EMERGENCY AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post Emergency ADs on the internet at "av-info.faa.gov"

DATE: August 30, 2002
AD #: 2002-18-52

Transmitted as follows is emergency airworthiness directive (AD) 2002-18-52 for the attention of all owners and operators of Boeing Model 737-600, -700, -700C, –800, and -900 series airplanes; Model 747 series airplanes; and Model 757 series airplanes.

Background

The FAA has received reports indicating that fuel pumps on certain Boeing Model 737, 747, and 757 series airplanes have failed as a result of chafing of the stator lead wire bundle, which occurred when the stationary wire bundle came into contact with the rotor in the pump motor. The pumps failed when the pump power was short-circuited to the rotor and the circuit protection device tripped. Examination of failed pumps showed that arcing had occurred in the pump bearings both inside and outside of the explosion-proof cavity of the pump. Such arcing could result in an ignition source in the fuel tank. The fuel pump failures have been attributed to the manufacturing assembly process during which the stator lead wire bundle was improperly installed and positioned in the end cap. This AD is intended to ensure that the center wing tank pump inlets will be covered with fuel during pump operation, which will prevent fuel vapors from coming into contact with any ignition source resulting from a fuel pump failure. (For purposes of this AD, the term “center tank” and “center wing tank” are used interchangeably.) The other main wing tank fuel pump inlets are not normally uncovered during operation. This condition, if not corrected, could result in fire/explosion in the center fuel tank.

Explanation of the Requirements of the Rule

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of this same type design, this AD is issued to require revision of the FAA-approved airplane flight manual (AFM) to advise the flight crew of certain minimum fuel levels that must be maintained in the center fuel tanks. This AD also prohibits the installation of certain spare fuel pumps.

If an operator can demonstrate that no airplane in that operator’s fleet of a given airplane type contains a fuel pump in a center wing tank or horizontal stabilizer tank position with an affected part number, the AFM revision is not required for that operator.

Interim Action

This is considered to be interim action until final action is identified, at which time the FAA may consider further rulemaking.

Determination of Rule's Effective Date

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this AD effective in less than 30 days.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this AD.

2002-18-52 BOEING: Docket No. 2002-NM-229-AD.

Applicability: All Model 737-600, -700, -700C, –800, and -900; 747; and 757 series airplanes; certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (g) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent fuel vapors from coming into contact with an ignition source in the center wing fuel tank, which could result in fire/explosion in the center fuel tank, accomplish the following:

Note 2: For purposes of this AD, the term "center tank" and "center wing tank" are used interchangeably. The terms are used in this AD to correspond to the terminology used in the different airplane flight manuals (AFMs).

AFM Revision: Model 737-600, -700, -700C, –800, and -900

(a) For Model 737-600, -700, -700C, –800, and -900 series airplanes: Within 4 days after receipt of this AD, revise the Limitations section of the FAA-approved AFM to include the following procedures (this may be accomplished by inserting a copy of the AD into the AFM):

"CERTIFICATE LIMITATIONS

The center tank fuel pumps must be OFF for takeoff if center tank fuel is less than 5,000 pounds (2,300 kilograms) with the airplane readied for initial taxi.

Both center tank fuel pump switches must be selected OFF when center tank fuel quantity reaches approximately 1,000 pounds (500 kilograms) during climb and cruise or 3,000 pounds (1,400 kilograms) during descent and landing. The fuel pumps must be positioned OFF at the first indication of fuel pump low pressure, if the center tank fuel quantity is less than 1,000 pounds (500 kilograms) during climb and cruise or 3,000 pounds (1,400 kilograms) during descent and landing.

Note

The CONFIG indicator will annunciate when center tank fuel exceeds 1,600 pounds (800 kilograms) and the center tank fuel pump switches are OFF. Do not accomplish the CONFIG non-normal procedure prior to or during takeoff with less than 5,000 pounds (2,300 kilograms) of center tank fuel or during descent and landing with less than 3,000 pounds (1,400 kilograms) of center tank fuel.

Note

In a low fuel situation, both center tank pumps may be selected ON and all center tank fuel may be used.

If the main tanks are not full, the zero fuel gross weight of the airplane plus the weight of center tank fuel may exceed the maximum zero fuel gross weight by up to 5,000 pounds (2,300 kilograms) for takeoff, climb and cruise and up to 3,000 pounds (1,400 kilograms) for descent and landing, provided that the effects of balance (CG) have been considered.

If a center tank fuel pump fails with fuel in the center tank, accomplish the FUEL PUMP LOW PRESSURE non-normal procedure.

When defueling center or main wing tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. Defueling with passengers on board is prohibited.

The limitations contained in this AD supersede any conflicting basic airplane flight manual limitations."

AFM Revision: Model 747 (except 747-400, -400D, and –400F series)

(b) For Model 747 series airplanes other than 747-400, -400D, and –400F series airplanes: Within 4 days after receipt of this AD, revise the Limitations section of the FAA-approved AFM to include the following procedures (this may be accomplished by inserting a copy of the AD into the AFM):

"<u>CERTIFICATE LIMITATIONS</u>

The center wing tank (CWT) must contain a minimum of 17,000 pounds (7,700 kilograms) of fuel prior to engine start, if the CWT override/jettison pumps are to be selected ON during flight.

The CWT fuel quantity indication system must be operative to dispatch with CWT mission fuel.

Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 7,000 pounds (3,200 kilograms), if the CWT fuel quantity is less than 50,000 pounds (22,700 kilograms) prior to engine start. The CWT override pumps may then be selected ON in stabilized cruise conditions. Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 3,000 pounds (1,400 kilograms).

Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 3,000 pounds (1,400 kilograms), if the CWT fuel quantity is greater than or equal to 50,000 pounds (22,700 kilograms) prior to engine start.

Both CWT override/jettison pumps must be selected OFF when either CWT override/jettison fuel pump low pressure light illuminates, if the CWT quantity is less than 7,000 pounds (3,200 kilograms) during climb or less than 3,000 pounds (1,400 kilograms) in cruise flight.

Warning

Do not reset a tripped CWT override/jettison pump circuit breaker.

Warning

Do not cycle the CWT pump switches from ON to OFF to ON with any continuous low pressure indication present.

Note

The CWT may be emptied normally in an emergency fuel jettison.

Note

In a low fuel situation, both CWT override/jettison pumps may be selected ON and all CWT fuel may be used.

If the main tanks are not full, the zero fuel gross weight of the airplane plus the weight of CWT tank fuel may exceed the maximum zero fuel gross weight by up to 7,000 pounds (3,200 kilograms) for takeoff, climb, cruise, descent, and landing, provided that the effects of balance (CG) have been considered.

When defueling center or main wing tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. Defueling with passengers on board is prohibited.

The limitations contained in this AD supersede any conflicting basic airplane flight manual limitations."

AFM Revision: Model 747-400, -400D, and –400F series airplanes

(c) For Model 747-400, -400D, and -400F series airplanes: Within 4 days after receipt of this AD, revise the Limitations section of the FAA-approved AFM to include the following procedures (this may be accomplished by inserting a copy of the AD into the AFM):

"CERTIFICATE LIMITATIONS

Fueling and use of the horizontal stabilizer tank (if installed) is prohibited.

The center wing tank (CWT) must contain a minimum of 17,000 pounds (7,700 kilograms) prior to engine start, if the CWT override/jettison pumps are to be selected ON during flight.

The CWT fuel quantity indication system must be operative to dispatch with CWT mission fuel.

Both CWT override/jettison pump switches must be selected OFF at or before CWT fuel quantity reaches 7,000 pounds (3,200 kilograms), if CWT fuel quantity is less than 50,000 pounds (22,700 kilograms) prior to engine start. The CWT override pumps may then be selected ON in stabilized cruise conditions. Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 3,000 pounds (1,400 kilograms).

Note

With CWT override/jettison pumps selected OFF and CWT fuel quantity greater than 6,000 pounds (2,800 kilograms), the FUEL OVRD CTR L & R EICAS messages will be displayed. Do not accomplish the associated non-normal procedure.

Both CWT override/jettison pump switches must be selected OFF at or before CWT fuel quantity reaches 3,000 pounds (1,400 kilograms), if CWT fuel quantity is greater than or equal to 50,000 pounds (22,700 kilograms) prior to engine start.

Both CWT override/jettison pumps must be selected OFF when either CWT override/jettison fuel pump low pressure light illuminates, if the CWT quantity is less than 7,000 pounds (3,200 kilograms) during climb or less than 3,000 pounds (1,400 kilograms) in cruise flight.

Warning

Do not reset a tripped CWT override/jettison or horizontal stabilizer transfer/jettison pump circuit breaker.

Warning

Do not cycle CWT override/jettison pump switches from ON to OFF to ON with any continuous low pressure indication present.

Note

The center wing tank may be emptied normally during an emergency fuel jettison.

Note

In a low fuel situation, both CWT override/jettison pumps may be selected ON and all CWT fuel may be used.

If the main tanks are not full, the zero fuel gross weight of the airplane plus the weight of CWT tank fuel may exceed the maximum zero fuel gross weight by up to 7,000 pounds (3,200 kilograms) for takeoff, climb, cruise, descent, and landing, provided that the effects of balance (CG) have been considered.

When defueling any fuel tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. Defueling with passengers on board is prohibited.

The limitations contained in this AD supersede any conflicting basic airplane flight manual limitations."

AFM Revision: Model 757

(d) For Model 757 series airplanes: Within 4 days after receipt of this AD, revise the Limitations section of the FAA-approved AFM to include the following procedures (this may be accomplished by inserting a copy of the AD into the AFM):

"CERTIFICATE LIMITATIONS

The center tank fuel pumps must be OFF for takeoff if center tank fuel is less than 5,000 pounds (2,300 kilograms) with the airplane readied for initial taxi.

Both center tank fuel pump switches must be selected OFF when center tank fuel quantity reaches approximately 1,000 pounds (500 kilograms) during climb, cruise, or descent. The center tank fuel pumps must be positioned OFF at the first indication of fuel pump low pressure, if the center tank fuel quantity is less than 1,000 pounds (500 kilograms) during climb, cruise, or descent.

Note

The FUEL CONFIG light will illuminate when there is fuel in the center tank that exceeds 1,200 pounds (600 kilograms) and the center tank fuel pump switches are OFF. Do not accomplish the associated non-normal procedure prior to or during takeoff with less than 5,000 pounds (2,300 kilograms) of center tank fuel, unless there is an imbalance between main tanks or fuel is low in either main tank. After canceling the FUEL CONFIG light, monitor fuel quantity indications and accomplish the appropriate non-normal procedure if a main tank imbalance or main tank low fuel quantity occurs.

Note

In a low fuel situation, both center tank pumps may be selected ON and all center tank fuel may be used.

If the main tanks are not full, the zero fuel gross weight of the airplane plus the weight of center tank fuel may exceed the maximum zero fuel gross weight by up to 5,000 pounds (2,300 kilograms) for takeoff, climb, cruise, descent, and landing, provided that the effects of balance (CG) have been considered.

If a center tank fuel pump fails or indicates low pressure with fuel in the center tank, accomplish the FUEL PUMP non-normal procedure.

When defueling center or main wing tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. Defueling with passengers on board is prohibited.

The limitations contained in this AD supersede any conflicting basic airplane flight manual limitations."

Airplanes Excluded from AFM Revision

(e) If an operator can demonstrate that no airplane in that operator's fleet contains a fuel pump in a center wing tank or horizontal stabilizer tank position with any corresponding part number contained in Table 1 of this AD, the applicable AFM revision specified in paragraph (a), (b), (c), or (d) of this AD, for the airplanes of that fleet, is not required. For purposes of this paragraph, each group (within a cell) in the first column of Table 1 of this AD is a separate fleet. Table 1 follows:

Table 1 – Fleets and Part Numbers for Discrepant Fuel Pumps

Airplane	Hydro-Aire Part Number	Boeing Part Number
Model 737-600, -700, -700C, –800, and -900 series airplanes	60-989100-4	60B89004-14
	60-755100-4	60B92404-8
Model 747-100, -200B, -200F, -200C, SR, SP, -100B, -300, and -100B SUD series airplanes	60-72301-4	60B92603-418
	60-75501-4	60B92404-403
	60-75503-4	60B92404-404
	60-755100-4	60B92404-8
	60-72101-4	60B92603-26
Model 747-400, -400D, and -400F series airplanes	60-98976-4	60B89004-15
	60-72101-4	60B92603-26
Model 757 series airplanes	60-989100-4	60B89004-14
	60-755100-4	60B92404-8

Spare Parts

(f) As of 4 days after receipt of this AD, no person may install on any airplane a fuel pump having a part number contained in Table 1 of this AD.

Alternative Methods of Compliance

(g) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle Aircraft Certification Office (ACO), Seattle. Operators shall submit their requests through an appropriate FAA Principal Operations or Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

Note 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

Special Flight Permits

(h) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

(i) **AD 2002-18-52, issued on August 30, 2002, becomes effective upon receipt.**

For further information contact: Doug Pegors, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA; telephone (425) 227-1446; fax (425) 227-1181.

Issued in Renton, Washington, on August 30, 2002.

Original signed by

Ali Bahrami,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.