1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Note 3: The subject of this AD is addressed in German airworthiness directives 1998–105, dated January 30, 1998, and 1997–148/6, dated December 3, 1998.

(f) This amendment becomes effective on May 17, 1999.

Issued in Renton, Washington, on March 31, 1999.

Darrell M. Pederson,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 97–NM–325–AD; Amendment 39–11116; AD 99–08–10]

RIN 2120–AA64

Airworthiness Directives; Boeing Model 747–100, –200, –300, –SP, and –400F Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that is applicable to all Boeing Model 747–100, –200, –300, –SP, and –400F series airplanes.

Among other things, this amendment requires repetitive leak tests of the lavatory drain system and repair, if necessary; installation of a cap or flush/fill line ball valve on the flush/fill line; periodic seal changes; and replacement of any ''donut'' type valves installed in the waste drain system. This amendment is prompted by continuing reports of damage to airframes and damage to property on the ground, caused by ''blue ice'' that forms from leaking lavatory drain systems on transport category airplanes and subsequently dislodges from the airplane fuselage. The actions specified by this AD are intended to prevent damage to airframes and property on the ground that is associated with the problems of ''blue ice'' that forms from leaking lavatory drain systems on transport category airplanes and subsequently dislodges from the airplane fuselage.

DATES: Effective May 17, 1999.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of May 17, 1999.

ADDRESSES: This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Don Eiford, Aerospace Engineer, Systems and Equipment Branch, ANM–130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington; telephone (425) 227–2788; fax (425) 227–1181.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to all Boeing Model 747–100, –200, –300, –SP, and –400F series airplanes was published in the **Federal Register** on June 15, 1998 (63 FR 32624). That action proposed to require repetitive leak tests of the lavatory drain system and repair, if necessary; installation of a cap or flush/fill line ball valve on the flush/fill line; periodic seal changes; and replacement of any ''donut'' type valves installed in the waste drain system.

The actions specified in that proposal are intended to prevent damage to airframes and property on the ground that is associated with the problems of ''blue ice'' that forms from leaking lavatory drain systems on transport category airplanes and subsequently dislodges from the airplane fuselage.

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

1. Support for the Proposal

Two commenters support the proposed rule.

2. Request To Revise the Unsafe Condition

One commenter, the airplane manufacturer, requests that the proposed rule be revised to remove reference to ''engine damage'' in the description of the unsafe condition. The airplane manufacturer bases this request on the fact that it is not aware of any in-service reports of engine damage due to ''blue ice'' on Model 747 series airplanes.

The FAA concurs. Since the FAA has not received any reports of engine damage due to ''blue ice'' on Model 747 series airplanes, reference to ''engine damage'' in the description of the unsafe condition has been removed from the AD.

3. Request To Extend Leak Test Intervals for Model 747 Series Airplanes

One commenter requests that the leak test intervals be specified in flight cycles rather than flight hours as proposed in the Notice of Proposed Rulemaking (NPRM). The commenter also requests that, if the intervals are retained as flight hours, all of the intervals should be extended. The commenter points out that a typical ''C'' check on Model 747 series airplanes is between 5,000 and 6,000 flight hours, as compared to typical ''C'' checks of Models 727 and 737 series airplanes, which are generally between 3,000 and 4,000 flight hours. Since most of the wear and damage is caused by opening and closing the valve, which happens during a flight cycle, and is not directly related to the number of flight hours, flight cycles are more critical than flight hours with regard to the potential for leakage. Because Model 747 series airplanes have a low number of flight cycles per hour, the fleet should be allowed a greater leak test interval than the interval specified for Models 727 and 737 series airplanes.

The FAA does not concur that the leak test intervals should be specified in flight cycles rather than flight hours. The commenter did not provide any specific data that correlated the number of flight hours to the number of flight cycles for the Boeing Model 747 fleet and the Boeing 727 and 737 fleets. Additionally, existing ''blue ice'' Airworthiness Directives for other airplanes presently specify the leak test intervals in terms of flight hours. To change the leak test intervals from flight hours to flight cycles could result in an operator having some airplanes operating under flight hours intervals and other airplanes operating under flight cycle intervals, which may be burdensome for the operator.

However, the FAA does concur that certain leak test intervals can be extended somewhat for Model 747 series airplanes for the reasons the commenter suggested. Specific extensions of leak tests for certain valves are discussed later in this disposition of comments.

4. Requests To Extend PneuDraulics Leak Test Intervals

One commenter requests that the leak test interval for the PneuDraulics service panel drain valve be revised from 2,000 to 4,000 flight hours. The commenter advises that the PneuDraulics service panel drain valve specified in paragraph

(a) of the proposal has had in excess of 800,000 flight hours of service history documented by operators in FAA-approved maintenance programs with only two leakage events reported.

The FAA concurs that, for the reasons provided by the commenter, extension of the leak test interval from 2,000 flight hours to 4,000 flight hours for those PneuDraulics valves is justified. Since that service history was obtained when the operators were using FAA-approved maintenance programs that required reporting of any leakage, the FAA has high confidence that this data is representative of the actual leakage rates. Paragraph (a)(3) of the final rule has been revised to reflect the 4,000 flight hour leak test interval.

5. Request To Extend Leak Test Interval for Certain Shaw Aero Valves

The commenter requests that the leak test interval for certain Shaw Aero service panel drain valves be extended from 1,000 flight hours to 2,000 flight hours. The commenter states that data submitted previously to the FAA indicates that there are nearly 8,000 Shaw Aero service panel drain valves on airplanes that have accumulated in excess of 50 million flight hours over the past 10 years. The commenter points out that, on all of the airplanes on which Shaw Aero service panel drain valves were installed during production, there were less than ten reports of leakage during that time that could have been attributed to a Shaw Aero Devices service panel drain valve.

In addition, the commenter states that Boeing has presented data to the FAA showing that the Shaw Aero service panel drain valve has been the baseline unit installed on Model 737 series airplanes since January 1991, and on Model 757 series airplanes since July 1992. All Boeing service data available through February 1996 indicates that all versions of the Shaw service panel drain valves can be attributed to less than 0.60 percent of the reports of leakage on Model 737 and 757 series airplanes.

The commenter states that the data presented shows ample evidence to support a leak test interval equal to the PneuDraulics valve, which was granted a leak test interval extension based on only 412 valves installed on aircraft flown over a much shorter interval than the 10 year period cited for the Shaw valves. Additionally, the commenter points out that industry experience clearly indicates that the main problems occur after two years of residue build-up on the sealing surfaces of any valve, irrespective of the design features. The commenter points out that meaningful data must be gathered over a period of at least two years.

Additionally, the commenter advises that several airlines have collected, or are in the process of collecting, data in order to submit a request for extended leak test intervals for their fleets. In fact, the commenter states that it has attached a copy of one such draft request that indicates that there have been only two cases reported of any evidence of leakage on a fleet of 163 Boeing Model 727 series airplanes that have accumulated 325,678 flight hours on Shaw Aero Devices 332 series valves.

The FAA concurs with the commenter's request to extend certain interval times based on the general extension of intervals given to Model 747 series airplanes explained previously. Those intervals have been extended for certain Shaw Aero service panel drain valves from 1,000 to 1,500 flight hours. The leak test interval for certain other Shaw Aero service panel drain valves has been increased from 600 to 800 flight hours. The FAA has revised certain sub-paragraphs of paragraph (a) of the final rule to reflect those extensions of the leak test intervals.

This commenter also states that in over 50 million flight hours on 8,000 valves only four instances of leakage have been reported. However, data the FAA has received indicates that most instances of leakage are not reported. Leakage from a service panel drain valve is not a reportable event as required by Part 21.3 of the Federal Aviation Regulations (14 CFR part 21.3). The service history data was not collected as part of an FAA-approved maintenance program that requires reporting of service panel drain valve leakage. Therefore, the FAA does not have a high level of confidence that the reported leakage rates are necessarily representative of the actual leakage rate in service. As an example, a Boeing report cited by the commenter listed 157 total reports of leakage for 662 Boeing Model 747 series airplanes for the history of the fleet up until April of 1996, when the data was collected. However, the FAA recently received a copy of a report regarding ice on certain airplanes arriving at Narita Airport in Japan during a two-week period in February 1998. For 562 arrivals of Boeing Model 747 series airplanes that were inspected during the two-week period, there were 14 instances of ice found at lavatory service panels. While some of those instances were caused by leakage from the flush/fill lines instead of the waste drain valve, the fact remains that a two-week period of actual inspection at one airport revealed 14 instances of leakage compared to 157 cases of leakage reported by operators to Boeing for the entire operating history of the Model 747 fleet until 1996. Clearly, the amount of actual leakage is not reflected in the number reported by operators to Boeing.

In regard to the commenter's statement that several operators are in the process of gathering data regarding performing leak checks, the FAA has not received that data as of this date. Without reviewing the actual data and information, the FAA cannot provide a decision to extend the leak test interval. Therefore, no change is necessary to the final rule in this regard.

6. Request To Extend the Leak Test Interval for Certain Service Panel Ball Valves

The same commenter requests that the leak test interval (currently 1,000 flight hours) be extended for Kaiser Electroprecision service panel ball valves, Part Number (P/N) 2651–357. The commenter contends that the Kaiser Electroprecision service panel ball valve is designed considerably different than the other valves that are subject to the proposed 1,000-flight-hour intervals for valves. The commenter notes that the Kaiser ''Expander'' valve, P/N 0218–0032, and Shaw Aero ''Posi-Lift'' valve, P/N 10101000C( ), are subject to the proposed 1,000-flight-hour intervals also. The commenter points out that Kaiser P/N 2651–357 is considered a ball valve. The commenter questions that if the FAA considers similarity of valves in determining an appropriate leak test interval, Kaiser P/N 2651–357 is at least equivalent to a PneuDraulics P/N 9527 series valve. The commenter points out that P/N 9527 series valves are essentially only a half-ball valve. Since Kaiser makes the in-line ball valve, P/N 2651–278, which has a 4,500-flight-hour leak test interval, Kaiser's experience in manufacturing reliability should be considered when setting an initial leak test interval for the panel ball valve, P/N 2651–357. The commenter concludes that a new valve such as this should not receive a ''generic'' 1,000-flight-hour leak test, but rather should be considered for an extension of the leak test interval based on its design and similarity to other valves.

The FAA concurs that Kaiser Electoprecision panel ball valve, P/N 2651–357( ) series can be extended from the proposed 1,000-flight-hour interval. In fact, the FAA has recently approved the leak test interval for that panel ball valve to be extended from 1,000 to 2,000 flight hours. The FAA based this extension on similarity to the Kaiser

Electroprecision in-line drain valve, the service history of over 20 panel ball valves with an average of over 2,000 flight hours per valve and with no reports of leakage, and other data and analysis. The FAA considers similarity of valves, the manufacturer's experience, and manufacturing reliability in setting the initial leak test interval for a particular valve. These factors are also considered in determining the amount of in-service monitoring by operators that is required for an extension of the leak test interval. The intent of requiring service experience in addition to similarity analysis is to make sure that there are no unforeseen design deficiencies in a valve for which similarity is claimed. Similarity can be used to reduce the amount of in-service experience needed for a particular valve to receive an extension of the leak test interval. Therefore, paragraph (a)(4) of the final rule specifies the 2,000-flight-hour interval for the Kaiser Electoprecision panel ball valve, P/N 2651–357( ) series.

7. Request To Use Optional Method

One commenter requests that the proposal be revised to allow use of Monogram P/N 4803–76 or P/N 4803–96 series vacuum breaker check valve as an option to the installation of a lever lock cap on the flush/fill line or a ball valve on the flush/fill line. Another commenter requests that the proposal be revised to allow use of either a vacuum breaker check valve or an automatic shut-off valve as an option to installing a lever lock cap on the flush/fill line or a ball valve on the flush/fill line. The commenters point out that such an option to installing flush/fill line ball valves was permitted in the ''blue ice'' AD for McDonnell Douglas Model DC–10 series airplanes [AD 96–12–18, amendment 39–9661 (61 FR 29009, June 7, 1996)].

The FAA concurs with the commenter's request. Vacuum breaker check valves, Monogram P/N 4803–86, installed on McDonnell Douglas Model DC–10 series airplanes, and Monogram P/N 4803–76 and –96 installed on Boeing Model 747 series airplanes are similar to each other in design and function. The FAA has determined that those valves are adequate to install as an alternative to installing a lever lock cap of the flush/fill line or a ball valve on the flush/fill line. The FAA also has determined that installation of an automatic shut-off valve is an adequate method to prevent leakage from the flush/fill line. Certain paragraphs of this AD [(a), (b)(3), and (a)(9)(ii)] have been revised to add provisions to install vacuum breaker valves as an option to installing a lever lock cap or ball valve on the flush/fill line. Additionally, the final rule has been revised to add provisions in paragraphs (b)(3) and (a)(9)(iv) of this AD to install and test a shut-off valve per Boeing specification number 60B50341 as an option to installing a lever lock cap or flush/fill line ball valve on the flush/fill line.

In addition to listing optional valves for the flush/fill line, the FAA also added vacuum leak test procedures as discussed in comment 10 below, and reorganized the seal change and leak test requirements previously contained in paragraph (a)(8) of the NPRM, and moved them into paragraphs (a)(9) and (a)(10) of the final rule.

8. Request To Revise Specifications of the Leak Test of the Toilet Tank Dump Valve

The commenter, the airplane manufacturer, points out that the proposal specifies that the toilet tank be filled with a ''minimum of 10 gallons of water/rinsing fluid'' prior to performing the leak test of the toilet tank dump valve. The commenter requests that the specifications for the leak test be changed to require ''a minimum of 10 gallons of water/rinsing fluid for tanks with less than 30 gallons capacity, and a minimum of 20 gallons of water/rinsing fluid for tanks with more than 30 gallons capacity.'' The commenter states that due to the wide variation in toilet tank sizes on the Model 747 fleet, 10 gallons may not be adequate in some cases to properly conduct a leak test.

The FAA concurs that the amount of fluid in the tank should be sufficient to test for leakage of the toilet tank dump valve, and that the specifications for conducting the leak test should be revised. The intent of specifying that the leak test be performed with ''a minimum of 10 gallons'' was to indicate that sufficient fluid be used to perform a valid leak test, without having to completely fill the tank and risk a spill of fluid inside the airplane. Since some Model 747 series airplanes are equipped with toilet tanks that are considerably larger than tanks in other airplanes, an increase in the minimum amount of fluid used to perform the test is considered necessary for airplanes with the larger tanks. The FAA has revised the final rule to specify the requested revision.

9. Request To Revise Table 1 of the Proposal

The commenter requests that Table 1 of the proposal be revised to correct the serial numbers of 10101000B–A–1 valves and to add 10101000C–R and 10101000C–G valves to Table 1.

The FAA concurs with the request to correct the serial numbers for 10101000B–A–1 valves and has revised Table 1 accordingly. However, the FAA does not concur with the commenter's request to add the two additional valves to Table 1. The FAA has determined that those valves are not used on the airplanes affected by this AD. Further, the FAA has removed certain other part numbers of valves (10101000B–A and 10101000C–A) listed in Table 1 of the proposal since they are not eligible for the 1,000-flight-hour leak test interval. Additionally, Note 2 of the AD has been revised to specify that Table 1 of the AD contains only valves that are eligible for a leak check interval of 1,500 hours.

10. Request To Use Vacuum Tool

One commenter requests that the proposal be revised to allow testing of the inner seal of the service panel valve with a vacuum tool for a period of one minute without any fluid upstream of the valve. This same commenter states that testing with air (vacuum tool) is more stringent than testing with water. The commenter points out that when testing with air, a leak path is detected readily within one minute because the pressure gauge will move indicating a loss of vacuum. The commenter also points out that previous AD's have permitted leak testing with a vacuum tool. A second commenter states that by allowing a leak test without requiring that the inner door of the service panel be covered with fluid, the likelihood of ''blue showers'' (i.e., uncontrolled leakage of waste tank drain line inside the airplane) would be reduced.

The FAA concurs with the request to allow a vacuum leak test procedure for the reasons the commenter provided. The FAA has revised paragraphs (a), (a)(10)(ii), and Note 3 of the final rule to add provisions and instructions for the use of vacuum leak test procedures. However, the FAA does not concur with the request to establish a period of one minute for the vacuum leak test. The commenter did not provide sufficient evidence to support reducing the leak test period from five minutes to one minute. Therefore, no change is necessary to the final rule regarding the time period required for the leak test.

11. Request To Revise ''Dump Valve'' Terminology

One commenter requests that paragraph (a)(5)(i) of the proposal be revised to change the current wording of ''dump valve'' to the correct terminology of ''toilet tank dump valve.'' The commenter points out that changing the terminology in that particular paragraph would make the

use of the term ''toilet tank dump valve'' consistent throughout the proposal. The FAA concurs and has revised the final rule accordingly.

12. Request To Clarify Seal Replacement Interval

One commenter requests that the compliance time for replacement of seals be revised to clarify that the seal replacement interval would begin when the new valve is installed or a new airplane is delivered.

The FAA concurs. Installation of a new valve or delivery of a new airplane would also mean that a new seal is in place. Therefore, the FAA considers that a new valve installation or delivery of a new airplane constitutes the ''last documented seal change.'' The FAA has revised paragraphs (a)(1) and (a)(9) of the final rule to reflect this change. The FAA points out that, for the purposes of this AD, a ''new'' airplane is one that has accumulated less than 100 total flight hours or 30 calendar days, whichever occurs later, since the issuance of the original airworthiness certificate.

13. Request To Correct a Part Number

One commenter requests that paragraphs (a)(8)(ii) and (b)(2) of the proposal be revised to reflect the correct part number for the flush/fill ball valve. The commenter advises that the correct part number is Kaiser Electroprecision part number series 0062–0010, not ''0062–0009,'' as specified in the proposal. The FAA concurs with the commenter's request, and has revised paragraphs (a)(9)(iii) and (b)(2) of the final rule to reflect the correct part numbers.

14. Request To Extend the Seal Change Interval

One commenter requests that paragraph (a)(1)(ii) of the proposal be revised to reduce the seal change interval from 6,000 to 5,000 flight hours for the PneuDraulics valve. The commenter states that the seal in a ball-valve or half-ball valve located at the service panel is subjected to a significantly greater dynamic action than that of a seal in a flapper-type valve. The distance that the ball or half-ball drags across the seal subjects the seal to considerably more wear that the wear experienced by an O-ring seal in a flapper-type valve as it moves from a sealed to an unsealed position. The plastic seals used in the ball or half-ball valves are much less forgiving and less compressible than elastomer type seals used in flapper-type valves. Therefore, the ball or half-ball valves are more susceptible to being damaged by foreign objects and consequent leakage. The potential for ice, hardened debris, and ''black tar'' to build up on the ball at the service panel makes the seals more susceptible to damage by service and maintenance personnel than the seals of an in-line ball valve. Additionally, the commenter contends that the performance of the seals in the in-line ball valve cannot be replicated in-service on ball or half-ball valves used at the service panel. Service panel components also experience greater temperature fluctuations (−65 degrees Fahrenheit to +130 degrees Fahrenheit) than those experienced by components upstream.

The FAA does not concur with the commenter's request to reduce the seal change interval for the PneuDraulics valve. The commenter did not provide any specific data to demonstrate that ball valve seals or half-ball valve seals actually do have greater failure rates than flapper type valves. The FAA established the seal change interval for the PneuDraulics valve based on data submitted by an operator and the valve manufacturer. No change is necessary to the final rule.

15. Request To Standardize the Requirements for Extension of the Leak Test

One commenter, a valve manufacturer, requests that the proposal be revised to require ''equivalent'' criteria for extending the leak tests of all valves. The manufacturer states that certain criteria were required to obtain leak test extensions for its product, but that other valves were not subjected to the same stringent criteria. The commenter notes that valves with components prone to multiple failure and easily damaged seals will leak if exposed to the hourly usage schedules (as proposed in the NPRM). The commenter contends that a valve with exposed soft seals can leak immediately after successfully passing a test if damaged by ice, tools, or loss of the donut plug. The commenter further contends that the valves should have a primary seal and a secondary seal as required by the specifications of the airplane manufacturer for panel valves.

The FAA does not concur that the final rule should be revised in regard to establishing ''equivalent'' criteria for extending the leak test intervals. The FAA has required all operators requesting an extension to provide service history and data to support any extensions of leak test intervals. Previous service experience, similarity to existing valves, and the quality of the data are considered in determining an appropriate extension of the leak check interval for each valve. No change is necessary to the final rule.

16. Request To Establish Consistent Testing Intervals for Components

One commenter, the airplane manufacturer, states that it is concerned that test and maintenance intervals for a particular part number component may not be consistent across all models. The commenter requests that any increased intervals for a specific component be applied to all models using that component.

The FAA does not concur. As explained in a previous disposition of comment (number 3), the flight cycles per flight hours are different on various airplane models. Therefore, the cyclic wear on various components differs according to the airplane model on which the component is installed. Consequently, the FAA cannot approve consistent flight hour intervals for leak checks on specific components that apply to all airplane models.

Operators who wish to take advantage of the increase in leak test intervals may request information concerning the existence of approved alternative methods of compliance, in accordance with Note 5 of this AD. Additionally, paragraph (d) of this AD provides for any operator to request approval of an alternative method of compliance that provides an acceptable level of safety.

17. Request To Provide a Maintenance Option

One commenter, the airplane manufacturer, requests that the FAA add a maintenance option to the AD that would permit operators to revise their FAA-approved maintenance program to include the requirements specified in the proposal. The commenter points out that such a revision would permit operators to justify extending leak test intervals to intervals that are consistent with their regularly scheduled maintenance.

The FAA does not concur. The FAA did not provide the maintenance option in this AD based on information it received that few operators were inclined to revise their maintenance program to incorporate the requirements of this AD. Additionally, comments submitted regarding previous ''blue ice'' AD's that did contain the maintenance option stated that the proposed AD's were ''too long, and hard to understand.'' The FAA's intent by not specifying the maintenance option in this AD is to simplify and clarify the requirements of this AD. No change to the final rule is necessary in that regard. However, if an operator wishes to request approval for revision of its

maintenance program, a request should be submitted to the FAA in accordance with the provisions of paragraph (d) of this AD.

18. Request To Include Terminating Action in the AD

One commenter, the airplane manufacturer, requests that a provision for terminating action be included in the AD. The commenter agrees that incorporation of the proposed AD requirements such as ''donut'' lug removal, seal replacement, rinse system upgrade, and installation of improved drain valves will result in reduced incidences of ''blue ice.'' However, if an operator incorporates the requirements of the proposed AD, and revises its maintenance program to include seal replacement and/or seal visual inspections, the commenter considers those actions to be sufficient to provide terminating action.

The FAA does not concur. The FAA finds that previous requests for terminating action based on the installation of certain valves have been unsuccessful. Accomplishment of the requirements of this AD will ensure that an effective and uniform program to prevent incidents of ''blue ice'' is in effect for the entire fleet. Therefore, no change to the final rule is necessary in that regard.

19. Request To Remove the Requirement to Replace ''Donut'' Valves

One commenter, an airline operator, requests that the proposal be revised to remove the requirement ''to replace 'donut' valves with another FAA-approved valves within 5,000 flight hours.'' The commenter points out that other AD's concerning ''blue ice'' have not required replacement of ''donut'' valves. Further, the commenter contends that the repetitive leak test intervals specified in the proposal will address the safety considerations. The commenter states that, based on financial considerations, the replacement of ''donut'' valves should be an option for operators.

The FAA does not concur with the request to remove the requirement to replace ''donut valves.'' The FAA finds that several incidents of ''blue ice'' were caused by ''donut'' valve leakage on airplanes, despite a required leak test at intervals of 200 hours. Additionally, the largest and most potentially dangerous pieces of ''blue ice'' have been associated with ''donut'' valves. Based on the continued problems associated with the use of ''donut'' valves, the FAA has determined that those valves must be replaced. No change to the final rule is necessary in that regard. Regarding current AD's addressing ''blue ice,'' continuing to require the leak test intervals for the ''donut'' valves may motivate operators to replace the ''donut'' valves. However, if the FAA finds that ''donut'' valves continue to be a source of ''blue ice,'' additional rulemaking may be considered.

20. Request To Call Out Part Numbers by Name

One commenter requests that lever/lock caps manufactured in accordance with an FAA-Parts Manufacturer Approval granted to Shaw Aero Devices be called out by part number the same way the Kaiser flush/fill ball valve part number is called out in the proposal. The commenter did not provide an explicit reason for this request.

The FAA does not concur. Reference to lever lock caps as ''FAA-approved lever lock caps'' rather than specific part numbers that are called out has been the standard practice in the development of the ''blue ice'' AD's. Therefore, the Shaw Aero Devices lever lock cap, part number 580–116, is encompassed in the final rule as an ''FAA-approved lever lock cap.'' However, the Kaiser flush/fill line ball is not a lever lock cap and would not be encompassed by the phrase ''FAA-approved lever lock caps.'' Consequently, the Kaiser valve part number is specifically called out in the final rule. No change is necessary to the final rule in that regard.

21. Requests To Revise the Cost Impact Information

One commenter, a parts manufacturer, requests that the cost impact information, below, be revised to reflect an optional use of a hand held vacuum pump as the most cost effective method to perform the leak tests. The commenter points out that a hand held vacuum pump takes less time and does not require fuel to power-up the airplane.

The FAA does not concur with the commenter's request. The cost impact figures provided in an AD are intended to provide an approximate cost of performing required tasks. The FAA has no way of determining the specific cost figures of each possible method of accomplishing a required task. The cost estimates, as provided, are simply estimates based on the best information the FAA has available at the time the rule is developed. No change is necessary to the final rule in that regard.

Another commenter states that the work hours necessary to install the flush/fill line cap is estimated in the proposal to be 1 work hour per cap. The commenter requests that the work hour estimate be revised to include heating the flush/fill line to prevent ice build-up within the line behind the cap. The commenter provided no work hour figures that would include heating of the flush/fill line.

The FAA does not concur. Heating for the line behind the flush/fill cap may be considered a good practice and possibly the most practical solution where flush/fill lines take a long time to drain. The FAA typically provides cost estimates only for those actions that are required to be accomplished. In this case, heating of the line behind the flush/fill cap is not necessary when operators allow the flush/fill line to drain before closing the cap. The FAA considers it to be the operator's choice to allow the flush/fill line to drain after servicing, or to install heating for the flush/fill line. Therefore, no change is necessary to the final rule.

Conclusion

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes previously described. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Cost Impact

There are approximately 711 Model 747 series airplanes of the affected design in the worldwide fleet. The FAA estimates that 201 airplanes of U.S. registry and 89 U.S. operators will be affected by this AD.

The waste drain system leak test and outer cap inspection will take approximately 6 work hours per airplane to accomplish, at an average labor rate of $60 per work hour. Based on these figures, the cost impact on U.S. operators of the waste drain system leak test and outer cap inspection is estimated to be $72,360, or $360 per airplane, per test/inspection.

Certain airplanes (i.e., those that have ''donut'' type drain valves installed) may be required to be leak tested as many as 15 times each year. Certain other airplanes having other valve configurations will be required to be leak tested as few as 1 time each year. Based on these figures, the annual (recurring) cost impact of the required repetitive leak tests on U.S. operators is estimated to be between $360 and $5,400 per airplane, per year.

With regard to replacement of ''donut'' type drain valves, the cost of a new valve is approximately $1,200. However, the number of leak tests for an airplane that is flown an average of

3,000 flight hours a year is thereby reduced from 15 tests to 3 tests. The cost reduction because of the number of tests required is approximately equal to the cost of the replacement valve. Therefore, no additional cost would be incurred.

The FAA estimates that it will take approximately 1 work hour per airplane lavatory drain to accomplish a visual inspection of the service panel drain valve cap/door seal and seal mating surfaces, at an average labor rate of $60 per work hour. As with leak tests, certain airplanes will be required to be visually inspected as many as 15 times or as few as 3 times each year. Based on these figures, the annual (recurring) cost impact of the required repetitive visual inspections on U.S. operators is estimated to be between $180 and $900 per airplane, per year.

The installation of the flush/fill line cap will take approximately 1 work hour per cap to accomplish, at an average labor rate of $60 per work hour. The cost of required parts will be $275 per cap. There are an average of 4 caps per airplane. Based on these figures, the cost impact on U.S. operators of these requirements of this AD is estimated to be $269,340, or $1,340 per airplane, per replacement cycle.

The seal replacements of the drain valves required by paragraph (a) of this AD will require approximately 2 work hours to accomplish, at an average labor cost of $60 per hour. The cost of required parts will be $200 per each seal change. Based on these figures, the cost impact on U.S. operators of these requirements of this AD is estimated to be $64,320, or approximately $320 per airplane, per replacement.

The number of required work hours, as indicated above, is presented as if the accomplishment of the actions of this AD will be conducted as ''stand alone'' actions. However, in actual practice, these actions could be accomplished coincidentally or in combination with normally scheduled airplane inspections and other maintenance program tasks. Therefore, the actual number of necessary ''additional'' work hours would be minimal in many instances. Additionally, any costs associated with special airplane scheduling should be minimal.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the current or proposed requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted.

The FAA recognizes that the obligation to maintain aircraft in an airworthy condition is vital, but sometimes expensive. Because AD's require specific actions to address specific unsafe conditions, they appear to impose costs that would not otherwise be borne by operators. However, because of the general obligation of operators to maintain aircraft in an airworthy condition, this appearance is deceptive. Attributing those costs solely to the issuance of this AD is unrealistic because, in the interest of maintaining safe aircraft, prudent operators would accomplish the required actions even if they were not required to do so by the AD.

A full cost-benefit analysis has not been accomplished for this proposed AD. As a matter of law, in order to be airworthy, an aircraft must conform to its type design and be in a condition for safe operation. The type design is approved only after the FAA makes a determination that it complies with all applicable airworthiness requirements. In adopting and maintaining those requirements, the FAA has already made the determination that they establish a level of safety that is cost-beneficial. When the FAA, as in this AD, makes a finding of an unsafe condition, this means that the original cost-beneficial level of safety is no longer being achieved and that the required actions are necessary to restore that level of safety. Because this level of safety has already been determined to be cost-beneficial, a full cost-benefit analysis for this AD would be redundant and unnecessary.

Regulatory Impact

The regulations adopted herein will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

For the reasons discussed above, I certify that this action (1) is not a ''significant regulatory action'' under Executive Order 12866; (2) is not a ''significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption **ADDRESSES.**

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

Compliance: Required as indicated, unless accomplished previously.

99–08–10 Boeing: Amendment 39–11116. Docket 97–NM–325–AD.

Applicability: All Model 747–100, –200, –300, –SP, and –400F 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 (d) 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 airframe damage, and/or hazard to persons or property on the ground as a result of ''blue ice'' that has formed from leakage of the lavatory drain system or flush/fill systems and dislodged from the airplane, accomplish the following:

(a) Accomplish the applicable requirements of paragraphs (a)(1) through (a)(11) of this AD at the time specified in each paragraph. If the waste drain system incorporates more than one type of valve, only one of the waste drain system leak test procedures (the one that applies to the equipment with the longest leak test interval) must be conducted at each service panel location. The waste drain system valve leak tests specified in this AD shall be performed in accordance with the following requirements: The toilet tank dump valve leak test must be performed by filling the toilet tank with water/rinsing fluid to fill the toilet tank to a level that submerges the toilet

tank dump valve seals with sufficient fluid to perform a valid test, and testing for leakage after a period of five minutes. For guidance, a minimum of 10 gallons is considered sufficient for a tank of 30 gallons or less capacity, and 20 gallons of fluid is considered sufficient for a tank with more than 30 gallons capacity. For tests of service panel drain valves, unless otherwise specified by this AD: Fluid shall completely cover the upstream end of the valve being tested; the direction of the 3 pounds per square inch differential pressure (PSID) shall be applied across the valve in the same direction as occurs in flight; the other waste drain system valves shall be open; and the minimum time to maintain the differential pressure shall be 5 minutes. As an alternative to the above test procedure for the service panel drain valves and in-line drain valves, a vacuum test may be done in accordance with Shaw Aero Devices Document ILS–193, Operation Instructions for the Waste Drain Valve Inner Flapper and Lavatory Rinse/Fill Valve Leak Test Tool, dated November 17, 1998, using a minimum of 3 PSID across the in-line drain valve or waste drains system service panel valve inner door for a period of 5 minutes. Any movement of the needle of the pressure gauge during the test period constitutes failure of the test. Other leak test tools may by used for this test if approved per paragraph (d) of this AD. Any revision of the seal change intervals or leak test intervals must be approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA, Transport Airplane Directorate.

(1) Replace the valve seals with new valve seals in accordance with the applicable schedule specified in paragraphs (a)(1)(i), (a)(1)(ii), and (a)(1)(iii) of this AD. For purposes of determining seal replacement times specified in this AD: If a new valve is installed or a ''new airplane'' is delivered, it is considered that the new valve installation or airplane delivery constitutes the ''last documented seal change.'' A ''new airplane'' for the purposes of this AD is an airplane that has accumulated less than 100 total flight hours or 30 calendar days, whichever occurs later, since the issuance of the original airworthiness certificate.

(i) For each lavatory drain system that has an in-line drain valve installed, Kaiser Electroprecision part number series 2651–278 or a Kaiser Electroprecision service panel ball valve, part number series 2651–357: Replace the seals within 5,000 flight hours after the effective date of this AD, or within 48 months after the last documented seal change, whichever occurs later. Thereafter, repeat the replacement of the seals at intervals not to exceed 48 months.

(ii) For each lavatory drain system that has a PneuDraulics part number series 9527 valve: Replace the seals within 5,000 flight hours after the effective date of this AD, or within 18 months of the last documented seal change, whichever occurs later. Thereafter, repeat the replacement of the seals at intervals not to exceed 18 months or 6,000 flight hours, whichever occurs later.

(iii) For each lavatory drain system that has any other type of drain valve: Replace the seals within 5,000 flight hours after the effective date of this AD, or within 18 months after the last documented seal change, whichever occurs later. Thereafter, repeat the replacement of the seals at intervals not to exceed 18 months.

(2) For each lavatory drain system that has an in-line drain valve installed, Kaiser Electroprecision part number series 2651–278: Within 6,000 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 6,000 flight hours, accomplish the procedures specified in paragraphs (a)(2)(i) and (a)(2)(ii) of this AD:

(i) Conduct a leak test of the toilet tank dump valve (in-tank valve that is spring loaded closed and operable by a T-handle at the service panel) and the in-line drain valve. Take precautions to avoid overfilling the tank and spilling fluid into the airplane. The in-line drain valve leak test must be performed with a minimum of 3 PSID applied across the valve.

(ii) If a service panel valve or cap is installed, perform a visual inspection of the service panel drain valve outer cap/door seal and the inner seal (if the valve has an inner door with a second positive seal), and the seal mating surfaces for wear or damage that may allow leakage.

(3) For each lavatory drain system that has a service panel drain valve installed, PneuDraulics part number series 9527: Within 4,000 flight hours after the effective date of this AD, accomplish the requirements of paragraphs (a)(3)(i) and (a)(3)(ii) of this AD. Thereafter, repeat the leak tests at intervals not to exceed 4,000 flight hours.

(i) Conduct leak tests of the toilet tank dump valve and service panel drain valve. Take precautions to avoid overfilling the tank and spilling fluid into the airplane. The leak test of the service panel drain valve must be performed with a minimum of 3 PSID applied across the valve inner door/closure device.

(ii) Perform a visual inspection of the outer cap/door and seal mating surface for wear or damage that may cause leakage.

(4) For each lavatory drain system that has a service panel drain valve installed, Kaiser Electroprecision part number series 2651–357–(2) or higher –() (dash number): Within 2,000 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 2,000 flight hours, conduct a leak test of the toilet tank dump valve and service panel drain valve. Take precautions to avoid overfilling the tank and spilling fluid into the airplane. The service panel drain valve leak test must be performed with a minimum of 3 PSID applied across the valve.

(5) For each lavatory drain system that has a service panel drain valve installed, Kaiser Electroprecision part number series 0218–0032 or Shaw Aero part number/serial number as listed in Table 1 of this AD: Within 1,500 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 1,500 flight hours, accomplish the requirements of paragraphs (a)(5)(i) and (a)(5)(ii) of this AD:

TABLE 1.—SHAW AERO VALVES APPROVED FOR 1,500 FLIGHT HOUR LEAK TEST INTERVAL

Shaw waste drain valve part number	Serial numbers of part number valve approved for 1,500 hour leak test interval
331 Series, 332 Series	All.
10101000B–A–1	0201 and higher.
10101000BA2	0130 and higher.
10101000C–A–1	0277 and higher.
10101000CN OR C–N	3649 and higher.
Certain 10101000B valves	Any of these ''B'' series valves that incorporate the improvements of Shaw Service Bulletin 10101000B–38–1, dated October 7, 1994, and are marked ''SBB38–1–58''
Certain 10101000C valves	Any of these ''C'' series valves that incorporate the improvements of Shaw Service Bulletin 10101000C-38–2 dated October 7, 1994, and are marked ''SBC38–2–58''.

Note 2: Table 1 is a list of approved Shaw valves that are eligible for a 1,500 hour leak test, including those valves approved by Parts Manufacturer Approval (PMA) or Supplemental Type Certificate (STC) for installation on Boeing Model 747 series airplanes that are subject to this AD.

(i) Conduct a leak test of the toilet tank dump valve and service panel drain valve. Take precautions to avoid overfilling the tank and spilling fluid into the airplane. The service panel drain valve leak test must be performed with a minimum of 3 PSID applied across the valve inner door/closure device.

(ii) For each valve, perform a visual inspection of the outer cap/door and seal mating surface for any wear or damage that may cause leakage.

(6) For each lavatory drain system that has a service panel drain valve installed, Kaiser Electroprecision part number series 0218–0026; or Shaw Aero Devices part number series 10101000B or 10101000C [except as specified in paragraph (a)(4) of this AD]: Within 800 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 800 flight hours, accomplish the requirements of paragraphs (a)(6)(i) and (a)(6)(ii) of this AD:

(i) Conduct a leak test of the toilet tank dump valve and the service panel drain valve. Take precautions to avoid overfilling the tank and spilling fluid on the airplane. The service panel drain valve leak test must be performed with a minimum 3 PSID applied across the valve inner door/closure device.

(ii) Perform a visual inspection of the outer cap/door and seal mating surface for wear or damage that may cause leakage.

(7) For each lavatory drain system with a lavatory drain system valve that incorporates either ''donut'' plug, Kaiser Electroprecision part number 4259–20 or 4259–31; Kaiser Roylyn/Kaiser Electroprecision cap/flange part numbers 2651–194C, 2651–197C, 2651–216, 2651–219, 2651–235, 2651–256, 2651–258, 2651–259, 2651–260, 2651–275, 2651–282, 2651–286; Shaw Aero Devices assembly part number 0008–100; or other FAA-approved equivalent parts; accomplish the requirements of paragraphs (a)(7)(i), (a)(7)(ii), and (a)(7)(iii) of this AD at the times specified in those paragraphs. For the purposes of this paragraph [(a)(7)], ''FAA-approved equivalent part'' means either a ''donut'' plug which mates with the cap/flange part numbers listed above, or a cap/flange which mates with the ''donut'' plug part numbers listed above, such that the cap/flange and ''donut'' plug are used together as an assembled valve.

(i) Within 250 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 250 flight hours, conduct leak tests of the toilet tank dump valve and the service panel drain valve. Take precautions to avoid overfilling the tank and spilling fluid on the airplane. The service panel drain valve leak test must be performed with a minimum 3 PSID applied across the valve.

(ii) Perform a visual inspection of the outer door/cap and seal mating surface for wear or damage that may cause leakage. This inspection shall be accomplished in conjunction with the leak tests of paragraph (a)(7)(i).

(iii) Within 5,000 flight hours after the effective date of this AD, replace the donut valve [part numbers per paragraph (a)(7) of this AD] with another type of FAA-approved valve. Following installation of the replacement valve, perform the appropriate leak tests and seal replacements at the intervals specified for that replacement valve, as applicable.

(8) For each lavatory drain system not addressed in paragraphs (a)(2), (a)(3), (a)(4), (a)(5), (a)(6), or (a)(7) of this AD: Within 250 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 250 flight hours, accomplish the requirements of paragraphs (a)(8)(i) and (a)(8)(ii) of this AD:

(i) Conduct a leak test of the toilet tank dump valve and the service panel drain valve. Take precautions to avoid overfilling the tank and spilling fluid on the airplane. The service panel drain valve leak test must be performed with a minimum 3 PSID applied across the valve inner door/closure device.

(ii) Perform a visual inspection of the outer cap/door and seal mating surface for wear or damage that may cause leakage.

(9) For flush/fill lines: Within 5,000 flight hours after the effective date of this AD, perform the requirements of paragraph (a)(9)(i), (a)(9)(ii), (a)(9)(iii), or (a)(9)(iv) of this AD, as applicable. Thereafter, repeat the requirements at intervals not to exceed 5,000 flight hours, or 48 months after the last documented seal change, whichever occurs later. For the purpose of determining seal replacement times required by this AD: If a new valve has been installed or a new airplane has been delivered, the new valve installation or airplane delivery may be considered to constitute the ''last documented seal change.'' For the purposes of this AD, a ''new airplane'' is defined as an airplane that has accumulated less than 100 total flight hours or 30 calendar days, whichever occurs later, since the issuance of the original airworthiness certificate.

(i) If a lever lock cap is installed on the flush/fill line of the subject lavatory, replace the seals on the toilet tank anti-siphon (check) valve and the flush/fill line cap. Perform a leak test of the toilet tank anti-siphon (check) valve with a minimum of 3 PSID across the valve, in accordance with paragraph (a)(10)(i) or (a)(10(ii), or (a)(10)(iii) of this AD, as applicable.

(ii) If a vacuum breaker check valve having Monogram part number series 4803–76 or 4803–96 is installed on the subject lavatory, prior to further flight, replace the seals/o-rings in the vacuum breaker check valve. Perform a leak test of the vacuum breaker check valve in accordance with paragraph (a)(10)(i) or (a)(10)(ii) of this AD, as applicable. Verify proper operation of the vent line vacuum breaker in accordance with paragraph (a)(10)(iii) of this AD.

(iii) If a flush/fill ball valve having Kaiser Electroprecision part number series 0062–0010 is installed on the flush/fill line of the subject lavatory, replace the seals in the flush/fill ball valve and the toilet tank anti-siphon valve. Perform a leak test of the toilet tank anti-siphon valve with a minimum of 3 PSID across the valve, in accordance with paragraph (a)(10)(i) or (a)(10)(ii) of this AD, as applicable.

(iv) If a shut-off valve having Boeing Specification #SCD 60B50341 is installed on the flush/fill line of the subject lavatory, replace the seals in the shut-off valve. Perform a leak test of the shut-off valve with a minimum of 3 PSID across the valve, in accordance with paragraph (a)(10)(ii) of this AD. At the time the test is performed, ground handling bus power must be removed from the shutoff valve and level sensor. This can be accomplished by de-energizing the ground handling bus completely (refer to Boeing Maintenance Manual 38–32–00/1 and 24–22–00/201 as an additional source of service information) or by removing ground handling bus supplied power to only the shutoff valve and waste level sensor. To remove ground handling bus supplied power to the shutoff valve and waste level sensor, open the ground service lavatory lights circuit breaker supplying 115V AC to the shutoff valve and the lavatory tank fill control circuit breaker supplying 28 V DC to the level sensor. These circuit breakers are located on panel P14 of Model 747–100, –200, –300 and SP airplanes, and on panel P414 of Model 747–400F series airplanes.

(10) Perform the tests specified in paragraph (a)(9) of this AD in accordance with the instructions of paragraph (a)(10)(i), (a)(10)(ii), or (a)(10)(iii) of this AD, as applicable.

(i) Leak test the toilet tank anti-siphon valve or the vacuum breaker check valve by filling the bowl above the toilet tank approximately half-full with water/rinsing fluid (at least 2 inches above the flapper in the bowl). Apply 3 PSID across the valve in the same direction as occurs in flight. The vent line vacuum breaker on vacuum breaker check valves must be pinched closed or plugged for this leak test. If there is a cap/valve at the flush/fill line port, the cap/valve must be removed or opened during the test. Test for leakage at the flush/fill line port for a period of 5 minutes.

Note 3: The leak test may be accomplished by pressurizing the airplane or by performing the leak test using Boeing vacuum test rig described in Boeing Maintenance Manual, 38–32–00/501, which is considered to be an additional source of service information for this test, if the toilet tank is filled to the level specified in paragraph (a)(10)(i) of this AD.

(ii) As an alternative to the leak tests of the flush/fill line valve specified in paragraph (a)(10)(i) of this AD, a vacuum test may be done using a minimum of 3 PSID across the anti-siphon valve, vacuum breaker valve, or shut-off valve in the flush/fill line for a period of 5 minutes, in accordance with Shaw Aero Devices Document ILS–193 (Operation Instructions for the waste Drain Valve Inner Flapper and Lavatory Rinse/Fill Valve Leak Test Tool) dated November 17, 1998. The vent line vacuum breaker on vacuum breaker check valves must be pinched closed or plugged for this leak test. If there is a cap/valve at the flush/fill line port, the cap/valve must be removed/open during the test. Any movement of the needle of the pressure gauge during the test period constitutes failure of the test and shall be considered evidence of leakage. Other leak test tools may by used for this test if approved in accordance with paragraph (d) of this AD.

(iii) Verify proper operation of the vent line vacuum breaker by filling the tank and testing at the fill line port for back drainage after disconnecting the fluid source from the flush/fill line port. As an alternative to the above test technique, verify proper operation of the vent line vacuum breaker in accordance with the procedures of the applicable component maintenance manual. If back drainage does not occur, prior to further flight, replace the vent line vacuum breaker or repair the vacuum breaker check valve in accordance with the appropriate component maintenance manual to obtain proper back drainage.

(11) If evidence of leakage or valve damage that may cause leakage is found during the leak tests and inspections required by paragraph (a) of this AD or at any other time: Accomplish the requirements of paragraph (a)(11)(i), (a)(11)(ii), or (a)(11)(iii) of this AD, as applicable.

(i) If any leakage is discovered, prior to further flight, perform the requirements of paragraphs (a)(11)(i)(A) and (a)(11)(i)(B) of this AD.

(A) Repair the leakage in accordance with the applicable component repair or maintenance manual.

(B) Perform the appropriate leak test, as specified in paragraph (a) of this AD; thoroughly clean the surfaces adjacent to any leakage to remove any horizontal fluid residue streaking. Cleaning must be to the extent that any future appearance of a horizontal fluid residue streak would indicate that the system is leaking.

Note 4: For purposes of this AD, ''leakage'' is defined as any visible leakage, if observed during a leak test. At any time other than during a leak test, ''leakage'' is defined as the presence of ice in the service panel, horizontal fluid residue streaks, or ice trails originating at the service panel. The fluid residue is usually, but not necessarily, blue in color.

(ii) If any worn or damaged seal is found, or if any damaged seal mating surface is found and that wear or damage could result in a leak, prior to further flight, repair or replace it in accordance with the valve manufacturer's maintenance manual.

(iii) In lieu of performing the requirements of paragraph (a)(11)(i) or (a)(11)(ii) of this AD: Prior to further flight, drain the affected lavatory system and placard the lavatory inoperative until repairs are accomplished.

(b) For all airplanes: Unless accomplished previously, within 5,000 flight hours after the effective date of this AD, install one of the caps/valves specified in paragraph (b)(1), (b)(2), (b)(3), or (b)(4) of this AD on each flush/fill line of all lavatories.

(1) Install an FAA-approved lever/lock cap on the flush/fill line. Or

(2) Install a flush/fill ball valve Kaiser Electroprecision part number series 0062–0010 on the flush/fill line. Or

(3) Install a vacuum breaker valve, Monogram part number series 4803–76 or 4803–96 on the flush/fill line. Or

(4) Install a shut-off valve, Boeing specification number 60B50341, on the flush/fill line.

(c) For any affected airplane acquired after the effective date of this AD: Before any operator places into service any airplane subject to the requirements of this AD, a schedule for the accomplishment of the leak tests required by this AD shall be established in accordance with either paragraph (c)(1) or (c)(2) of this AD, as applicable. After each leak test has been performed once, each subsequent leak test must be performed according to the new operator's schedule, in accordance with paragraph (a) of this AD.

(1) For airplanes that have been maintained previously in accordance with this AD, the first leak test to be performed by the new operator must be accomplished in accordance with the previous operator's schedule or with the new operator's schedule, whichever results in the earlier accomplishment date for that leak test.

(2) For airplanes that have not been maintained previously in accordance with this AD, the first leak test to be performed by the new operator must be accomplished prior to further flight, or in accordance with a schedule approved by the FAA Principal Maintenance Inspector (PMI), but within a period not to exceed 250 flight hours.

(d) 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, Transport Airplane Directorate, Operators shall submit their requests through an appropriate FAA PMI, who may add comments and then send it to the Manager, Seattle ACO.

Note 5: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

(e) 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.

(f) Except as provided in paragraph (a) of this AD, the vacuum leak tests of the service panel drain valves and in-line drain valves, and vacuum leak tests of the service panel drain valves and flush/fill line valves, if accomplished, shall be done in accordance with Shaw Aero Devices, Doc. ILS–193, Operation Instructions for the Waste Drain Valve Inner Flapper and Lavatory Rinse/Fill Valve Leak Test Tool, dated November 1998. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Shaw Aero Devices, Inc., 12291 Towne Lake Drive, Ft. Myers, Florida 33913. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(g) This amendment becomes effective on May 17, 1999.

Issued in Renton, Washington, on April 1, 1999.

Darrell M. Pederson,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 99–8686 Filed 4–9–99; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 98–NM–175–AD; Amendment 39–11115; AD 99–08–09]

RIN 2120–AA64

Airworthiness Directives; Aerospatiale Model ATR42 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD), applicable to certain Aerospatiale Model ATR42–300 and –320 series airplanes, that currently requires a one-time inspection of the main landing gear (MLG) actuator fitting bolt holes for correct alignment, and rework of the fitting surface and bolt replacement, if necessary. This amendment requires replacement of the MLG actuator fitting bolts with new, improved bolts. This amendment also revises the applicability of the existing AD. This amendment is prompted by issuance of mandatory continuing airworthiness information by a foreign civil airworthiness authority. The actions specified by this AD are intended to prevent failure of the MLG actuator fitting bolts, which could result in the inability to retract the MLG and attain an adequate climb gradient.

DATES: Effective May 17, 1999.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of May 17, 1999.

ADDRESSES: The service information referenced in this AD may be obtained from AI(R) American Support, Inc., 13850 Mclearen Road, Herndon, Virginia 20171. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Norman B. Martenson, Manager, International Branch, ANM–116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (425) 227–2110; fax (425) 227–1149.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 90–19–06,