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–116." The postcard will be date stamped and returned to the commenter.

Background

On February 15, 1994, Israel Aircraft Industries (IAI), Ben Gurion International Airport, Tel Aviv 70100, Israel, applied for an amendment to Type Certificate (TC) A16NM to incorporate the Model Astra SPX airplane. The Astra SPX is a derivative of the Model 1125 Westwind Astra. The changes include installation of new Allied Signal (Garrett) TFE731–40/40A engines, which are a derivative of the existing TFE731–3A–200G engines; installation of winglets and minor structural modifications to the wing; and installation of new avionics.

Type Certification Basis

Under the provisions of § 21.101 of 14 CFR part 21, IAI must show that the Model Astra SPX meets the applicable regulations incorporated by reference in TC A16NM, 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 incorporate by reference in TC A16NM are as follows: Part 25, effective February 1, 1965, as amended by Amendments 25–1 through 25–54. The regulations in effect on the date of application include the applicable provisions of part 25 effective February 1, 1965, as amended by Amendments 25-1 through 25-79. In addition, the certification basis for the Model Astra SPX 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 Amendment 36-1 through the amendment in effect at the time of certification. This special condition will form an additional part of the type certification basis. In addition, the certification basis may include exemptions and other special conditions that are not relevant to this special condition.

If the Administrator finds that the applicable airworthiness regulation (i.e., part 25, as amended) do not contain adequate or appropriate safety standards

for the Astra SPX 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 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 Astra SPX incorporates new avionic/electronic systems, such as electronic displays and electronic engine controls, that perform critical functions. These systems may be vulnerable to HIRF external to the airplane.

Discussion

There is no specific regulation that addresses 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, a special condition is needed for the IAI Astra SPX, which would require that new electrical and electronic systems that perform critical functions 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 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 cockpitinstalled 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.

As discussed above, this special condition would be applicable initially to the IAI Model Astra SPX. Should IAI apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, this special condition would apply to that model as well, under the provisions of § 21.101(a)(1).

Conclusion

This action affects only certain design features on the IAI Astra SPX 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.

The substance of the special condition for this airplane 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