of operation with two flight crewmembers and eight passengers.

The Model Falcon 2000 will incorporate an unusual design feature, the Automatic Takeoff Thrust Control System (ATTCS), referred to by Dassault as Automatic Power Reserve or APR, to show compliance with the approach climb requirements of § 25.121(d). Appendix I to part 25 limits the application of performance credit for ATTCS to takeoff only. Since the airworthiness regulations do not contain appropriate safety standards for approach climb performance using ATTCS, special conditions are required to ensure a level of safety equivalent to that established in the regulations.

Type Certification Basis

Under the provisions of § 21.17 of the FAR, Dassault Aviation must show that the Falcon 2000 meets the applicable provisions or part 25, effective February 1, 1965, as amended by Amendments 25–1 through 25–69. The certification basis may also include later amendments to part 25 that are not relevant to these special conditions. In addition, the certification basis for the Falcon 2000 includes part 34, effective September 10, 1990, plus any amendments in effect at the time of certification; and part 36, effective December 1, 1969, as amended by Amendments 36–1 through the amendment in effect at the time of certification. These special conditions form an additional part of the type certification basis. In addition, the certification basis may include other special conditions that are not relevant to these special conditions.

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 Dassault Aviation Model Falcon 2000 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 § 21.17(a)(2).

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model already included on the same type certificate be modified 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).

Novel or Unusual Design Features

The Model Falcon 2000 will incorporate an unusual design feature, the ATTCS (referred to by Dassault as the Automatic Power Reserve or APR), to show compliance with the approach climb requirements of § 25.121(d). The FALCON 2000 is a twin-turbofan-powered airplane equipped with Full Authority Digital Engine Controls (FADECs) that, in part, protect against exceeding engine limits. Further, the FALCON 2000 incorporates a non-moving throttle system that functions by placing the throttle levers in detents for the takeoff and climb phases of flight, allowing the FADEC to schedule power setting based on flight phase. With the throttle levers placed in either of the two forward detents (takeoff/go-around and climb), if an engine failure (RPM (N1)) difference of greater than 10 percent between engines is sensed, power is automatically advanced on the remaining engine to the APR power level associated with the detent. The system is permanently armed and will function any time the throttle levers are in either of the two forward detents and an engine failure is sensed. Additionally, as in the case of an APR failure, or in an all-engines mode, the crew can select APR by placing the throttle levers in either of the two forward detents and manually activating the system using an instrument panel-mounted override switch.

APR power levels manifest themselves as an increase in the engine flat-rating temperature for the operating altitude, and, in general, result in higher thrust levels than those associated with the throttle detents alone. Dassault also makes reference in the APR logic description to thrust increase being armed for a throttle lever angle above 27 degrees (max cruise position), but does not make it clear in the system description if the APR system functions when the throttle is not in a detent. Further discussions with Dassault make it clear that when the throttle is between two detents, the FADEC makes a linear interpolation between the related tables of corrected N_1; i.e., an almost linear thrust change. As function outside of a detent is possible, then a throttle angle of 28 degrees (arming angle + 1 degree) would produce almost no additional thrust when APR is activated, while 1 degree before the next detent (max cruise/max continuous) would produce almost the same thrust increase as when the throttle is in that detent. Logic for the max climb/max continuous detents is the same. From a practical point of view, throttle positions between the detents are not used.

The part 25 standards for ATTCS, contained in § 25.904 and Appendix I, specifically restrict performance credit for ATTCS to takeoff. Expanding the scope of the standards to include other phases of flight, including go-around, was considered at the time the standards were issued, but flightcrew workload issues precluded further consideration. As stated in the preamble to Amendment 25–62:

> ''In regard to ATTCS credit for approach climb and go-around maneuvers, current regulations preclude a higher thrust for the approach climb (§ 25.122(d)) than for the landing climb (§ 25.119). The workload required for the flightcrew to monitor and select from multiple in-flight thrust settings in the event of an engine failure during a critical point in the approach, landing, or go-around operations is excessive. Therefore, the FAA does not agree that the scope of the amendment should be changed to include the use of ATTCS for anything except the takeoff phase.'' (52 FR 43153, November 9, 1987)

The ATTCS incorporated on the FALCON 2000 allows the pilot to use the same power setting procedure during a go-around, regardless of whether or not an engine fails. In either case, the pilot obtains go-around power by moving the throttles into the forward (takeoff/go-around) throttle detent.

Since the ATTCS is permanently armed, it will function automatically following an engine failure, and advance the remaining engine to the ATTCS thrust level. Therefore, this design adequately addresses the pilot workload concerns identified in the preamble to Amendment 25–62. Accordingly, these special conditions require a showing of compliance with those provisions of § 25.904 and Appendix I that are applicable to the approach climb and go-around maneuvers.

The definition of a critical time interval for the approach climb case, during which time it must be extremely improbable to violate a flight path based on the § 25.121(d) gradient requirement, is of primary importance. The § 25.121(d) gradient requirement implies a minimum one-engine-inoperative flight path capability with the airplane in the approach configuration. The engine may have been inoperative before initiating the go-around, or it may become inoperative during the go-around. The definition of the critical time interval must consider both possibilities.

Discussion of Comments

Notice of Proposed Special Conditions No. SC–94–4–NM for the Dassault Aviation Model Falcon 2000 airplane was published in the Federal Register on December 16, 1994 (59 FR 64869). No comments were received, and the special conditions are adopted as proposed.

As discussed above, these special conditions are applicable to the Dassault Aviation Model Falcon 2000. Should Dassault Aviation apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well under the provisions of § 21.101(a)(1).

Under standard practice, the effective date of final special conditions would be 30 days after the date of publication in the Federal Register; however, as the certification date for the Falcon 2000 is imminent, the FAA finds that good cause exists to make these special conditions effective upon issuance.

Conclusion

This action affects only certain design features on the Dassault Aviation Model Falcon 2000 airplane. It is not a rule of general applicability and affects only the manufacturer who applied to the FAA for approval of these features on the airplane.

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 type certification basis for the Dassault Aviation Model Falcon 2000 airplane.

(a) *General:* An ATTCS is defined as the entire automatic system, including all devices, both mechanical and electrical, that sense engine failure, transmit signals, actuate fuel controls or power levers, or increase engine power by other means on operating engines to achieve scheduled thrust or power increases and furnish cockpit information on system operation.

(b) *Automatic takeoff thrust control system (ATTCS).* The engine power control system that automatically resets the power or thrust on the operating engine (following engine failure during the approach for landing) must comply with the following requirements:

(1) *Performance and System Reliability Requirements.* The probability analysis must include consideration of ATTCS failure occurring after the time at which the flightcrew last verifies that the ATTCS is in a condition to operate until the beginning of the critical time interval.

(2) *Thrust Setting.* The initial takeoff thrust set on each engine at the beginning of the takeoff roll or go-around may not be less than:

(i) Ninety (90) percent of the thrust level set by the ATTCS (the maximum takeoff thrust or power approved for the airplane under existing ambient conditions);

(ii) That required to permit normal operation of all safety-related systems and equipment dependent upon engine thrust or power lever position; or

(iii) That shown to be free of hazardous engine response characteristics when thrust is advanced from the initial takeoff thrust or power to the maximum approved takeoff thrust or power.

(3) *Powerplant Controls.* In addition to the requirements of § 25.1141, no single failure or malfunction, or probable combination thereof, of the ATTCS, including associated systems, may cause the failure of any powerplant function necessary for safety. The ATTCS must be designed to:

(i) Apply thrust or power on the operating engine(s), following any one engine failure during takeoff or go-around, to achieve the maximum approved takeoff thrust or power without exceeding engine operating limits; and

(ii) Provide a means to verify to the flightcrew before takeoff and before beginning an approach for landing that the ATTCS is in a condition to operate.

(c) *Critical Time Interval.* The definition of the Critical Time Interval in Appendix I, Section I25.2(b) shall be expanded to include the following:

(1) When conducting an approach for landing using ATTCS, the critical time interval is defined as follows:

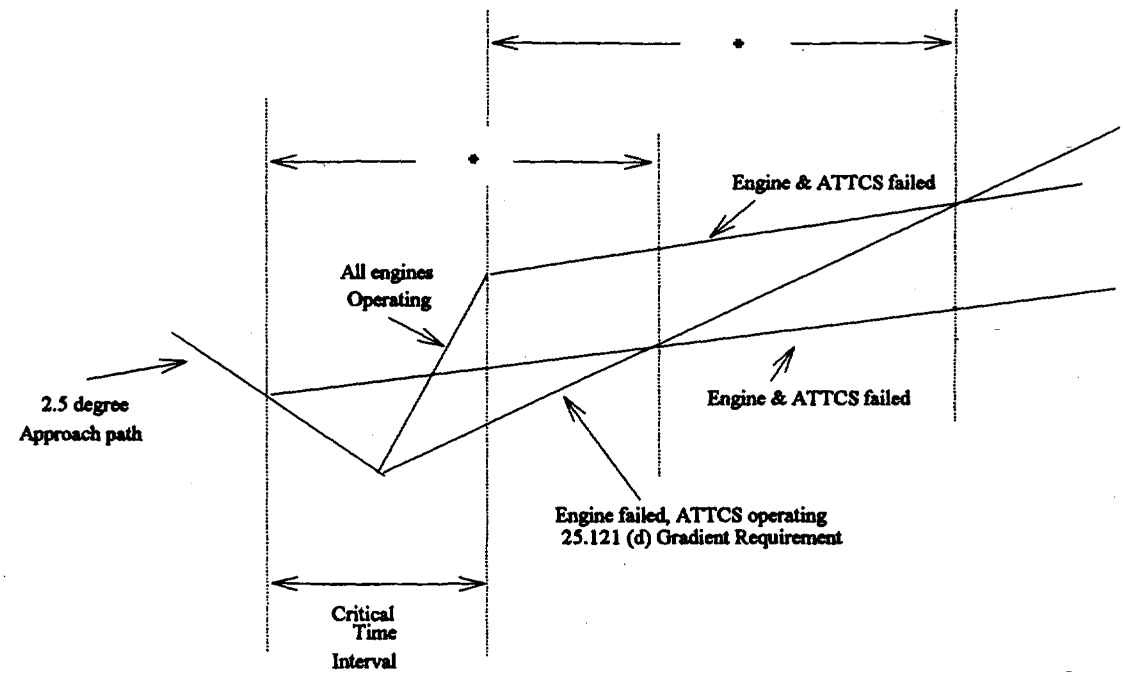
(i) The critical time interval *begins* at a point on a 2.5 degree approach glide path from which, assuming a simultaneous engine and ATTCS failure, the resulting approach climb flight path intersects a flight path originating at a later point on the same approach path corresponding to the Part 25 one-engine-inoperative approach climb gradient. The period of time from the point of simultaneous engine and ATTCS failure to the intersection of these flight paths must be no shorter than the time interval used in evaluating the critical time interval for takeoff beginning from the point of simultaneous engine and ATTCS failure and ending upon reaching a height of 400 feet.

(ii) The critical time interval *ends* at the point on a minimum performance, all-engines-operating go-around flight path from which, assuming a simultaneous engine and ATTCS failure, the resulting minimum approach climb flight path intersects a flight path corresponding to the Part 25 minimum one-engine-inoperative approach climb gradient. The all-engines-operating go-around flight path and the Part 25 one-engine-inoperative approach climb gradient flight path originate from a common point on a 2.5 degree approach path. The period of time from the point of simultaneous engine and ATTCS failure to the intersection of these flight paths must be no shorter than the time interval used in evaluating the critical time interval for the takeoff beginning from the point of simultaneous engine and ATTCS failure and ending upon reaching a height of 400 feet.

(2) The critical time interval must be determined at the altitude resulting in the longest critical time interval for which one-engine-inoperative approach climb performance data are presented in the Airplane Flight Manual.

(3) The critical time interval is illustrated in the following figure:

BILLING CODE 4910–13–M



*** The engine and ATTCS failed time interval must be no shorter than the time interval from the point of simultaneous engine and ATTCS failure to a height of 400 feet used to comply with I25.2(b) for ATTCS use during takeoff.**

BILLING CODE 4910–13–C

Issued in Renton, Washington, on February 3, 1995.

Darrell M. Pederson,

Assistant Manager, Transport Airplane Directorate, Aircraft Certification Service, NAM–101.

[FR Doc. 95–4774 Filed 2–24–95; 8:45 am]

BILLING CODE 4910–13–M

---

14 CFR Part 25

[Docket No. NM–108; Special Conditions No. 25–ANM–96]

Special Conditions: Modified Gulfstream American Corporation Model G–IV Airplane; 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 Gulfstream American Corporation (GAC) Model G–IV airplane modified by Duncan Aviation, Inc., of Lincoln, Nebraska. This airplane 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 February 13, 1995. Comments must be received on or before April 13, 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–108, 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–108.'' 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