

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98057-3356**

In the matter of the petition of

**Hawker Beechcraft Corporation**

for an exemption from § 25.1435(a)(1),  
Amendment 25-104, of Title 14, Code of  
Federal Regulations

**Regulatory Docket No. FAA-2006-25155**

**AMENDED GRANT OF EXEMPTION**

By letter of May 1, 2007, Mr. David Bernstorff, Vice President, Airworthiness, Certification and Technical Engineering, Hawker Beechcraft Corporation (formerly known as Raytheon Aircraft Company), 9709 E. Central, P.O. Box 85, Wichita, Kansas, 67201-0085, petitioned the Federal Aviation Administration (FAA) for an amendment to Exemption No. 8760 that was issued to Raytheon Aircraft Company on August 7, 2006, and provided relief until June 1, 2007. That exemption provided temporary relief from certain requirements of Title 14 Code of Federal Regulations (14 CFR) 25.1435(a)(1), Amendment 25-104, with three (3) provisions. First, it allowed the petitioner to obtain the type certificate by December 31, 2006, with the hydraulic system in compliance with Amendment 25-72. Second, it required that by June 1, 2007, the petitioner complete analysis, testing, and documentation of the affected hydraulic system components to show compliance with Amendment 25-104. Third, it required retrofit of the model 4000 fleet by June 1, 2007, if any design changes are developed to comply with Amendment 25-104. The petitioner is requesting an extension of Exemption No. 8760 to December 21, 2007, to comply with the aforementioned second and third provisions.

**The petitioner requests relief from the following regulation:**

**§ 25.1435 Hydraulic systems.**

- (a) Element design. Each element of the hydraulic system must be designed to:
- (1) Withstand the proof pressure without permanent deformation that would prevent it from performing its intended functions, and the ultimate pressure without rupture. The proof and ultimate pressures are defined in terms of the design operating pressure (DOP) as follows:

Element	Proof (xDOP)	Ultimate (xDOP)
1. Tubes & fittings	1.5	3.0
2. Pressure vessels containing gas		
High pressure (e.g., accumulators)	3.0	4.0
Low pressure (e.g., reservoirs)	1.5	3.0
3. Hoses	2.0	4.0
4. All other elements	1.5	2.0

**Related Sections of 14 CFR:**

**§ 25.1435 Hydraulic systems.**

- (a) Element design. Each element of the hydraulic system must be designed to:
- (2) Withstand, without deformation that would prevent it from performing its intended function, the design operating pressure in combination with limit structural loads that may be imposed;
  - (3) Withstand, without rupture, the design operating pressure multiplied by a factor of 1.5 in combination with ultimate structural load that can reasonably occur simultaneously;
  - (4) Withstand the fatigue effects of all cyclic pressures, including transients, and associated externally induced loads, taking into account the consequences of element failure; and
  - (5) Perform as intended under all environmental conditions for which the airplane is certificated.

- (b) System design. Each hydraulic system must:
- (1) Have means located at a flightcrew station to indicate appropriate system parameters, if
    - (i) It performs a function necessary for continued safe flight and landing; or
    - (ii) In the event of hydraulic system malfunction, corrective action by the crew to ensure continued safe flight and landing is necessary;
  - (2) Have means to ensure that system pressures, including transient pressures and pressures from fluid volumetric changes in elements that are likely to remain closed long enough for such changes to occur, are within the design capabilities of each element, such that they meet the requirements defined in § 25.1435(a)(1) through (a)(5);
  - (3) Have means to minimize the release of harmful or hazardous concentrations of hydraulic fluid or vapors into the crew and passenger compartments during flight;
  - (4) Meet the applicable requirements of §§ 25.863, 25.1183, 25.1185, and 25.1189 if a flammable hydraulic fluid is used; and
  - (5) Be designed to use any suitable hydraulic fluid specified by the airplane manufacturer, which must be identified by appropriate markings as required by § 25.1541.

(c) Tests. Tests must be conducted on the hydraulic system(s), and/or subsystem(s) and elements, except that analysis may be used in place of or to supplement testing, where the analysis is shown to be reliable and appropriate. All internal and external influences must be taken into account to an extent necessary to evaluate their effects, and to assure reliable system and element functioning and integration. Failure or unacceptable deficiency of an element or system must be corrected and be sufficiently retested, where necessary.

(1) The system(s), subsystem(s), or element(s) must be subjected to performance, fatigue, and endurance tests representative of airplane ground and flight operations.

(2) The complete system must be tested to determine proper functional performance and relation to the other systems, including simulation of relevant failure conditions, and to support or validate element design.

(3) The complete hydraulic system(s) must be functionally tested on the airplane in normal operation over the range of motion of all associated user systems. The test must be conducted at the system relief pressure or 1.25 times the DOP if a system pressure relief device is not part of the system design. Clearances between hydraulic system elements and other systems or structural elements must remain adequate and there must be no detrimental effects.

### **The petitioner provides the following supportive information**

At the time the request for the exemption was submitted in June 2006, the Model 4000 was nearing the end of the initial type certification program. It was believed at that time that issuance of the TC was imminent. However, initial coordination with Hawker Beechcraft suppliers in June of 2006 indicated there would be inadequate time available prior to obtaining the Type Certificate (TC) to conduct and document the required certification tests of the three (3) accumulators and two (2) hose assemblies to meet the requirements of 14 CFR 25.1435(a)(1) at Amendment 104. All other components were tested to levels that support Amendment 104 requirements. This delay in certification resulted in the design efforts to address compliance to 14 CFR 25.1435 being delayed until January 2007. Consequently, the delay in starting has impacted Hawker Beechcraft Corporation's (HBC) ability to meet the June 1, 2007, expiration date in exemption no. 8760 for provisions 2 and 3.

Due to efforts associated with the delay in completing type certification activities—which did not occur until November 21, 2006—and resolving certification requirements with

suppliers, completion of the required compliance testing and reports prior to the June 1, 2007, requirement in the exemption cannot be met.

### **Extent and Reason for Relief**

Since January, HBC has submitted and obtained approval of the certification plan regarding showing compliance for the remainder of the components to 14 CFR 25.1435(a)(1) (see reference letter Hawker Beechcraft Corporation to FAA # 940-2007-00411, available in the Docket). In addition, the qualification test plans have been coordinated with the suppliers and are in the process of being submitted to the FAA for approval. Once approval is obtained, testing will commence. However, completion of this activity will not be prior to the June 1, 2007, date specified in the exemption.

### **Public Interest**

Granting this extension to the time limited exemption is in the public interest. HBC has concluded there is no adverse affect on safety based on current Model 4000 design features. Further, no aircraft are currently delivered and there will not be an aircraft delivered that does not meet the requirements of 14 CFR 25.1435(a)(1).

- Without the extension to the time limited exemption, the requirements of the certification basis will likely not be met by June 1, 2007, and a gap in the certification basis will be created for the Type Certificate (T00013WI).

### **Impact on Safety**

Hawker Beechcraft Corporation believes granting an extension to the time limited exemption has no safety impact because no aircraft will be delivered with a system that is not fully compliant with 14 CFR 25.1435 at amendment 104.

### **Summary**

Hawker Beechcraft Corporation is seeking an amended extension date to December 21, 2007, for the time limited exemption, number 8670, to 14 CFR 25.1435(a)(1), Amendment 104 for the Model 4000 type certification program.

Hawker Beechcraft Corporation is nearly complete with certification activities to show compliance to 14 CFR 25.1435(a)(1), Amendment 104 for remaining components, however, the current time requirement specified in the exemption will likely not be met. Therefore, an extension is requested.

No aircraft will be delivered unless it complies with 14 CFR 25.1435(a)(1), amendment 104.

There is no impact to safety as there will not be any aircraft delivered that do not meet 14 CFR 25.1435(a)(1), amendment 104. In accordance with 14 CFR 11.87, Hawker Beechcraft Corporation request the FAA not publish the petition for an extension to the time-limited exemption and request for public comment for the following reasons:

1. The extension would not set a precedent for issuance of time-limited exemption as it only extends the time permitted to complete the certification tasks,
2. The relief requested in the exemption is identical to that originally requested and granted, only the duration is extended.
3. The time extension for limited exemption will allow Hawker Beechcraft Corporation sufficient time to complete analysis, testing, and if required, develop any design changes.

Hawker Beechcraft Corporation's complete petition for exemption is available on the Department of Transportation's docket website. Go to <http://dms.dot.gov>. The docket number is FAA-2006-25155. The petitioner's complete supportive information is contained in its petition.

#### **Notice and Public Procedure**

The petition for exemption and the reasons presented are nearly identical to exemption no. 8760. Therefore, the FAA agrees with the petitioner's good cause request and has waived the requirement to publish a summary of the petition in the Federal Register for public comment.

#### **The FAA's analysis and summary of this petition is as follows**

The FAA considers the petitioner's request for an amendment to a time-limited exemption to be in the public's interest for some of the reasons stated by the petitioner. Notably, no aircraft will be delivered unless it complies with the provisions of 14 CFR 25.1435(a)(1) at amendment 25-104. Therefore, there would be no impact on safety. In addition, effective June 1, 2007, when Exemption No. 8760 expires, a denial of this amended exemption request could jeopardize the validity of Hawker Beechcraft Corporation's Type Certificate for the model 4000 airplane.

In drafting the previous exemption, the FAA assumed that the petitioner would work diligently with its suppliers to conduct and document the required certification tests of the three (3) accumulators and two (2) hose assemblies requiring testing. Though we thought that the original 151-day extension was reasonable, we now recognize that due to apparent difficulties encountered by the petitioner, compliance cannot be met under the terms of Exemption No. 8760 and a further extension is now being sought.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not adversely affect the level of safety provided by the regulations. Therefore, pursuant to

the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, the petition of Hawker Beechcraft Corporation for an amendment to Exemption 8760 from the provisions of 14 CFR 25.1435(a)(1) is hereby granted until December 21, 2007, and is subject to the following provisions:

1. Complete analysis, testing, and documentation of the affected accumulators and hose assemblies to show compliance to § 25.1435(a) (1), as amended by Amendment 25-104, prior to December 21, 2007,
2. Before December 21, 2007, Hawker Beechcraft Corporation will develop and submit for FAA approval service information to incorporate any design changes and/or operating and maintenance limitations developed to meet the provision of § 25.1435(a)(1), as amended by Amendment 25-104, and
3. The FAA will not issue standard and export certificates of airworthiness for airplanes that do not meet the requirements of 14 CFR 25.1435(a)(1) as amended by Amendment 25-104.

Issued in Renton Washington, on May 31, 2007.

/s/

Ali Bahrami  
Manager, Transport Airplane Directorate  
Aircraft Certification Service