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CHAPTER 05 - LIMITS/MAINTENANCE CHECK

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CONDITIONAL INSPECTIONS - DESCRIPTION AND OPERATION

1. General
   A. The conditional inspections were written because of unusual incidents which may occur and thus damage the airplane. If an unusual condition occurs, the related conditional inspection should be completed.
   B. Some of the conditional inspections use the terms body station and wing station. Look at these maintenance manual sections for identification of the locations:
      (1) 06-21-00/001, Body Station Diagram - Description and Operation
      (2) 06-51-00/001, Wing Stations - Description and Operation

ICE OR SNOW CONDITION - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is ice and snow conditional inspection.
   B. When there is ice, snow, frost, and/or slush conditions before a flight, examine the surfaces of the airplane.

TASK 05-51-01-202-002

2. Ice or Snow Conditional Inspection
   A. References
      (1) 12-33-01/301, Cold Weather Maintenance
   B. Procedure

S 212-003
(1) Examine these areas for ice, snow, frost, and/or slush:
   (a) Fuselage
   (b) Wings
   (c) Control Surfaces
   (d) Movable Seals
   (e) Hinge Points
   (f) Engine Inlet Cowls

S 712-005
(2) Make sure all of the inlet doors move freely.

S 712-007
(3) Make sure the 1st-stage compressor turns freely.

S 612-006
(4) If there is ice, snow, slush, and/or frost, look at the cold weather maintenance practice procedure (AMM 12-33-01/301).

EXTREME DUST CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is extreme dust conditional inspection.
   B. When there is very high dust conditions before a flight, examine the dust sensitive areas of the airplane.

   TASK 05-51-02-202-001

2. Extreme Dust Conditional Inspection
   A. Procedure

      S 212-002

      (1) Examine these areas and make sure they are clean:
          (a) Stabilizer Trim Mechanisms
          (b) Flap Screw Mechanisms
          (c) Static Vents
          (d) Pitot Tube
          (e) Landing Gear Shock Strut Inner Cylinders
          (f) Landing Gear Actuator Rods
          (g) Engine Inlet
          (h) Engine Inlet Probe

SEVERE OR UNUSUAL TURBULENCE, STALL, BUFFET, OR SPEEDS MORE THAN THE DESIGN LIMITS CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. The structural inspection in this task is applicable after a severe turbulence or buffet condition.
      (1) It also applies to stalls (after the initial buffet or stick shaker condition) or airplane speeds more than the design speed.
   B. When the conditional inspection tells you to "examine" a component, look for these conditions (replace or repair components, if it is necessary).
      (1) Cracks
      (2) Pulled apart structure
      (3) Loose paint (paint flakes)
      (4) Twisted parts (distortion)
      (5) Bent components
      (6) Wrinkles or buckles in the structure
      (7) Fastener holes that became larger or longer
      (8) Loose fasteners
      (9) Fasteners that have pulled out or are missing
      (10) Delaminations (a component with one or more layers pulled apart)
      (11) Parts that are not aligned correctly
      (12) Fiber breakouts
      (13) Misalignment
      (14) Interference (clearance that is not sufficient between the parts)
      (15) Discoloration (heat damage)
      (16) Nicks or gouges
      (17) Other signs of damage.

TASK 05-51-03-212-043

2. Severe or Unusual Turbulence, Stall, Buffet, or Speeds More Than the Design Limits Conditional Inspection

A. General

(1) The data that follows applies to a severe or unusual turbulence condition.

(a) The pilot must make a decision if a structural inspection is necessary.

NOTE: If an inspection is necessary, refer to the "Examine the Airplane Structure" in this section.

NOTE: Severe turbulence is identified as turbulence which causes large, abrupt changes in the altitude and/or attitude. The airplane could be out of control for short periods. It usually causes large variations in airspeed. Passengers and crew are moved violently against their seat belts and loose objects are moved around the airplane.

1) The flight vertical load acceleration limits that follow are specified in the FAA Flight Manual, Section I. If these flight maneuvering vertical load acceleration limits are exceeded, refer to the Examine Airplane Structure procedure in this section.

a) Flaps up . . . . . 2.5g to -1.0g

b) Flaps down . . . . . 2.0g to 0.0g

NOTE: These flight maneuvering vertical load acceleration limits are not directly applicable to severe or unusual turbulence. Severe or unusual turbulence inspections may be required for conditions that do not exceed these limits.

(2) The data that follows applies to a severe or unusual buffet condition:

(a) If an unusual maneuver or severe or unusual buffet condition occurs in flight, do the procedure "Examine the Airplane Structure" in this section.

1) Also do this inspection if an unusual vibration occurs in flight.

(b) If a stall occurs after the initial buffet or stick shaker condition, do the step that follows:

1) Do the procedure "Examine Airplane Structure After Stall (Beyond Initial Buffet or Stick Shaker)" in this section.

(3) The data that follows applies to airplane speeds more than the design speeds:

(a) The maximum design speed of the airplane for usual flight operation is the Maximum Operating Speed.

NOTE: The Maximum Operating Speed is found in Section 1, LIMITATIONS of the airplane Flight Manual.

1) The aural warning horn will operate at this speed condition.

(b) If the airplane speed is 20 knots more than the Maximum Operating Speed (20 knots above Vmo or 0.02 mach above Mmo) do the "Examine the Airplane Structure" procedure in this section.

B. References

(1) AMM 05-51-06/201, Dragged Engine Nacelle/Engine Seizure/Engine and Strut Damage Condition.
(2) AMM 06-09-09/201, Nacelle and Engine-to-Wing Fairing Access Doors and Panels
(3) AMM 27-11-00/501, Aileron and Aileron Trim Control System
(4) AMM 27-21-00/501, Rudder and Rudder Trim Control System
(5) AMM 27-31-00/501, Elevator Control System
(6) AMM 27-51-00/201, Trailing Edge Flap System
(7) AMM 27-51-00/501, Trailing Edge Flap System
(8) AMM 27-81-00/201, Leading Edge Flap System
(9) AMM 27-81-00/501, Leading Edge Flap System

C. Examine the Airplane Structure

S 042-044

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE TRAILING EDGE FLAP ACTUATION SYSTEMS. FLAP ACTUATION SYSTEMS MUST NOT BE OPERATED DURING THIS INSPECTION. FAILURE TO OBEY THIS WARNING CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do the deactivation procedure for the trailing edge flap system (AMM 27-51-00/501).

S 042-045

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE LEADING EDGE FLAP ACTUATION SYSTEMS. FLAP ACTUATION SYSTEMS MUST NOT BE OPERATED DURING THIS INSPECTION. FAILURE TO OBEY THIS WARNING CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do the deactivation procedure for the leading edge flap system (AMM 27-81-00/501).

S 212-046

(3) Do the inspections that follow:

(a) Examine the external surface of the lower chords and webs in the keel beam between body stations 1000 and 1480.

NOTE: A vertically bent web of the keel beam is satisfactory.

(b) Examine the external surface of the fuselage above the wing, aft of station 1319.

(c) Examine the external surface of the lower body between stations 1480 and 2007.

(d) Examine all of the external surface of the fuselage between body stations 2007 and 2598.

(e) If external damage was found in the last four steps, do the step that follows:

1) Examine all of the adjacent internal primary structure in the areas you can get access to.

S 212-048

(4) Examine the external surfaces around the top and bottom wing-to-body attachment.

NOTE: This includes the wing-to-body fairing, and the pressure web of the canted rear spar.

(a) If you see external damage, examine the areas that follow:

1) The body-to-wing joints at body stations 1000 and 1241.
2) The landing gear beam-to-body joint at body station 1350.
3) The overwing longeron splice at body stations 1000 and 1241.
4) The drag splice fitting on the underwing at body station 1000.
5) The skin splice on the upperwing at wing buttock line 128.5.

S 492-049

WARNING: DO NOT GO INTO THE WING LEADING EDGE AREAS BEFORE YOU INSTALL THE SAFETY LOCKS. THE LEADING EDGE FLAPS WILL RETRACT IN 7 SECONDS. PUT LOCKS ON ALL LEADING EDGE FLAPS THAT ARE EXTENDED. THIS WILL PREVENT INJURY TO PERSONS FROM ACCIDENTAL FLAP OPERATION.

(5) Put safety locks on the leading edge flaps (AMM 27-81-00/201).

S 212-050
(6) Examine the external surfaces of the wing at the skin splices and the upper surface of the trailing edge.
(a) If external damage is found, do the step that follows:
1) Examine all of the internal primary structure in the damaged area that you can get access to.

S 212-051
(7) Examine the wing control surfaces and attachments at wing front and rear spars.

S 212-047
(8) Do the inspections that follow:
(a) Examine all of the internal structure you can get access to in the fuselage, aft of the rear pressure bulkhead (body station 2360).
1) Examine the fuselage bulkheads at body stations 2360, 2484, 2598, and 2658.
2) Examine the fin attach fittings.
3) Examine the horizontal stabilizer center section.
4) Examine the stabilizer hinge fittings.
5) Examine the diagonal braces and hinge support structure at body station 2598.
6) Examine the mount fittings and support structure of the stabilizer jackscrew mechanism.
7) Operate the stabilizer trim through the full range.
8) Make sure the jackscrew and hinges move freely.
(b) Examine the external surfaces of the horizontal stabilizer.

NOTE: Make sure you look at the skin splices.

1) Examine the support towers for the balance weights on the outboard elevator.
2) If external damage is found, do the steps that follow:
a) Examine the spars.
b) Examine all of the internal primary structure you can get access to.
(c) Examine the rear spar webs of the horizontal stabilizer.
(d) Examine the external surfaces of the elevator.
1) If external damage is found, examine the front spar web of the elevator.
(e) Examine the vertical stabilizer and rudders.

NOTE: Do the same procedures for the horizontal stabilizer and elevators.

(f) Examine the rear spar webs of the vertical stabilizer.

(g) If you find damage in the last 6 steps (starting at the step " Do the Inspections that Follow:") do the steps that follow:
1) Examine all elevator hinge bearings and actuator bearings.

NOTE: A recommended procedure is in the section "Examine Airplane Structure After Stall (Beyond Initial Buffet or Stick Shaker)".

2) Examine the rudder hinge bearings and and actuator bearings.

S 712-058
(9) Make sure the flight controls move freely.
(a) If unusual conditions are found, do a check of all flight controls for force specifications and cable tensions.

NOTE: If it is necessary, refer to the applicable sections that follow.

1) AMM 27-11-00/501, Aileron and Aileron Trim Control System
2) AMM 27-21-00/501, Rudder and Rudder Trim Control System
3) AMM 27-31-00/501, Elevator Control System
4) AMM 27-51-00/501, Trailing Edge Flap System
5) AMM 27-61-00/501, Spoiler Control System
6) AMM 27-81-00/501, Leading Edge Flap System

S 212-059
(10) Examine the external area of the pylon panels, doors, and the lower surface of the nacelle cowlings.
(a) If unusual conditions are found, do the inspections of the step that follows.

NOTE: Also do the inspection if severe turbulence occurs with large variations in airplane roll and yaw attitude.

S 212-078

(11) Examine the Strut Area

NOTE: This step is divided into two phases (Phase I and Phase II):

- Do the Phase I inspection before the next flight.
- If damage is found during Phase I inspection, do the Phase II before the next flight.
- If you do not find damage in the Phase I inspection, do the Phase II inspection in less than 500 flight cycles.

NOTE: This note applies if you do not find damage in the Phase I inspection. The Phase II inspections can be waived for airplanes with the strut modification incorporated. The Phase II midspar fuse pin removal and inspection can be waived for airplanes with 3rd generation fuse pins installed.

(a) Do the Phase I inspection. (general visual inspection for obvious damage).

1) Examine the components that follow:
   a) External strut to wing fairings
   b) Pylon panels
   c) Pylon doors
   d) Strut skins (cut outs around edges; inner and outer surfaces).
   e) Nacelle cowlings.
2) Open the trailing edge fairing doors and remove the strut access panels (AMM 06-09-09/201).
   a) Examine the components that follow:
   b) Internal strut bulkheads
   c) Spars

      NOTE: Examine the strut mid-spar carefully.

   d) Skins.
3) Examine the areas of all four struts as follows:
   a) Mid-spar attachment areas:
      - Strut mid-spar fittings
      - Spring beam mid pivot area
      - Spring beams
      - Underwing fittings
      - Fuse pins
      - Lugs
      - Side braces
      - Side brace fittings
      - Attachment hardware
      - All other structure in this area.

b) Diagonal brace area:
- Fittings
- Lugs.

c) Examine all engine mounts and the adjacent structure.

(b) Do the Phase II inspection.

1) Remove and examine all mid-spar fuse pins.

NOTE: It is recommended that you replace all bulkhead-style fuse pins and retaining hardware.

2) Examine the components that follow with an ultrasonic procedure:
- Strut mid-spar fittings lugs
- Spring beam lugs.
- Visually examine spring beam mid pivot area.

NOTE: Use the last revision of the Non Destructive Test procedures found in the document D6-7170, Part 4, NDT 54-40-02 and NDT 54-40-11.

S 212-061

(12) Examine the areas that follow and look for signs of fuel or other types of fluid leakage:
(a) The wing
(b) The nacelles
(c) The horizontal stabilizer
(d) The external surfaces of the fuselage.
(e) All of the wheel wells of the landing gear.

S 222-062

(13) When flight load accelerations are more than the flight manual limits, and the last inspections showed signs of much damage, check the airplane alignment.

NOTE: The Alignment Check Procedure is in the Structural Repair Manual.

S 712-063

(14) Make sure the handling systems for the containers/pallets in the cargo compartments operate correctly.
(a) Do a check of the restraint system in all of the cargo compartments.
(b) Visually examine the items that follow:
1) The side guides
2) The seat tracks
3) The pallet locks
4) The rollers (where installed) that do not move freely.

S 212-064
(15) Examine landing gear doors for damage.

S 212-065
(16) Examine the landing gear uplocks for damage.

S 212-066
(17) Examine the inspection and blowout doors on the lower surface of the wing and engine pylons.

S 212-067
(18) Examine all of the inspection and access doors on the lower side of the body (from body stations 470 to 2200).

S 212-068
(19) Examine the wingtip fairings.

D. Examine the Airplane Structure After Stall (Beyond Initial Buffet or Stick Shaker)

S 042-069

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE TRAILING EDGE FLAP ACTUATION SYSTEMS. FLAP ACTUATION SYSTEMS MUST NOT BE OPERATED DURING THIS INSPECTION. FAILURE TO OBEY THIS WARNING CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do the deactivation procedure for the trailing edge flap system (AMM 27-51-00/501).

S 042-070

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE LEADING EDGE FLAP ACTUATION SYSTEMS. FLAP ACTUATION SYSTEMS MUST NOT BE OPERATED DURING THIS INSPECTION. FAILURE TO OBEY THIS WARNING CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do the deactivation procedure for the leading edge flap system (AMM 27-81-00/501).

S 492-071

WARNING: DO NOT GO INTO THE WING LEADING EDGE AREAS BEFORE YOU INSTALL THE SAFETY LOCKS. THE LEADING EDGE FLAPS WILL RETRACT IN 7 SECONDS. PUT LOCKS ON ALL LEADING EDGE FLAPS THAT ARE EXTENDED. THIS WILL PREVENT INJURY TO PERSONS FROM ACCIDENTAL FLAP OPERATION.

(3) Put safety locks on the leading edge flaps (AMM 27-81-00/201).

S 212-072

(4) Do the steps that follow to find possible damage:
  (a) Examine the internal structure in the fuselage at body station 2598 bulkhead that you can get access to.
  (b) Look at the areas that follow:
    1) The fuselage bulkheads at body station 2598
    2) The center section of the horizontal stabilizer
    3) The stabilizer hinge fittings
    4) The diagonal braces and hinge support structure at body station 2598.
  (c) Examine the elevator external surfaces.
  (d) Examine the elevator front spar in the area of the actuators.
  (e) Examine the support towers for the balance weights in the outboard elevator.
  (f) Examine the rear spar web of the horizontal stabilizer, immediately outboard of the hinge fittings.
  (g) Make sure the flight controls move freely.
    1) If unusual conditions are found, make a check of all force specifications for the flight controls and the cable tensions.

      NOTE: If it is necessary, refer to the applicable sections that follow.

      a) AMM 27-11-00/501, Aileron and Aileron Trim Control System
      b) AMM 27-21-00/501, Rudder and Rudder Trim Control System
      c) AMM 27-31-00/501, Elevator Control System
      d) AMM 27-51-00/501, Trailing Edge Flap System
      e) AMM 27-61-00/501, Spoiler Control System
      f) AMM 27-81-00/501, Leading Edge Flap System

S 212-073

(5) If damage is found, do the inspections that follow:
  (a) Examine the fuselage bulkheads at body stations 2360, 2484, and 2658.
  (b) Examine the external surfaces of the horizontal stabilizer.
    1) Make sure you look at the skin splices.
  (c) Examine the horizontal stabilizer spars and all the adjacent internal primary structure in the areas you can get access to.
  (d) Use the recommended procedure that follows to examine all elevator hinge bearings and actuator bearings:
    1) Remove the actuator pin to disconnect the actuator from the elevator.

      NOTE: You must hold the elevator during these steps.

    2) Examine the actuator pin.
    3) Examine the actuator bearing.
      a) The bearing must turn and pivot in the housing freely.

4) Move the elevator up and down by hand.
   a) The elevator must pivot freely.

      NOTE: Listen for unusual sounds at each hinge bearing.

   b) If the elevator does not pivot freely, remove the unsatisfactory hinge pin and examine the pin and hinge bearing.
   c) Replace the pin or the bearing if it is necessary.
5) Install the actuator pin(s).

E. Cabin Inspections

S 212-080
(1) Do a visual inspection of all ceiling panels for dislodging and evi dence do to impact damage.

S 212-082
(2) Do a visual inspection of all ceiling overhead bins for evidence of looseness and impact damage.

S 212-083
(3) Do a detailed visual inspection of all ceiling panels equipped with video monitors.
   (a) Inspect latches, stops, potting inserts and all fasteners.

S 212-081
(4) Continue the following inspection if any cabin damage was found in the above Cabin Inspection including the ceiling panels, central overhead bins, or the video monitors. If no damage was found, no further cabin inspection is required and it is not necessary to continue this Cabin Inspection.
   (a) If ceiling panels without video monitors are found dislodged or damaged: Check for proper latching and installation. Repair as necessary.
   (b) If central overhead stowage bins are found with impact damage or are loose, or if ceiling panels equipped with video monitors are found with broken lateches: repair as necessary.
   (c) Inspect all tie rods of affected zones for evidence of buckling or rupture. If any defect is found, replace as necessary.
   (d) Examine lavatory tie rod attachments for damage consisting of breakage, cracks, and deformation. Inspect the tie rods for evidence of buckling or rupture.
   (e) Examine the lavatory floor fittings for damage consisting of breakage, cracks, and deformation.
   (f) Examine galley tie rod attachments for damage consisting of breakage, cracks, and deformation. Inspect the tie rods for evidence of buckling or rupture.
   (g) Examine the galley floor fittings for damage consisting of breakage, cracks, and deformation.

(h) Examine closet tie rod attachments for damage consisting of breakage, cracks, and deformation. Inspect the tie rods for evidence of buckling or rupture.

(i) Examine the closet floor fittings for damage consisting of breakage, cracks, and deformation.

(j) Examine the cabin overhead electronic racks for damage consisting of breakage, cracks, deformation, and missing or broken fasteners.

NOTE: For example, if installed, the E-42 SATCOM rack.

F. Put the Airplane back to Its Usual Condition

S 412-074

(1) Install the components you removed or install replacement components.

S 442-075

(2) Do the activation procedure for the trailing edge flap system (AMM 27-51-00/201).

S 442-076

(3) Do the activation procedure for the leading edge flap system (AMM 27-81-00/201).

FLAP DOWN OVERSPEED CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. When the trailing edge flaps are lowered at speeds more than the placard speeds permit, the flap components and related structures must be examined for damage and conditions defined in this procedure.

      NOTE: The Phase I inspection for the TE flaps is not necessary for flap position 1 because the TE flaps are not are not extended.

   B. When the leading edge slats are lowered at speeds more than the flaps 1 placard for flap detents 1, 5, 15, and 20, or more than the flaps 25 placard for flap detents 25 and 30, the slat components must be examined for damage and conditions defined in this procedure.
   C. The conditional inspection is divided into two phases, Phase I and Phase II, and should be accomplished as follows:
      (1) If the overspeed was less than 15 knots, do the Phase I inspection within 100 flight hours of the overspeed indication.
      (2) If damage is found in the Phase I inspection, do the Phase II inspection before the next flight.
      (3) If the overspeed was 15 knots or more, do both the Phase I and Phase II inspections before the next flight.
   D. When the conditional inspection tells you to "examine" a component, look for these conditions (replace or repair the components, if necessary):
      (1) Cracks
      (2) Pulled apart structure
      (3) Loose paint (paint flakes)
      (4) Twisted parts (distortion)
      (5) Bent components
      (6) Fasteners holes that became larger or longer
      (7) Loose fasteners
      (8) Fasteners that have pulled out or are gone
      (9) Delaminations
      (10) Misalignment
      (11) Interference
      (12) Other signs of damage.

   TASK 05-51-04-212-012

2. Phase I Inspection
   A. References
      (1) 27-51-00/201, Trailing Edge Flap System
      (2) 27-51-22/401, Inboard Flap Inboard Track
      (3) 27-51-25/401, Inboard Flap Outboard Track
      (4) 27-51-27/401, Outboard Flap Track
   B. Trailing Edge Flaps

S 862-015

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE FLAP ACTUATION SYSTEM. INJURY TO A PERSON OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE FLAPS MOVE.

(1) Do the deactivation procedure for the trailing edge flap system (Ref 27-51-00/201).

S 212-014

(2) Examine the trailing edge flap components as follows:
   (a) Examine the external skin of all trailing edge flaps.
   (b) Examine all flap support fittings and their attachment bolts. Also examine the surfaces between the front and rear wing spars near the flap support fittings.
   (c) Examine the main flap carriages, links and their bearings and mounting bolts.
   (d) Examine the flap tracks and their attachment points.
   (e) Examine the foreflap sequence carriages and their rollers.
   (f) Examine the fuse bolts at the forward attach points of the flap track, if:
      1) The overspeed was 30 knots more than the placard speed for flap position 5 or less.
      2) The overspeed was 15 knots more than the placard speed for for the flap position more than 5, and up through 10.
      3) The speed was more than the placard speed for flap positions more than 10.

C. Trailing Edge Panel

S 212-019

(1) Examine the upper panel support of the fixed trailing edge at wing buttock line 163.

TASK 05-51-04-212-017

3. Phase II Inspection

A. Trailing Edge Flaps

S 212-022

(1) No Phase II inspection is necessary.

B. Leading Edge Flaps

S 862-020

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE FLAP ACTUATION SYSTEM. INJURY TO A PERSON OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE FLAPS MOVE.

(1) Do the deactivation procedure for the trailing edge flap system (Ref 27-51-00/201).

S 212-021

(2) Examine all leading edge flaps as follows:
  (a) Examine the external skins of the wing leading edge flaps.
  (b) Examine the linkages of the wing leading edge flaps.
  (c) Examine the rotary actuator arms of all leading edge flaps.
  (d) Examine the rib support tubes and their attachments on the fixed-wing leading edge.

HARD LANDING OR HIGH DRAG/SIDE LOAD LANDING CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. The Inspection
      (1) The inspection is divided into two phases (Phase I and Phase II).
         (a) The Phase I inspection is applicable when a Hard Landing or a High Drag/Side Load Landing occurs.
      (2) If the inspection during Phase I does not show that damage has occurred, no more inspections are necessary.
      (3) If the Phase I inspection shows that damage has occurred, the Phase II inspection is necessary.
   B. Hard Landing
      (1) The hard landing procedure is for hard landings at or below the maximum design landing weight limits.
      (2) The pilot must make a decision if a structural inspection is necessary.
         (a) For airplane flight data recording systems capable of at least eight (8) samples per second, the following can be used: An indication of a hard landing on the main landing gear is a peak recorded vertical acceleration that exceeds 1.7 G (incremental 0.7 G). This vertical accelerometer data must be measured by the flight data recorder accelerometer at a data sampling rate of at least eight (8) samples per second. The peak recorded vertical acceleration for a hard landing that is a hard nose landing or is accompanied by more than two degrees of roll at the time of main landing gear impact can be significantly less than 1.7 G.
         (b) For airplane flight data recording systems capable of at least sixteen (16) samples per second, the following can be used: An indication of a hard landing on the main landing gear is a peak recorded vertical acceleration that exceeds 1.8 G (incremental 0.8 G). This vertical accelerometer data must be measured by the flight data recorder accelerometer at a data sampling rate of at least sixteen (16) samples per second. The peak recorded vertical acceleration for a hard landing that is a hard nose landing or is accompanied by more than two degrees of roll at the time of main landing gear impact can be significantly less than 1.8 G.
         (c) If the landing is also overweight, the Overweight Landing Inspection, not the Hard Landing Inspection, must be done.
   C. High Drag/Side Load Landing
      (1) A high drag/side load landing occurs if the airplane makes a landing with one or more of the conditions that follow:
         (a) The airplane skidded or overran the prepared surface.
         (b) The airplane made a landing short of the prepared surface.
         (c) The airplane made a landing and two or more tires were blown.
         (d) The airplane skidded on the runway sufficiently to make you think damage occurred.

D. When the conditional inspection tells you to "examine" a component or area, look for these conditions (replace or repair components, if necessary).
(1) Cracks
(2) Creases or cracks in the skin or web
(3) Skin wrinkling that crosses a line of fasteners
(4) Pulled apart structure
(5) Loose paint (paint flakes)
(6) Twisted parts (distortion)
(7) Bent components
(8) Fastener holes that have become larger or longer
(9) Loose fasteners
(10) Fasteners that have pulled out or are gone
(11) Delaminations
(12) Misalignment
(13) Interference
(14) Other signs of damage.

TASK 05-51-05-212-081

2. Phase I Inspection

A. References
(1) AMM 06-09-09/201, Nacelle and Engine-to-Wing Fairing Access Doors and Panels
(2) AMM 71-00-02/401, Power Plant

B. Wing and Body Gear Inspection

S 212-065

(1) Examine the areas of the wing and body landing gear that follow:
(a) The tires
(b) The wheels
(c) The shock struts at the top and bottom ends for signs of fluid leakage

NOTE: A small quantity of hydraulic fluid on the inner cylinder is satisfactory.

(d) The strut doors and linkage
(e) The trunnion and shock strut upper end
(f) The drag strut and trunnion attach fittings of the body landing gear
(g) The attach fitting of the landing gear beam at the rear spar
(h) The connection of the landing gear trunnion to the rear spar attachment
(i) The connection of the landing gear trunnion to the landing gear beam
(j) The inner diameter of the fuse pins at the connection of the trunnion to the rear spar
(k) The truck positioning mechanism and linkage
(l) The truck beams.

C. Nose Landing Gear Inspection

S 212-066

(1) Examine the areas of the nose landing gear that follow:
  (a) The tires
  (b) The wheel well

NOTE: Make sure you look carefully in the area near the trunnion and the support fitting of the drag strut.

  (c) The wheels
  (d) The shock strut at the top and bottom ends for signs of hydraulic fluid leakage

NOTE: A small quantity of hydraulic fluid on the inner cylinder is satisfactory.

  (e) The outer cylinder.

D. Fuselage and Wing Inspection

S 212-067

(1) Examine the fuselage and wing areas.
  (a) Examine the Nacelles and Nacelle-Struts components that follow:

NOTE: Do a general visual inspection for obvious damage.

NOTE: The inspection of the upper link area can be deferred for up to 150 flights (cycles). This is if no damage is found in the other parts of the inspection.

    1) The strut to wing fairing
    2) The pylon panels
    3) The pylon doors
    4) The strut skins (cut outs around edges; inner and outer surfaces).
    5) The nacelle cowlings.
  (b) Open the trailing edge fairing door and remove the strut access panels (AMM 06-09-09/201).
  (c) Remove the gap cover above the upper link.
  (d) Remove the trailing edge fixed fairing (inboard struts).
  (e) Examine the internal strut areas that follow:

NOTE: Examine the bulkhead area of the AFT engine mount carefully.

NOTE: Examine the strut midspar carefully.

    1) Bulkhead chords.
    2) Bulkhead skins.

(f) Examine the areas of the struts that follow, for damage:
1) Midspar attachment area:
- strut midspar fitting
- spring beams
- under wing fittings
- fuse pins
- lugs
- side brace
- side brace fittings
- attachment hardware
- all other structure in this area.
2) Diagonal brace area:
- diagonal brace assembly
- strut attach fitting
- wing attach fitting
- lugs
- bushings
- fuse pins/bolts
- all other structure in this area.
3) Upper link area:
- upper link assembly
- strut attach fitting
- wing attach fitting
- bushings
- lugs
- fuse pins/bolt
- wing leading edge beam located above each engine strut.
- strut to wing fairing
- all other structure in this area.
4) Examine all engine mounts and adjacent structure.
5) If you think there is possible engine damage or seizure, remove the engine, if it is necessary (AMM 71-00-02/401).

(g) Examine the leading edge fairings that follow.

NOTE: The general section has a list of components and areas to examine. Careful inspection of the specified components and areas identified in this section is required.

1) The wing-to-body fairing at the wing leading edge.
2) The fairing at the engine strut-to-wing attachment (underwing fairing).

(h) Examine the fuselage skin from body station (BS) 1480 to 1961, below stringer 23.

NOTE: Follow the general section list of components and areas to examine. Careful, inspection of the specified components and areas identified in this section is required.

1) Creases or cracks in the skin.
2) Skin wrinkling that crosses a line of fasteners.
3) Pulled, missing, or distrubed/loose fasteners.

(i) Examine the keel beam structure looking for:

NOTE: Follow the general section list of components and areas to examine. Careful, inspection of the specified components and areas identified in this section is required.

1) Web buckles that spanning continuously between two web segments and passing across the common web stiffener.
2) Creases in the web.
3) Buckling or local crippling of a stiffener or chord.

NOTE: Buckling can be determined if any creases or sharp bends can be found in either the stiffener flanges or the web of the stiffener.

4) Fastener holes that have become larger or longer.
5) Stiffener twisting on buttock line (BL) 0 web with the following criteria:

NOTE: The stiffener flanges and web may be out of plane as a result of web buckle in adjacent bays.

a) Web shear buckles (buckles at approximately 45 degrees) must be repaired or replaced.

b) The web compression buckles (buckles at approximately 45 degrees) must be repaired or replaced.

6) Stiffener twisting on buttock line (BL) 9 webs.

7) Gaps between the web and chords or between the web and stiffeners.

(j) Examine the Body Station (BS) 1480 bulkhead below the floor, for signs of:

NOTE: Follow the general section list of components and areas to examine. Careful, inspection of the specified components and areas identified in this section is required.

1) Web buckles spanning continuously between two web segments and passing across the common web stiffener.

2) Creases in the web.

3) Buckling or local crippling of a stiffener or chord.

NOTE: Buckling can be determined if any creases or sharp bends can be found in either the stiffener flanges or the web of the stiffener.

4) Fastener holes that have become larger or longer.

5) Loose or missing fasteners.

6) Gaps between the web and chords or between the web and stiffeners.

(k) Examine the lower fuselage structure aft of body station 2000 for signs that the runway was touched.

(l) Examine the drive rods and each mechanism of the aft part of the trailing edge flap and the drive rod of the aft fairing.

(m) Do an inspection of the horizontal tail tank if the landing was made with more than 1000 gallons of fuel.

1) Examine the lower surface of the horizontal stabilizer (this includes the center section).

a) Look for fuel leaks.

(n) Examine the APU support structure for cracking at the interface of the vertical support tube and support intercostal along the Section 48 upper skin.

1) Check the APU support installation intercostal: bonded outer skin panel adjacent to the support intercostal, backing plates, and clips for cracks or severe wear.

(o) Examine the APU support intercostal at buttock line 0, between body station 2701 and 2709.

E. Cabin Inspections

S 212-085
(1) Do a visual inspection of all ceiling panels for dislodging and evi dence do to impact damage.

S 212-086
(2) Do a visual inspection of all ceiling overhead bins for evidence of looseness and impact damage.

S 212-087
(3) Do a detailed visual inspection of all ceiling panels equipped with video monitors.
(a) Inspect latches, stops, potting inserts and all fasteners.

S 212-088
(4) Continue the Cabin Inspection in the Phase II inspection if any cabin damage was found in the above Cabin Inspection including the ceiling panels, central overhead bins, or the video monitors. If no damage was found, no further cabin inspection is required and it is not necessary to continue the Cabin Inspection in Phase II.

TASK 05-51-05-212-068

3. Phase II Inspection

A. References
(1) AMM 05-51-06/201, Dragged Engine Nacelle/Engine Seizure/Engine and Strut Damage Condition
(2) AMM 07-11-01/201, Jacking Airplane
(3) AMM 27-00-00, Flight Controls
(4) AMM 27-00-01, Flight Control Cables
(5) AMM 27-11-00/501, Aileron and Aileron Trim Control System
(6) AMM 27-21-00/501, Rudder and Rudder Trim Control System
(7) AMM 27-31-00/501, Elevator Control System
(8) AMM 27-41-00/501, Horizontal Stabilizer Trim Control System
(9) AMM 27-51-00/501, Trailing Edge Flap System
(10) AMM 27-61-00/501, Spoiler Control System
(11) AMM 27-81-00/501, Leading Edge Flap System
(12) AMM 32-11-02/301, Wing Gear Shock Strut
(13) AMM 32-11-02/401, Wing Gear Shock Strut
(14) AMM 32-13-02/301, Body Landing Gear Shock Strut
(15) AMM 32-13-02/401, Body Gear Shock Strut
(16) AMM 32-21-01/401, Nose Landing Gear
(17) AMM 32-21-01/601 Nose Landing Gear
(18) AMM 32-31-00/501, Landing Gear Control
(19) AMM 32-32-00/501, Wing Gear and Door Extension and Retraction
(20) AMM 32-33-00/501, Body Gear and Door Extension and Retraction
(21) AMM 32-34-00/501, Nose Landing Gear and Door Extension and Retraction
(22) AMM 32-41-15/601, Landing Gear Brake Unit
(23) AMM 32-45-03/601, Wheels
(24) AMM 32-51-00/501, Nose Wheel Steering System

(25) AMM 72-31-01/601, LP Compressor Case and Vanes
(26) AMM 72-31-04/601, LP Compressor Rotor Blades
(27) AMM 72-32-00/601, Forward Fan Case

B. Landing Gear Test

S 582-069
(1) Lift the airplane on jacks (AMM 07-11-01/201).

S 722-070
(2) Do a test of the landing gear.
(a) Retract and extend the wing landing gear (AMM 32-32-00/501).
(b) Retract and extend the body landing gear (AMM 32-33-00/501).
(c) Retract and extend the nose landing gear (AMM 32-34-00/501).
(d) Look for signs of interference, misalignment, or distortion.

C. Wing and Body Landing Gear Inspection

S 212-071
(1) Examine the areas of the wing and body gear that follow:
(a) the outer and inner cylinder lugs
(b) the drag struts
(c) the drag strut linkage
(d) the side struts and their connections
1) the side strut linkage
(e) Make sure the shock strut pressure and fluid level are correct (AMM 32-11-02/301 and AMM 32-13-02/301).
1) Remove and disassemble the wing gear for an inspection if (AMM 32-11-02/401):
a) the fluid level of the shock strut is low
b) a high drag or a high side load landing occurs with a hard landing.
2) Remove and disassemble the body gear for an inspection if (AMM 32-13-02/401):
a) the fluid level of the shock strut is low
b) a high drag or a high side load landing occurs with a hard landing.
(f) all bolt and pin connections in the wing landing gear (AMM 32-11-02/401)
(g) all bolt and pin connections in the body landing gear (AMM 32-13-02/401)

(h) The body gear connections of the support fitting to the vertical trunnion at the bulkhead of body station 1480.
(i) If the wing or body gear wheels are removed because of a blown tire, do the steps that follow:
1) Examine the wheel structure (AMM 32-45-03/601).
2) Examine the brake assemblies (AMM 32-41-15/601).

D. Nose Landing Gear Inspection

S 212-072

(1) Examine the areas of the nose landing gear that follow (AMM 32-21-01/601):
   (a) The support fitting of the drag strut
   (b) The trunnion fitting area of the outer cylinder
   (c) The assemblies of the drag brace link.
   (d) If the last two steps show signs of damage or hydraulic fluid leakage, remove the nose landing gear for an inspection (AMM 32-21-01/401).
   (e) Make sure the steering system operates correctly (AMM 32-51-00/501).
   (f) Make sure the steering mechanism is adjusted correctly (AMM 32-51-00/501).

E. Fuselage and Wing Inspection

S 212-073

(1) Examine the fuselage and wing areas that follow:
   (a) The lower fuselage structure
      1) Look carefully at the area below the body floor beams and between body stations 1480 and 1680.

         NOTE: A vertically bent web on the keel beam is satisfactory.

   (b) The joints of the wing at the fuselage and the wheel well bulkhead between body stations 1000 and 1241
   (c) The upper fuselage structure at body stations 1000, 1241, and 1480
   (d) Examine the side strut beam found in the location that follows:
      1) Forward of body station 1350 and at water line 140, and the horizontal deck at water line 152 and at side of body and aft of body station 1350.
   (e) The ribs from WS 382 to 469 in the area of the rear spar

      NOTE: You must go into the fuel tank for this inspection.

   (f) The webs of the rear spar and midspar between the rib at wing station 469 and the side of body.

      NOTE: You must go into the fuel tank for this inspection.

(g) The refuel manifold found along the spar and connection to the rib at the side of the body between wing station 359 and 386.

NOTE: You must go into the fuel tank for this inspection.

NOTE: Possible refuel line damage can cause accidental fuel transfer into the inboard main fuel cell during subsequent refuel operations.

1) Look at the left hand and the right hand tubes that are installed between wing station 359 and 386.

(h) The bulkhead at body station 400.

NOTE: This inspection can be done from the aft side of the bulkhead at body station 400, in the main center for the electrical/electronics equipment.

(i) The fuselage structure immediately outboard of the nose wheel well.

(j) If the fuel tank had more than 1000 gallons in the horizontal tail tank during the landing, do the inspections that follow:

NOTE: You must go into the fuel tank for this inspection.

NOTE: Possible refuel line damage can cause accidental fuel transfer into the inboard main fuel cell during subsequent refuel operations.

1) Examine the hinge rib at body line 43.5

NOTE: Make sure you examine all stringer splices and the rib chords at this rib.

2) Examine all of the attachments of the rib chords to the stringers on the lower surface of the fuel tank.

NOTE: Make sure you examine the fasteners, the rib chords, and the stringer flanges.

(k) Look for signs of fuel leaks or other fluid leaks in the areas that follow:
- the wing
- the nacelles
- the pylons
- the external surfaces of the fuselage
- the wheel well of the nose landing gear
- the wheel wells of the main landing gear.

(l) Examine the fuselage skin attachments above the landing gear beam at body station 1350.

(m) Examine the lower fuselage aft of body station 2000 for signs that it touched the runway.

(n) If you find signs the runway was touched, examine the areas that follow:
- the APU firewall
- the APU drain
- the APU door
- the outflow valve
- the drain mast
- the lower fuselage skin, stringers, frames, and the shear ties.

S 212-074

(2) Make sure the flight controls move freely (AMM 27-00-00).

S 222-075

(3) Make sure the flight control cables have the correct tension (AMM 27-00-01).

F. Cargo Loading Inspection

S 212-076

(1) Do a check of the cargo loading system to make sure it operates correctly with the containers and pallets.

(a) Look at the components that follow:

1) Make a check of the cargo restraint system in all cargo compartments.

2) Visually check
- the rollers
- the side guides
- the seat tracks
- the pallet locks.

3) Examine all components for breaks, cracks, and missing retaining lips.

NOTE: Make sure the rollers (where installed) move freely.

G. Cabin Inspections

S 212-089

(1) Continue the following inspection if any cabin damage was found in the Phase I Cabin Inspection including the ceiling panels, central overhead bins, or the video monitors. If no damage was found, no further cabin inspection is required and it is not necessary to continue this Cabin Inspection.
   (a) If ceiling panels without video monitors are found dislodged or damaged: Check for proper latching and installation. Repair as necessary.
   (b) If central overhead stowage bins are found with impact damage or are loose, or if ceiling panels equipped with video monitors are found with broken lateches: repair as necessary.
   (c) Inspect all tie rods of affected zones for evidence of buckling or rupture. If any defect is found, replace as necessary.
   (d) Examine lavatory tie rod attachments for damage consisting of breakage, cracks, and deformation. Inspect the tie rods for evidence of buckling or rupture.
   (e) Examine the lavatory floor fittings for damage consisting of breakage, cracks, and deformation.
   (f) Examine galley tie rod attachments for damage consisting of breakage, cracks, and deformation. Inspect the tie rods for evidence of buckling or rupture.
   (g) Examine the galley floor fittings for damage consisting of breakage, cracks, and deformation.
   (h) Examine closet tie rod attachments for damage consisting of breakage, cracks, and deformation. Inspect the tie rods for evidence of buckling or rupture.
   (i) Examine the closet floor fittings for damage consisting of breakage, cracks, and deformation.
   (j) Examine the cabin overhead electronic racks for damage consisting of breakage, cracks, deformation, and missing or broken fasteners.

       NOTE: For example, if installed, the E-42 SATCOM rack.

H. Engine Inspections

S 212-078

(1) AIRPLANES WITH THE CF6 SERIES ENGINES;
Examine for excessive fan case abraidable material wear (AMM 72-32-00/601).

S 212-079
(2) Do a dragged engine nacelle inspection - Phase II (AMM 05-51-06/201).

I. Put the Airplane Back to its Usual Condition

S 582-080
(1) Lower the airplane off of the jacks (AMM 07-11-01/201).

S 412-081
(2) Close all of the cowling, panels, fairings, and doors.

S 412-082
(3) Install the components you remove if they are serviceable, or install replacement parts.

DRAGGED ENGINE NACELLE/ENGINE SEIZURE/ENGINE AND STRUT DAMAGE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. This procedure has one task to do an inspection after a dragged engine nacelle, engine seizure, engine and nacelle damage.
   B. The inspections are divided into two phases (Phase I and Phase II).
      (1) Do the Phase I inspection before the next flight.
      (2) Do the Phase II inspection if one of the conditions that follow occur:
         (a) If damage is found in the Phase I inspection.
         (b) If an engine removal is necessary due to impact damage, do the Phase II inspection before the next flight.
   C. This sections examines the engine and nacelle strut after one of the incidents that follow:
      (1) Dragged engine nacelle
      (2) Engine seizure
      (3) Other engine damage
      (4) Other nacelle damage
   D. Other engine damage refers to incidents which result in unusual engine vibration.

      NOTE: These vibrations can be caused by loss of fan blades or other parts of the engine or cowling.

   E. Other nacelle damage refers to conditions that cause damage to the nacelle or the cowling.
      (1) This type of damage, such as dents or wrinkles is caused when the nacelle or cowling are hit by ground support equipment.
   F. Inspections, Repairs, and Replacements
      (1) When this procedure tells you to "examine" a part, look for these conditions (repair or replace the part, if it is necessary):
         - cracks
         - structure that pulled apart
         - loose paint (paint flakes)
         - twisted parts (distortion)
         - bent parts
         - wrinkles or buckles in the structure
         - fastener holes that became larger of longer
         - loose fasteners
         - missing fasteners (fasteners that have pulled out or are gone)
         - delaminations (a component with one or more layers pulled apart)
         - parts that are not aligned correctly
         - interference (clearance that is not sufficient between two parts)
         - discoloration (heat damage)
         - nicks or gouges
         - other signs of damage.

TASK 05-51-06-212-025

2. Dragged Engine Nacelle/Engine Seizure/Engine and Nacelle Damage Conditional Inspection

NOTE: The data in this procedure applies to:
- a dragged engine nacelle
- an engine seizure
- engine impact damage
- nacelle impact damage to cowls, tail cone, or reverser sleeves.

A. References
(1) AMM 06-09-09/201, Nacelle and Engine-to-Wing Fairing Access Doors and Panels
(2) AMM 54-51-02/401, Nacelle Strut Attach Pin/Bolt
(3) AMM 71-00-00/601, Power Plant.
(4) AMM 71-21-00/601, Engine Mounts.
(5) AMM 72-00-00/601, Engine.
(6) AMM 72-60-01/601, Accessory Drives.
(7) AMM 72-60-01/601, Transfer Gearbox.
(8) AMM 72-61-02/601, Accessory Gearbox.
(9) AMM 72-61-01/601, Transfer Gearbox.
(10) AMM 79-21-05/201, Master Chip Detect.
(11) AMM 79-00-00/601, Oil.
(12) AMM 71-00-02/401, Power Plant

B. Phase I Inspection - Nacelle and Nacelle-Strut (General visual inspection for obvious damage)

NOTE: Examine the strut at the damaged engine position.

S 212-026
(1) Examine the components that follow for obvious damage:
(a) Strut to wing fairings
(b) Pylon panels
(c) Pylon doors
(d) Strut skins (including frame cut out, inner and outer).
(e) Nacelle cowlings

S 012-027
(2) Open the trailing edge fairing doors and remove the strut access panels (AMM 06-09-09/201).

S 212-028
(3) Examine the internal strut areas that follow:
(a) the bulkhead spars
(b) the bulkhead skins

NOTE: Examine the strut mid-spar carefully.

S 212-036
(4) Examine the strut mid-spar carefully.

S 212-029
(5) Examine the diagonal brace area for obvious damage.

NOTE: Make sure you look at the attachment fittings.

Examine all engine mounts and adjacent structure.

S 012-030
(6) Do the steps that follow:

NOTE: For nacelle impact damage condition, make a decision if replacement of the cowls, tailcone, or reverser sleeves is necessary. If replacement is not necessary, it is not necessary to do these steps.

(a) Remove the gap cover above the upper link.
(b) Remove the trailing edge fixed fairing (inboard struts).
(c) Examine the areas of the struts that follow:
    1) Mid-spar attachment area:
        - Strut mid-spar fittings
        - Spring beams
        - Under wing fittings
        - Fuse pins
        - Lugs
        - Side brace
        - Side brace fittings
        - Attachment hardware
        - All other structure in this area.
    2) Diagonal brace area:
        - Diagonal brace assembly
        - Strut attach fitting
        - Wing attach fitting
        - Lugs
        - Bushings
        - Fuse pins/bolts
        - All other structure in this area.

3) Upper link area:
- Upper link assembly
- Strut attach fitting
- Wing attach fitting
- Lugs
- Bushings
- Fuse pins/bolts
- Wing "D" beam
- Strut to wing fairings
- All other structure in this area.

4) Examine all engine mounts and adjacent structure.

NOTE: Examine the bulkhead area of the aft engine mount carefully.

5) If you think there is possible engine damage or seizure, examine the engine (AMM 71-00-00/601).

6) Remove the engine if it is necessary (AMM 71-00-02/401).

C. Phase II Inspection - Nacelle and Nacelle-Strut

S 022-032

(1) Remove and examine all mid-spar fuse pins.

NOTE: It is recommended that you replace all bulkhead-style fuse pins and retaining hardware.

S 272-033

(2) Examine the components that follow with an ultrasonic procedure:
(a) Strut mid-spar fittings
(b) Spring beam lugs.

NOTE: Use the last revision of the Non Destructive Test procedure or use the procedure found in D6-7170, Part 4, NDT 54-40-02 and NDT 54-40-11.

D. Put the Airplane Back to Its Usual Condition

S 412-034

(1) Close all of the cowling, panels, fairings, and doors.

S 422-035

(2) Install the components you removed if they are serviceable, or install replacement parts.

OVERWEIGHT TAXI CONDITION (CONDITIONAL INSPECTION) - MAINTENANCE PRACTICES

1. General
   A. Overweight Taxi
      (1) Taxiing at a weight that is more than the maximum-design-taxi weight (MTW).
      (2) Before flight, you must decrease airplane weight to that specified by the Airplane Flight Manual for takeoff.
   B. Inspection Criteria; An immediate structural inspection is necessary if you:
      (1) Taxi the airplane overweight by more than 1/2% of the maximum-taxi-weight (MTW).
      (2) Taxi the airplane overweight at any weight over the Maximum Design Taxi Weight (MTW) and have any of these conditions:
         (a) High speed ground turn
         (b) Sharp radius turn
         (c) Heavy braking
         (d) Taxi over rough pavement
         (e) Pivoting (sharp radius turning with brakes on).
      (3) If the criteria for the above paragraphs have not been met, no inspection is necessary.
         (a) But, you must decrease the airplane weight to that specified by the Airplane Flight Manual before takeoff.
   C. The Inspections
      (1) The inspection is divided into Phases 1 and 2.
      (2) If the inspection for Phase 1 shows no signs of damage, the inspection is complete.
      (3) If the Phase 1 inspection shows signs of damage, the Phase 2 inspection must be done.
   D. Inspections, Repairs, and Replacements
      (1) When this procedure tells you to "examine" a part, look for these conditions:
         - cracks
         - structure that pulled apart
         - loose paint (paint flakes)
         - twisted parts (distortion)
         - bent parts
         - wrinkles or buckles in structure
         - fastener holes that became larger or longer
         - loose fasteners
         - missing fasteners (fasteners that have pulled out or are gone)
         - delaminations (a component with one or more layers pulled apart)
         - parts that are not aligned correctly
         - interference (clearance that is not sufficient between two parts)
         - discoloration (heat damage)
         - nicks or gouges
         - other signs of damage.

(2) Replace or repair the components that have one or more of the conditions given above.

TASK 05-51-07-212-001

2. Phase 1 Inspection

A. Airplane Inspection

S 212-002

(1) Do the inspection of the body, wing, and nose landing gear.
   (a) Examine all tires and wheels.
   (b) Examine the support structure.
   (c) Look for signs of fluid leakage at the top and bottom of the outer cylinder of the shock strut.

NOTE: A small quantity of hydraulic fluid on the surface of the inner cylinder of the shock strut is satisfactory.

   (d) Examine the truck beams (body and wing landing gear).

S 212-003

(2) Do the inspection of the landing gear, fuselage, and wing.
   (a) Look for fuel leaks, and other fluid leaks, in the areas that follow:
      1) all wheel well areas of the body, wing, and nose landing gear
      2) the lower external surface of the fuselage in the area of the wing-to-body fairing
      3) the wing.

TASK 05-51-07-212-004

3. Phase 2 Inspection

A. References
   (1) AMM 07-11-01/201, Jacking Airplane
   (2) AMM 12-15-03/301, Wing Gear Shock Strut
   (3) AMM 12-15-04/301, Body Gear Shock Strut
   (4) AMM 12-15-05/301, Nose Gear Shock Strut
   (5) AMM 32-11-01/601, Wing Gear
   (6) AMM 32-11-02/401, Wing Gear Shock Strut
   (7) AMM 32-13-02/401, Body Gear Shock Strut
   (8) AMM 32-21-01/401, Nose Landing Gear
   (9) AMM 32-21-01/601, Nose Landing Gear
   (10) AMM 32-21-01/401, Nose Landing Gear
   (11) AMM 32-32-00/501, Wing Gear and Door Extension and Retraction
   (12) AMM 32-33-00/501, Body Gear and Door Extension and Retraction
   (13) AMM 32-34-00/501, Nose Gear and Door Extension and Retraction
   (14) AMM 32-41-15/601, Landing Gear Break Unit

(15) AMM 32-45-03/601, Wheels
(16) AMM 32-51-00/501, Nose Wheel Steering System

B. Airplane Inspection

S 212-005

(1) Do the body landing gear and support structure inspection.
  (a) Make sure the shock strut pressures are normal and the hydraulic fluid are at the correct levels (AMM 12-15-04/301).
  (b) Lift the airplane with jacks (AMM 07-11-01/201).
  (c) Examine the inner and outer cylinder lugs.
  (d) Examine all structural components of the body landing gear and carefully examine the components that follow:
    1) the shock strut
    2) the trunnion
    3) the drag strut and universal fitting
    4) the torsion links
    5) the truck beam
    6) the side brace
    7) the downlock
    8) the truck Position Actuator (the actuator that sets the angle of the truck beam for retraction, extension).
    9) The strut doors and the mechanism that retracts and extends the doors
    10) the brake rods
    11) the steering mechanism
    12) the tow fitting
    13) the axles.
  (e) Examine the support structure of the body landing gear and carefully examine the components that follow:
    1) the trunnion support fittings and attachments
      - inboard
      - outboard

    2) the drag strut support fitting
    3) the drag strut downlock attach fitting.
  (f) Examine all of the bolts, spindles, and pins.
  (g) If you found tire damage in Phase 1, do the steps that follow:
    1) Remove and examine the wheel structure (AMM 32-45-03/601).
    2) Remove and examine the brake assembly (AMM 32-41-15/601).
  (h) If one or more of the conditions that follow occurred; remove, disassemble, and examine all parts of the shock strut (AMM 32-13-02/401).
    1) The shock strut pressures were sufficiently low to cause damage.
    2) The hydraulic fluid levels were sufficiently low to cause damage.

3) You found damage to one or more of the parts during your inspection of the landing gear.

(i) Make sure the body landing gear retracts and extends correctly (AMM 32-33-00/501).

(j) Do a check of the body gear steering.

S 212-006

(2) Do an inspection of the wing landing gear and support structure (AMM 32-11-01/601).

(a) Make sure the shock strut pressures are normal and the hydraulic fluids are at the correct levels (AMM 12-15-03/301).

(b) Examine the inner and outer cylinder lugs.

(c) Examine all structural components of the wing landing gear and carefully examine the components that follow:

1) the shock strut
2) the trunnion, trunnion fork
3) the drag brace
4) the torsion links
5) the truck beam
6) the side strut
7) the downlock
8) the truck position mechanism (the mechanism that sets the angle of the truck beam for retraction, extension) and linkage
9) the strut doors and the mechanism that retracts and extends the doors
10) the brake rods
11) the tow fitting
12) the axles.

(d) Examine the support structure of the wing landing gear and carefully examine the components that follow:

1) the side strut support beam (forward of Body Station 1350, WL 140)
2) the side strut attachments (Body Station 1350)
3) the landing gear beam.

(e) Examine the landing gear beam to rear spar attachment.

(f) Examine the landing gear trunnion attachment to the areas that follow:

1) the rear spar attachment
2) the landing gear beam attachment

(g) Examine all of the bolts, spindles, and fuse pin connections.

(h) If you found tire damage in Phase 1, do the steps that follow:

1) Remove and examine the wheel structure (AMM 32-45-03/601)
2) Remove and examine the brake assembly (AMM 32-41-15/601).

(i) If one or more of the conditions that follow occurred; remove, disassembly, and examine all parts of the shock strut (AMM 32-11-01/601).
1) The shock strut pressures were sufficiently low to cause damage.
2) The hydraulic fluid levels were sufficiently low to cause damage.
3) You found damage to one or more of the parts during your inspection of the landing gear.

(j) Make sure the wing landing gear retracts and extends correctly (AMM 32-32-00/501).

(k) Lower the airplane off of the jacks (AMM 07-11-01/201).

S 212-007

(3) Do the inspection of the nose landing gear and support structure (AMM 32-21-01/601).
(a) Make sure the shock strut pressures are normal and the hydraulic fluids are at the correct levels (AMM 12-15-05/301).
(b) Lift the nose of the airplane with the jacks (AMM 07-11-01/201).
(c) If you found tire damage in Phase 1, remove and examine the wheel structure (AMM 32-45-03/601).
(d) Examine all structural components of the nose landing gear and carefully examine the components that follow:
1) the shock strut
2) the torsion links
3) the drag strut
4) the lock links
5) the side braces
6) the lower tripod brace
7) the upper tripod brace
8) the tow fitting
9) the axle
10) the steering mechanism.
(e) Examine all of the bolts and fuse pins.
(f) Examine the wheel well area and carefully examine the parts that follow:
1) the web (the left and right sidewalls)
2) the aft bulkhead
3) the trunnion attachments
4) the drag strut attachments.
(g) If one or more of the conditions that follow occurred; remove, disassemble, and examine all parts of the shock strut (AMM 32-21-01/401).
1) The shock strut pressures were sufficiently low to cause damage.

2) The hydraulic fluid levels were sufficiently low to cause damage.
3) You found damage to one or more of the parts during your inspection of the landing gear.

(h) Make sure the steering system is adjusted and operates correctly (AMM 32-51-00/501).
(i) Make sure the nose landing gear retracts and extends correctly (AMM 32-34-00/501).
(j) Lower the nose of the airplane from the jacks (AMM 07-11-01/201).

S 212-008

(4) Do the inspection of the fuselage.

NOTE: If you find external damage to the fuselage, always examine the adjacent internal structure.

(a) Examine the lower fuselage structure.

NOTE: Keel beam vertical web wrinkles are normal.

1) Examine carefully the area below the body floor beams, immediately aft of the wing center section.

NOTE: Look from Body Stations 1480 to 1680.

(b) Examine the wing-to-fuselage joints at Body Stations 1000 to 1241, and wheel well bulkheads and sidewalls.
(c) Examine the bulkhead at Body Station 400 and fuselage structure immediately outboard of the nose landing gear wheel well.

NOTE: The inspection can be done from the aft side of the bulkhead at body section 400 in the main electrical/electronics equipment center.

(d) Examine the area of the main landing gear wheel wells.
(e) Examine the fuselage skin attachments above the landing gear beam (Body Station 1350).
(f) Examine the horizontal deck located aft of Body Station 1350, WL 152 at the side of the body.
(g) Examine the upper fuselage structure at Body Stations 1000, 1241, and 1480.

C. Put the Airplane Back to It's Usual Condition

S 422-009

(1) Install the components you removed or install replacement components.

EXCESSIVE CABIN PRESSURE LEAKAGE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. This procedure gives steps to do a leakage test to the airplane fuselage. This leakage test is done to make sure the fuselage pressurized areas are tight and there are no large leaks. The test is not a structural integrity test.

      WARNING: OBEY ALL SAFETY STANDARDS FOR COMPRESSION AND DECOMPRESSION WHEN PERSONS ARE IN A PRESSURIZED AREA. SUDDEN PRESSURE CHANGES WILL CAUSE PAIN AND INJURY AND MUST NOT BE DONE. WHEN YOU DO NOT OBEY THE PRECAUTIONS, INJURY TO PERSONS WILL OCCUR.

   B. When persons are in the airplane during this test, they must be in a good physical condition. When a person feels pain during a pressure change, you must lower the pressure or make it stable immediately. Do this to make sure the person can make the pressure equal in their ears. Also, do this to remove the person from the airplane.
   C. The primary pressure source is the APU. You can also use the engine bleed air, or an external ground source.

      NOTE: The external ground source must supply 2500 cfm of air at a pressure of 10 psig.

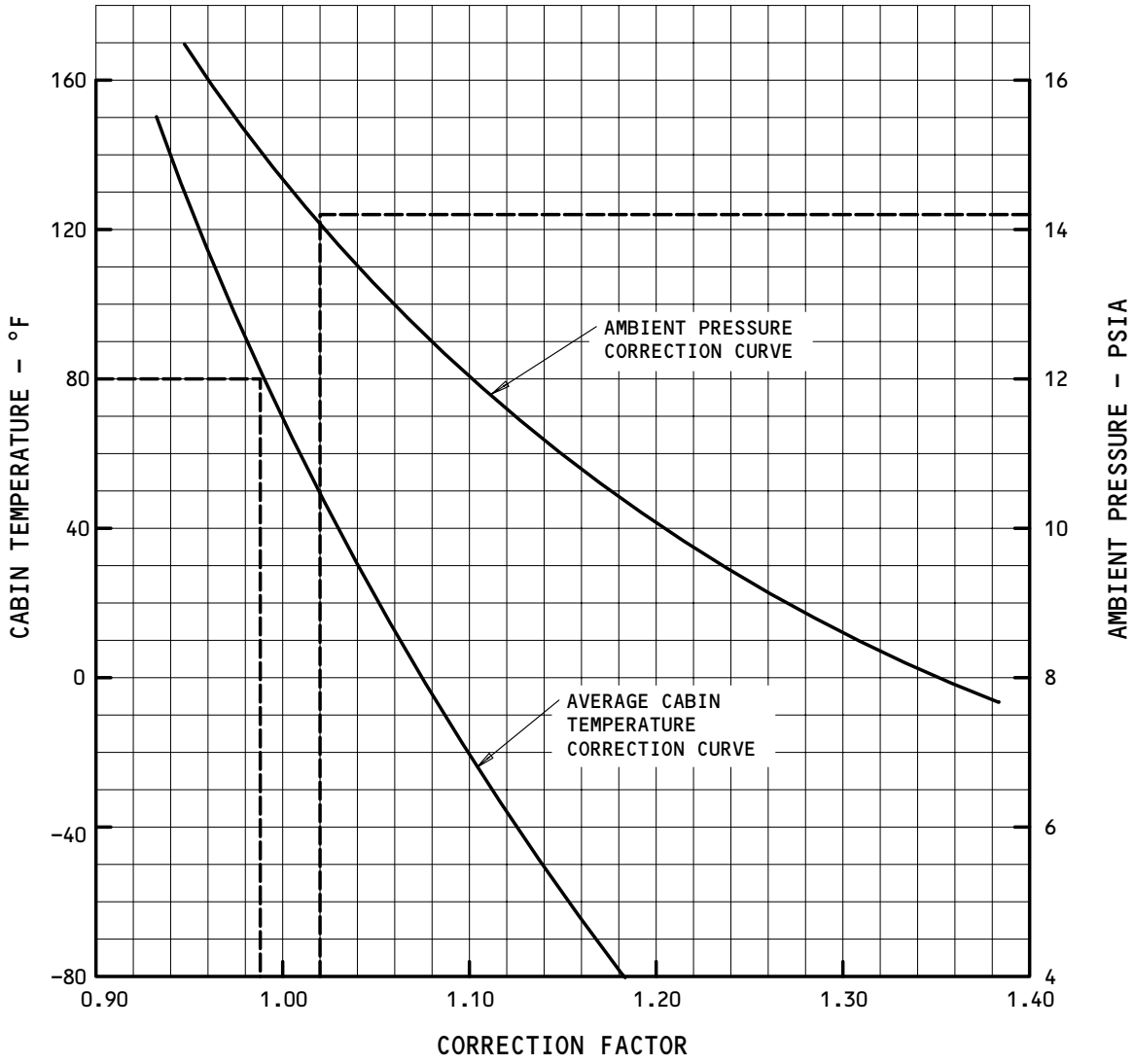
TASK 05-51-08-702-001

2. Excessive Cabin Pressure Leakage Test
   A. General
      (1) It is recommended that an Airspeed Indicator (ASI) be used for this test in place of a pressure gage. However, you can use the standby ASI in pilots' instrument panel.
      (2) Figure 201 shows how to get a correction factor used in connection with the test data. Figure 202 shows the straight line curves for satisfactory airplane leakage rates.
   B. Standard Tools and Equipment
      (1) Airspeed Indicator (ASI)

HOW TO USE CURVE:

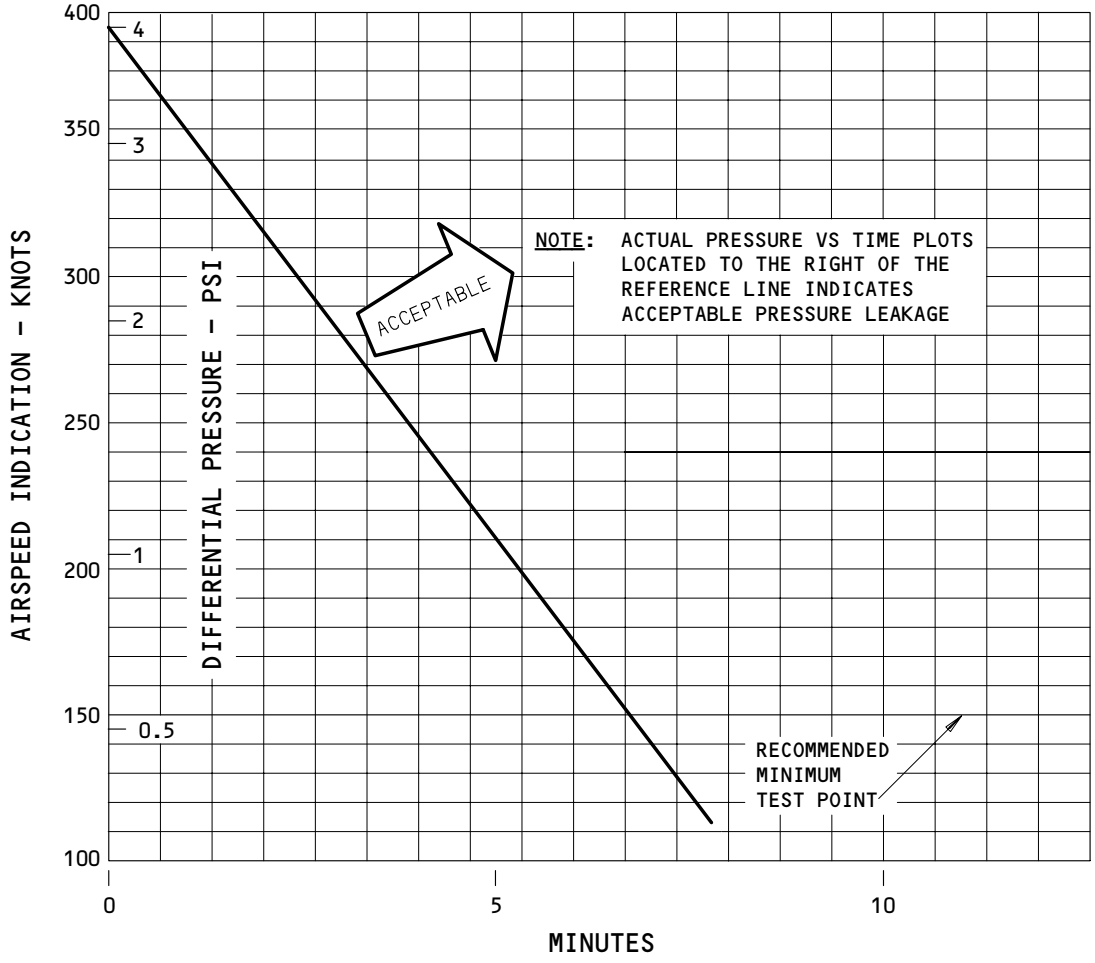
EXAMPLE: (A) ASSUME AVERAGE CABIN TEMPERATURE OF 80°F, AMBIENT PRESSURE OF 14.15 PSIA, AND TIME THREE MINUTES.

(B) FROM CURVES BELOW: TEMPERATURE CORRECTION FACTOR IS 0.99, AND PRESSURE CORRECTION FACTOR IS 1.02. THE PRODUCT OF THE TWO FACTORS IS 1.01. THUS, TIME CORRECTED FOR AN INITIAL AMBIENT PRESSURE OF 14.7 PSIA AVERAGE CABIN TEMPERATURE OF 70°F AND 8.6 PSIG DIFFERENTIAL = 3/1.01 = 2.97 = 2 MINUTES 58 SECONDS.



THE CORRECTION FACTOR TO BE APPLIED TO THE BLEED DOWN TIME WHEN THE AMBIENT PRESSURE DOES NOT EQUAL 14.7 PSIA AND/OR THE CABIN TEMPERATURE DOES NOT EQUAL 70°F.

Pressure Leakage Test Correction Factor
Figure 201



Cabin Pressure Leakage Rate Chart
Figure 202

260773

(2) Stopwatch
(3) External ground air source providing a continuous flow of 2500 cfm at a pressure of 10 psig.

C. References
(1) 21-00-00/201, Air Conditioning
(2) 24-22-00/201, Manual Control
(3) 34-11-00/501, Pitot-Static System
(4) 34-13-01/401, Standby Airspeed Indicator
(5) 34-13-02/401, Standby Altimeter
(6) 35-11-00/001, Crew Oxygen System
(7) 35-21-04/401, Unit - Continuous Flow Control
(8) 49-11-00/201, Auxiliary Power Unit

D. Prepare for the Cabin Pressure Leakage Test

NOTE: The pitot-static system must be complete when you do the test procedure.

S 792-033
(1) Make sure the pitot-static system does not have leaks (Ref 34-11-00/501).

S 482-002
(2) Use the EICAS System during the Cabin Pressure Leakage Test to monitor the cabin pressure.

NOTE: An independent ASI instrument can also be used to measure the pressure differential. The ASI on the pilots' console can be used when no other ASI is available.

(a) When an independent ASI is used:
1) Put the ASI in an applicable location.
2) Connect the ASI static pressure inlet to the airplane static pressure line.
(b) When the pilots' ASI is used:
1) Remove the standby airspeed indicator from the pilots instrument panel (Ref 34-13-01/401).

NOTE: Disconnect only the pitot pressure hose from the standby ASI at the quick-disconnect.

S 862-003
(3) Supply electrical power (Ref 24-22-00/201).

S 862-004
(4) Move the EQUIP COOLING selector on the cabin temperature control module, on the panel P5, to the STBY position.

S 792-005
(5) Make sure the pitot-static systems is installed and does not leak (Ref 34-11-00/501).

NOTE: Do not do the pressure leakage test on an airplane which has not been tested for pitot-static systems leaks.

S 022-034
(6) If the pressure will exceed 20 PSI absolute, you must remove the oxygen equipment that follows:
(a) The crew oxygen diluter demand masks.
(b) The passenger oxygen continuous flow control units.

S 862-035
(7) To close the section 41, forward overboard valve, do the steps that follow:
(a) Gain access to the section 41, left lower lobe, via the forward EE bay hatch.
(b) Remove the electrical connector from the forward overboard valve.
(c) Move the red valve selector handle to the closed position.

S 862-006
(8) Start the APU (Ref 49-11-00/201).

S 862-036
(9) Select the engine bleed valve "on".

S 862-037
(10) Open the wing isolation "Left and Right".

S 862-007
(11) Start one or more air conditioning packs (Ref 21-00-00/201).

E. Procedure

S 792-032
(1) Do the leakage test.
(a) Make sure that the outflow valve position indicators on the CPCS selector module M181, on the panel P5, show that the two valves are fully open.
(b) Push the MAN L and MAN R switches (M181 module) to the on position.
(c) Make sure all of the external hatches and doors that must hold pressure are tightly closed.
(d) When the air conditioning system is stable, hold the OPEN/CLOSE toggle switch (M181 module) to the close position.

(e) Monitor the cabin rate of climb.
(f) When the cabin rate of climb reaches -400 ft./min., release the OPEN/CLOSE toggle switch.
(g) Hold the OPEN/CLOSE toggle switch to the close position as necessary to maintain a cabin rate of approximately -500 ft./min.

NOTE: Do not let the cabin rate of climb exceed -500 ft./min.

NOTE: The increase in pressure can cause the lav or galley smoke detectors to sound an alarm when there is no smoke.

S 972-013
(2) Make a record of the maximum cabin rate of climb.

S 862-014
(3) Continue to pressurize at a maximum or a lower rate as is necessary. Do this until the cabin pressure differential is at 395-knot ASI and it becomes stable (4.0-psi gage).

NOTE: Make sure the pressure is not more than a 4.0-psi pressure differential.

S 862-015
(4) Turn the air conditioning pack(s) to the off position (Ref 21-00-00/201).

S 862-038
(5) Immediately CLOSE the outflow valves.

S 972-016
(6) In less than 5 minutes after you turn off the air conditioning packs, make a record of the data.
(a) Make a record of the pressure differential in knots ASI against time for cabin bleed down (minimum reading 150 knots ASI).
(b) Make five to ten data sets of each of the items that follow:
1) The time on the stopwatch
2) The cabin differential pressure
3) The cabin temperature
4) The external ambient temperature and pressure.

S 752-018
(7) Make a check for leakage caused by structural damage.

NOTE: Listen for air leaks through the fuselage, especially from the pressure bulkheads and structure hidden by fairings.

S 972-031
(8) Do the Leakage Rate Analysis
(a) Get the correction factor from figure 201 to correct the time data. Do this if the test was done at field altitudes that are much higher than at the sea level
(b) Make a graph from the points that follow:
1) The differential pressure data on the vertical axis of Figure 202.
2) The time on the horizontal axis of Figure 202.
3) Make a straight line through the two axis points of Figure 202.
4) If your line stays in the SATISFACTORY ZONE on Figure 202, the pressure leakage rate is satisfactory.

F. Put the Airplane Back to Its Initial Condition

S 862-019
(1) Hold the OPEN/CLOSE toggle switch to the OPEN position until the two outflow valves are fully open.

S 012-020
(2) Open all external hatches and doors that are necessary.

S 862-021
(3) Do the APU shutdown procedure (or the alternate pressure source) (Ref 49-11-00/201).

S 442-039
(4) To open the section 41, forward overboard valve, do the steps that follow:
(a) Gain access to the section 41, left lower lobe, via the forward EE bay hatch.

(b) Connect the electrical connector on the forward overboard valve.
(c) Move the red valve selector handle to the open position.

S 432-023
(5) If you removed airplane equipment to do this test, use the applicable maintenance manual chapters to install it.

S 862-024
(6) Put the EQUIP COOLING valve switch to NORM.

S 432-030
(7) Connect the pitot pressure hose to the standby ASI, if it was disconnected.

S 432-025
(8) Install the standby ASI if it was disconnected and used as a test instrument (Ref 34-13-01/401).

NOTE: Remove the independent ASI.

S 862-026
(9) Remove the electrical power if it is not necessary (Ref 24-22-00/201).

BRAKE DRAG OR SEIZURE CONDITION (CONDITIONAL INSPECTION) - MAINTENANCE PRACTICES

1. General
   A. One task is supplied in this procedure. The task is brake drag or seizure conditional inspection.
   B. The inspection examines the brakes and adjacent components for damage caused by a condition of high heat. The high heat condition was caused as a result of brake drag or brake seizure.

TASK 05-51-09-202-001

2. Brake Drag or Seizure Conditional Inspection
   A. References
      (1) AMM 07-11-03/201, Jacking Airplane Axles
      (2) AMM 12-15-03/301, Wing Landing Gear Shock Strut
      (3) AMM 32-41-15/401, Landing Gear Brake Unit
      (4) AMM 32-45-01/401, Main Gear Tire and Wheel
      (5) AMM 32-45-03/601, Wheels Inspection
      (6) AMM 32-45-04/601, Tire Inspection
   B. Procedure

S 862-002
(1) Make sure that the parking brake is not set.

S 582-003
(2) Jack the axle (AMM 07-11-03/201).

S 982-004
(3) Turn the wheel assembly by hand.
   (a) If the wheel assembly turns, the brake is not seized and the inspection is completed.
   (b) If the wheel assembly cannot turn, continue with the inspection.

S 212-013
(4) Examine the brake assembly.

S 212-018
(5) Remove the wheel and tire assembly of the main landing gear (AMM 32-45-01/401).

NOTE: You must remove the wheel and tire assembly before you can remove the brake unit.

(a) Inspect the tires and wheels as follows:
   1) Do this task: Wheels Inspection (Wheel removed from the airplane) (AMM 32-45-03/601).

2) Do this task: Tire Inspection (AMM 32-45-04/601).
3) Remove the seized brake unit do this task: Main landing gear brake removal (AMM 32-41-15/401)

NOTE: The brake assembly must be sent to the shop for disassembly and a detailed inspection.

S 212-007
(6) Examine the wheel bearing seal (AMM 32-45-01/401).
(a) Replace the wheel bearing seal if it is damaged.

S 212-008
(7) Examine the hydraulic fluid resistant paint on the axles and adjacent areas of the truck beam for heat damage.

NOTE: If the paint is damaged, the area will be a brown color.

S 212-009
(8) Examine visually the inflated tires and the wheels for damage.

S 422-010
(9) Install the brake assembly (AMM 32-41-15/401).

S 422-011
(10) Install the wheel assembly (AMM 32-45-01/401).

S 612-012
(11) Do the servicing procedure for the main landing gear struts (AMM 12-15-03/301).

HIGH ENERGY STOP/HEAT DAMAGE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General

A. This section gives an inspection procedure for landing gear cylinders, wheels, and brakes after a high energy stop condition. The level of these inspections are found by the level of absorbed kinetic energy.

NOTE: If an EICAS brake temperature monitor indication of 5 or a BRK TEMP message occurs, the energy present will not always cause the wheel fuses to release. Treat the condition as a high energy stop within the caution range as in par. 2.D.

If fuse releases do occur, treat the condition as in par. 2.E.

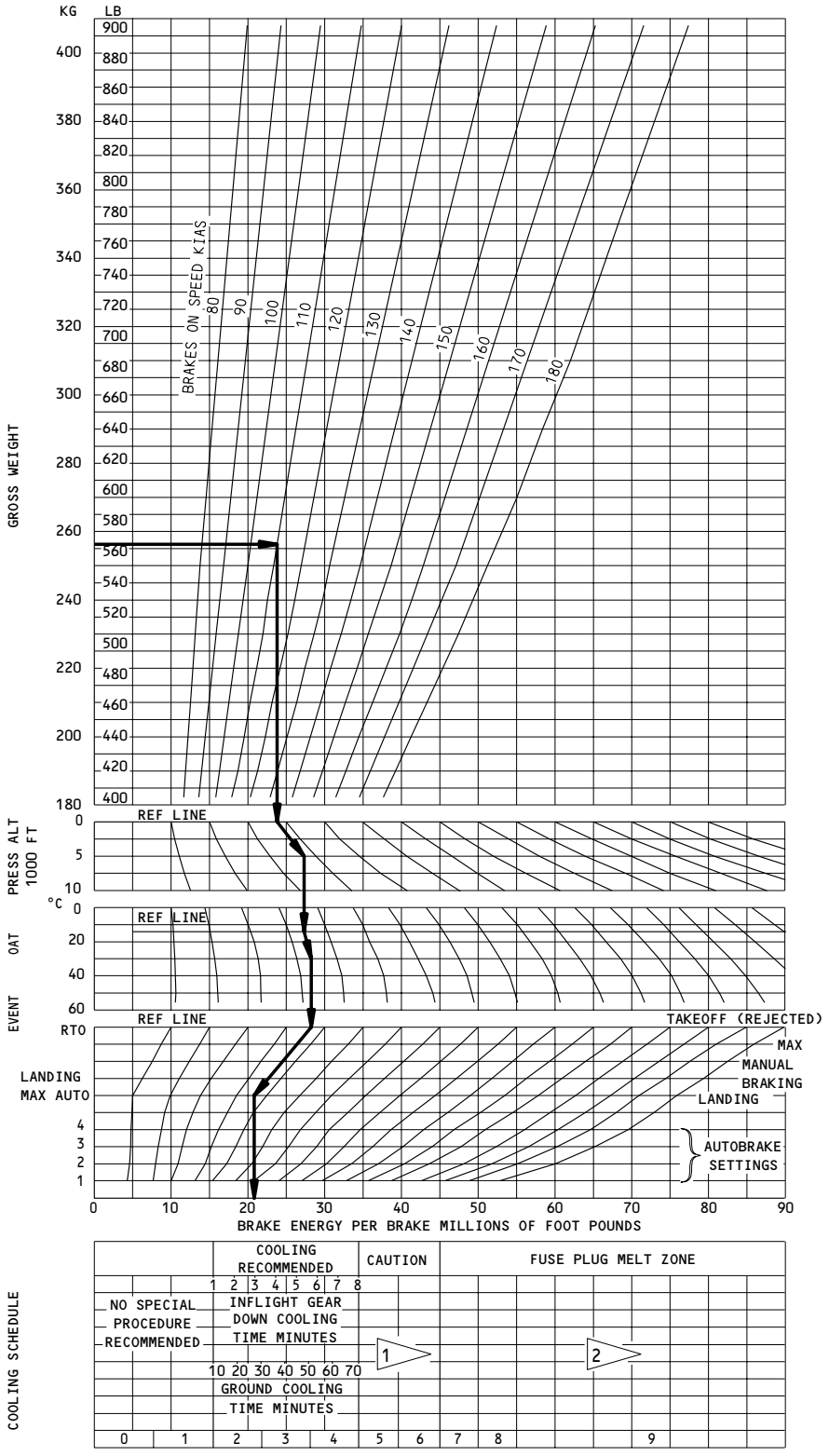
B. The approximate energy absorbed by a brake unit can be found on the brake energy chart (Fig 201). The the chart will give only an approximation of the energy absorbed during the stop. The items that follow will also affect the energy absorbed.

(1) Residual energy from a previous stop
(2) The runway slope
(3) The wind condition
(4) Braking during the airplane taxi
(5) Thrust reverser use.
(6) A calculated example or energy absorbed by a brake with the use of Figure 201, and not EICAS is as follows:
  (a) Gross Weight - 560,000 pounds (255,000 kgs)
  (b) Brakes on Speed - 110 knots (no wind)
  (c) Normal Landing Stop
  (d) Pressure Altitude - 5,000 feet
  (e) Outside Air Temperature - 86°F (30°C)
  (f) No Reversers
  (g) Resultant Brake Energy - 22 million foot-pounds
  (h) Resultant is in the COOLING RECOMMENDED range.

C. The EICAS brake temperature monitor that reads the hottest brake can be used. This is an alternative to the other data on the brake energy chart (Figure 201). EICAS will automatically read the taxi brake temperature residual energy, and other factors that were given before.

NOTE: Example (Fig 201):

The highest EICAS brake temperature monitor reading = 3.
Resultant is in the cooling recommended range.



GUIDANCE INFORMATION ONLY

OBSERVE MAXIMUM QUICK TURN-AROUND LIMITATION

TO CORRECT FOR WIND ENTER CHART WITH BRAKES ON SPEED MINUS ONE-HALF THE HEADWIND OR PLUS 1.5 TIMES THE TAILWIND.

CHART DOES NOT CONSIDER BENEFIT OF REVERSE THRUST.

CHART SHOWS ENERGY PER BRAKE ADDED BY A SINGLE STOP WITH ALL BRAKES OPERATING. ENERGY IS ASSUMED TO BE EQUALLY DISTRIBUTED AMONG THE OPERATING BRAKES. TOTAL ENERGY IS SUM OF RESIDUAL ENERGY PLUS ENERGY ADDED.

ADD 1.0 MILLION FOOT-POUNDS PER BRAKE FOR EACH TAXI MILE.

FOR ONE BRAKE DEACTIVATED INCREASE ENERGY PER BRAKE BY 7 PERCENT.

FOR TWO BRAKES DEACTIVATED INCREASE ENERGY PER BRAKE BY 15 PERCENT.

IF GROUNDSPEED IS USED FOR BRAKES ON SPEED, IGNORE WIND, ALTITUDE, AND OAT EFFECTS.

1 WHEEL FUSE PLUGS MAY MELT. DELAY TAKEOFF, AND INSPECT AFTER ONE HOUR. IF OVERHEAT OCCURS AFTER TAKEOFF, EXTEND GEAR SOON FOR AT LEAST 8 MINUTES.

2 CLEAR RUNWAY IMMEDIATELY. UNLESS REQUIRED, DO NOT SET PARKING BRAKE. DO NOT APPROACH GEAR OR ATTEMPT TAXI FOR ONE HOUR. TIRE, WHEEL, AND BRAKE REPLACEMENT MAY BE REQUIRED. IF OVERHEAT OCCURS AFTER TAKEOFF, EXTEND GEAR SOON FOR AT LEAST 12 MINUTES.

BRAKE TEMPERATURE MONITOR INDICATION MAY BE USED 10 TO 15 MINUTES AFTER AIRPLANE HAS COME TO A COMPLETE STOP, OR INFLIGHT WITH GEAR RETRACTED TO DETERMINE RECOMMENDED COOLING SCHEDULE.

BRAKE TEMPERATURE MONITOR INDICATION ON EICAS
Brake Energy
Figure 201

D. A high energy stop condition can be a refused takeoff. It can also be a stop or sequence of stops that collects energy in the CAUTION or FUSE PLUG MELT range (Fig 201). An indication that a high energy stop, or equivalent, has been made is the release of a wheel fuse plug. Energy levels are different between brakes after stops in the COOLING RECOMMENDED RANGE. One or more brakes could have absorbed energy in the CAUTION range, and one or more wheel fuse plugs released.

TASK 05-51-10-202-001

2. High Energy Stop

A. Standard Tools and Equipment

(1) Borescope - Fiber Optic Light Supply - Model BLS-97, American Cystoscope Makers Inc. Industrial Division, Pelham, New York
(2) Borescope - Fiber Optic Light Supply - Model BLS-98, American Cystoscope Makers Inc. Industrial Division, Pelham, New York
(3) Rigid Boroscope - Model BF0-3920A, American Cystoscope Makers Inc. Industrial Division, Pelham, New York
(4) Flexible Boroscope - Model BF1F-3127DD, American Cystoscope Makers Inc. Industrial Division, Pelham, New York
(5) Borescope - Fiber Light Carrier - Model F0-400-5A, American Cystoscope Makers Inc. Industrial Division, Pelham, New York
(6) Rigid Borescope Model FIB 730, Richard Wolf Medical Instruments Corp. Rosemont, Illinois
(7) Manifold - Landing Gear Brake Tooling - MIT 60B00150, Richard Wolf Medical Instruments Corp. Rosemont, Illinois
(8) Rigid Borescope Model FIB 740, Richard Wolf Medical Instruments Corp. Rosemont, Illinois
(9) Rigid Borescope Model FIB 760, Richard Wolf Medical Instruments Corp. Rosemont, Illinois

B. Consumable Materials

(1) B00728 Solvent - Kerosene
(2) E00002 Stripper - Turco 5351

C. References

(1) 07-11-03/201, Jacking Airplane Axles
(2) AMM 32-41-15/401, Landing Gear Brake Unit

(3) AMM 32-41-15/601, Brakes - Landing Gear
(4) 32-42-04/401, Antiskid Transducer
(5) AMM 32-45-01/401, Main Gear Tire and Wheel
(6) AMM 32-45-03/601, Wheels
(7) AMM 32-45-04/601, Tires
(8) 51-21-01/701, Interior and Exterior Finishes (Paint Stripping)

D. High Energy Stop Conditional Inspection - In COOLING RECOMMENDED Range

S 212-029

(1) Do the steps that follow for the Figure 201 Cooling Recommended range:
(a) Move the airplane away from the runway.
(b) Do not use the brakes very much when the airplane is moved.
(c) Do not set the parking brake.

WARNING: DO NOT GO NEAR THE LANDING GEAR AREA FOR THE RECOMMENDED TIME AS SHOWN IN THE FIGURE 201 COOLING RECOMMENDED RANGE. IF YOU DO NOT OBEY THIS WARNING, INJURY TO PERSONS CAN OCCUR.

(d) Let the brakes, tires, and wheels cool until you can touch them.

NOTE: A fast method of cooling is not recommeded. If fast cooling is necessary, use only forced air.

1) Examine the tires (AMM 32-45-04/601).
2) Examine the wheels (AMM 32-45-03/601).
3) Examine the brakes (AMM 32-41-15/601).

E. High Energy Stop Conditional Inspection - In CAUTION Range

S 582-002

(1) Move the airplane away from the runway.
(a) Do not use the brakes very much when the airplane is moved.
(b) Do not set the parking brake.

S 782-003

WARNING: DO NOT GO NEAR THE LANDING GEAR AREA FOR 1 HOUR AFTER THE AIRPLANE MADE A HIGH ENERGY STOP. INJURY TO PERSONS CAN OCCUR.

(2) Let the brakes, tires, and wheels cool until you can touch them.

S 212-026

(3) Examine the tires (Ref 32-45-04/601).

S 212-027

(4) Examine the wheels (Ref 32-45-03/601).

S 212-020
(5) Examine the brakes (Ref 32-41-15/601).
(a) Apply the brakes fully five or six times. Monitor the brake operation and look for hydraulic leaks during the last time the brakes were applied.

NOTE: Make sure the brakes work. Look at the movement of the brake indicator wear pins.

F. High Energy Stop Conditional Inspection - In FUSE PLUG MELT Range

S 942-005
(1) Move the airplane away from the runway immediately because the tires will possibly deflate.
(a) Do not set the parking brake.

S 882-028

WARNING: DO NOT GO NEAR THE LANDING GEAR AREA FOR 1 HOUR AFTER THE AIRPLANE MADE A HIGH ENERGY STOP, UNLESS IT IS NECESSARY. IF IT IS NECESSARY, GO NEAR THE AREA VERY CAREFULLY, BUT ONLY FROM THE FRONT OR REAR OF THE TIRES. INJURY TO PERSONS CAN OCCUR.

WARNING: DO NOT SPRAY EXTINGUISHER OR COOLANT DIRECTLY ON THE INFLATED TIRE OR WHEEL. THIS CAN CAUSE AN EXPLOSION AND INJURY TO PERSONS CAN OCCUR.

(2) After 1 hour, use fog or foam on the wheel or tire to decrease the temperature. Or, wait 2 to 3 hours for the brakes, wheels, and tires to cool so they can be touched.

NOTE: A different source of cooling can be an air conditioning cart or truck.

S 212-021
(3) Examine the tires on the axles where all tires are inflated (Ref 32-45-04/601).

S 212-022
(4) Examine the wheels of the axles where all tires are inflated (Ref 32-45-03/601).

S 212-023
(5) Examine the brakes on the axles where all tires are inflated (Ref 32-41-15/601).

S 022-008

(6) Remove the main gear tires and wheels on the axles where one or both of the tires are deflated (AMM 32-45-01/401).

NOTE: Do this step after the landing gear is cool and safe to go near.

Tires from the wheels with melted fuse plugs must be discarded.

Tires from the wheels with good fuse plugs must be discarded if the airplane has been moved with the adjacent tire deflated.

The removed wheels must be inspected for hardness or heat damage. Use the specifications in the supplier's component maintenance manual.

(a) Inspect all of the other tires (AMM 32-45-04/601).

S 212-009

(7) On the axles where one or both of the tires are deflated look for damaged brakes (AMM 32-41-15/601).
   (a) Make sure the brakes are released.
   (b) Make sure the groove at the top of each stator are aligned with the hydraulic inlet at the top of the brake.

   NOTE: Misalignment indicates a broken stator.

   (c) Make sure that each rotor is free to turn.
      1) Manually push each clip assembly with a blunt tool.
   (d) Examine each rotor clip assembly (inserts, retainers, rivets) for broken, loose, or missing parts.
   (e) Examine the disks in the slot region for chips, cracks, or very bad oxidation.
   (f) Examine the brake for leakage, adjuster operation, brake wear, and the correct clearance.

S 022-013

(8) Remove the antiskid transducer (Ref 32-42-04/401).
   (a) Remove the TPIS Transducer if it applies.

S 022-014

(9) Remove the brakes from the axles where one or both of the tires are deflated (AMM 32-41-15/401).

NOTE: Do not install the removed brakes until they have been fully inspected. Use the specifications in the supplier's component maintenance manual.

(a) You must inspect the brakes for hardness and heat damage.

S 212-015

(10) Examine the axle for heat damage.

(a) Remove the grease from inner surfaces (bore) of the axle.

NOTE: Use an applicable solvent to remove the grease.

(b) Examine the painted surfaces of the outer part of the axle for discoloration or blisters. This includes the surfaces you can see through the holes in the sleeves.

1) Green paint will change to a light brown of black color.
2) Gray paint will change to a yellow or yellow-brown color.

S 022-016

(11) Remove the axle's wheel sleeve and the brake sleeve (AMM 32-45-01/401).

S 112-025

WARNING: DO NOT BREATH THE VAPORS OF THE CAUSTIC STRIPPER. DO NOT GET IT IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. INJURY TO PERSONS CAN OCCUR.

(12) Remove the paint from the heat damaged areas with the stripper (Ref 51-21-01/701).

S 212-018

(13) Examine the axle for heat damage.

(a) Examine the cadmium (or cadmium-titanium) plating for heat damage.

NOTE: Heat damage can cause cadmium embrittlement of the steel substrate and is not always found by nondestructive inspection procedures.

1) Look for a white oxide material and blistered or melted plating. If the plating shows signs of heat damage, remove the components.

WARNING: THE POWER CABLE OF THE BORESCOPE MUST BE IN GOOD CONDITION. IF THERE ARE CIRCUMFERENTIAL CUTS, FRAYED AREAS, OR RUPTURES TO THE EXTERNAL RUBBER COVER OF THE CABLE, INJURY TO PERSONS CAN OCCUR.

(b) Examine the paint (green primer) on the inner surfaces (bore) of the axle with a borescope. Use the borescope to a minimum depth of 22 inches. Look for discoloration or blistering.

NOTE: The green primer will change to a light brown or black color.

(c) If a fire has occurred, examine the landing gear and adjacent structure for heat damage.

G. Put the Airplane Back to its Usual Condition.

S 422-019

(1) Install the components that were removed if they are serviceable, or install replacement parts.

MERCURY SPILLAGE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is mercury spillage conditional inspection.
   B. This section supplies an inspection and clean up procedures for areas where mercury has touched the airplane.
   C. All metal airplane structure which is touched by mercury will decrease in structural strength. The rate at which mercury goes into the metal is different for each type of metal. Also, the type of protective finish applied to the metal will change the rate at which the mercury will go into the metal.

      NOTE: When the mercury starts to go into the metal, it can not be stopped.

   D. The decrease in structural strength may not be seen until a load is applied to the structure.

TASK 05-51-11-202-001

2. Mercury Spillage Conditional Inspection
   A. Standard Tools and Equipment
      (1) Vacuum Cleaner - High Capacity
      (2) Portable X-ray Equipment
      (3) Sensing Device (Mercury Sniffer)
      (4) Trap-Type Glass Container
      (5) Mercury Vacuum Pump - Lab Safety Co. P.O. Box 1368, Jonesville, Wisconsin 53545
      (6) 10X Hand Lens
      (7) Medicine Dropper
   B. Consumable Materials
      (1) G00009 Compound - Corrosion Inhibiting, BMS 3-23, Type II
      (2) D00066 Oil - Turbine Eng, Synthetic, MIL-L-23699
      (3) G00000 Cards - Index, 5x8, Standard Weight Paper Stock
      (4) G00000 Paper - Typewriter 8-1/2x11, 25 percent Cotton Fiber, 16 Weight
      (5) G00000 Tape - Transparent, 3M Scotch 810, Magic Transparent
   C. Procedure-(Corrective Measures)

      S 222-002
      (1) Examine the spill.
         (a) Make a note of the quantity of mercury which has touched the airplane structure.
         (b) Make a note of the location where the mercury has touched the airplane structure.
         (c) Isolate the airplane structure which the mercury has touched.

(d) If the clean-up cannot be done immediately, apply a layer of corrosion inhibiting compound or engine oil.

NOTE: This will slow the rate at which the mercury goes into the airplane structure.

(e) Inspection, clean-up, and repair must be done before the next flight.

(f) Examine the lower lobe for mercury contamination.

1) Remove the insulation blankets in the area where the mercury has touched the airplane.
   a) Discard the insulation blankets.
2) Remove the insulation downstream of the area where the mercury touched the airplane.

   NOTE: Remove the insulation to the nearest lateral fluid dam.

3) Use a 10X hand lens to visually examine the structure.
   a) Look for any bare metal, scratches, or chipped paint.
4) Any areas from step (f) 3) and any joint which might been touched by mercury must be X-rayed.

   NOTE: Droplets of mercury show on an X-ray negative as small white spots. Mercury corrosion and embrittlement show as tree-like forms which penetrate the structural component.

(g) Examine the main deck for mercury contamination.

1) Examine the floor seals in the area where the mercury has touched the airplane.
2) If the floor seal appears to have been damaged or touched by the mercury, apply a small amount of water to the floor seal.
   a) Look to see if the water leaks through the floor seal.
3) If the floor seals show signs of damage, remove the floor panels and examine the structure below.

(h) Use a 10X hand lens to examine the seat track rails.
1) Look for bare metal, scratches, or chipped paint.
(i) If the mercury has touched the airplane near a frame or beam component, examine the frame or beam.

NOTE: A device which can find mercury (mercury sniffer) is recommended to find hidden deposits of mercury when the area touched by mercury is large in size. If available, x-ray equipment should be used to detect mercury.

1) Look for bare metal, scratches, and chipped paint.
(j) Any areas from step (h) or (i) and any joint which might have been touched by mercury must be X-rayed.

NOTE: Droplets of mercury show on an X-ray negative as small white spots. Mercury corrosion and embrittlement show as tree-like forms which penetrate the structural component.

(k) If any airplane structure shows signs of mercury contamination, the necessary structural repair must be done.
(l) Cargo restraining equipment must be replaced if damaged by mercury.

S 142-006

WARNING: MAKE SURE THERE IS VENTILATION WHEN THE MERCURY AREA IS CLEANED. MERCURY VAPORS CAN BE TOXIC.

IF HANDS CONTACT MERCURY, KEEP THEM AWAY FROM MOUTH. DO NOT EAT, SMOKE, OR BLOW NOSE WITHOUT WASHING HANDS CAREFULLY WITH SOAP AND HOT WATER. MERCURY IS POISONOUS AND CAN CAUSE INJURY.

(2) Use cardboard troughs, tape, eye droppers, or a vacuum to remove the mercury.
(a) Vacuum airplane structure which has been touched by mercury.
1) Use a trap-type glass container and a high flow vacuum cleaner to clean small areas.

NOTE: Vaporized mercury may be left in the commercial vacuum cleaner. Clean the commercial vacuum cleaner after use.

2) Use a mercury vacuum cleaner to clean large areas of mercury contamination.
(b) You must follow strict cleanup and inspection procedures during the first airplane service at a main base. Use a mercury vacuum cleaner, mercury sniffers and X-ray equipment.
1) Use mercury sniffers and X-ray equipment to detect any free mercury in the airplane.
2) Make sure there is no free mercury in the airplane.

(c) If signs of mercury are in joints, between faying surfaces, or trapped in any way between structural members, the parts must be disassembled and replaced as necessary to fully remove the mercury.

(d) Use soap and hot water at the end of the task to clean hands, clothes, and tools.

FIRE-RESISTANT HYDRAULIC FLUID REACTION WITH TITANIUM - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is examine titanium parts in fire-resistant hydraulic fluid contamination areas.

TASK 05-51-12-202-001

2. Examine Titanium Parts in Fire-Resistant Hydraulic Fluid Contamination Areas
   A. General
      (1) This section supplies an examination of bare titanium parts which have been touched by fire-resistant hydraulic fluid (Hydraulic Fluid) which is at a temperature greater than 270 F.

      NOTE: Hydraulic fluid above 270 F will cause embrittlement of the titanium.

      (2) Hydraulic fluid contamination of titanium parts will look as follows:
         (a) A Light Glossy Brown Film
         (b) A Dull Black Carbonaceous Residue
         (c) A Bared Surface
      (3) Deterioration of titanium parts will show as a bright etched surface.
   B. Standard Tools and Equipment
      (1) Scrapers - Wooden or Plastic
   C. Consumable Materials
      (1) B00340 Alcohol - Isopropyl
   D. References
      (1) 36-11-01/401, Pneumatic Manifold
   E. Examine Titanium Parts.

      NOTE: Titanium parts in hydraulic fluid areas are protected by an inorganic flat black or gold finish, and/or with a shield.

      Do not confuse the black finish with the carbonaceous residue.

      S 112-002
      (1) Clean the hydraulic fluid film/residue from the titanium parts with isopropyl acohol and a scraper.

      S 212-003
      (2) Examine all of the titanium parts in these areas for contamination and/or deterioration:
         (a) Landing Gear Wheel Wells

(b) Engine Firewalls
(c) Apu Firewall
(d) Wing-to-Body Fairings Under the Wing
(e) Fuselage Area Between the Pressure Bulkhead and the APU Firewall
(f) Strut Attach Linkages
(g) Spars

S 682-004

(3) Replace the parts which show paint deterioration or metal etching (Ref 36-11-01/401).

LIGHTNING STRIKE CONDITION (CONDITIONAL INSPECTION) - MAINTENANCE PRACTICES

1. General
   A. This procedure has these three tasks:
      (1) Examine the External Surfaces for Lightning Strike
      (2) Examine the Internal Components for Lightning Strike
      (3) Inspection and Operational Check of the Radio and Navigation Systems
   B. The airplane has all the necessary and known lightning strike protection measures. Most of the external parts of the airplane are metal structure with sufficient thickness to be resistant to a lightning strike. This metal assembly is its basic protection. The thickness of the metal surface is sufficient to protect the internal spaces from a lightning strike. The metal skin also gives protection from the entrance of electromagnetic energy into the electrical wires of the aircraft. The metal skin does not prevent all electromagnetic energy from going into the electrical wiring; however, it does keep the energy to a satisfactory level. If lightning strike strikes the airplane, you must fully examine all of the airplane to find the areas of the lightning strike entrance and exit points. When you look at the areas of entrance and exit, examine this structure carefully to find all of the damage that has occurred.
   C. Lightning strike entrance and exit points are usually found in Zone 1 (Fig. 201), but can also occur in Zone 2 and 3.
   D. You can usually find signs of a lightning strike in Zone 1 (Fig. 201). However, lightning strikes can occur to any part of the airplane which includes the fuselage, wing skin trailing edge panels, wing-body fairing, antennas, vertical stabilizer, horizontal stabilizer, and along the wing trailing edge in Zone 2 (Fig. 201).
   E. In metal structures, lightning damage usually shows as pits, burn marks or small circular holes. These holes can be grouped in one location or divided around a large area. Burnt or discolored skin also shows lightning strike damage.
   F. In composite (non-metallic) structures, solid laminate or honeycomb damage shows as discolored paint. It also shows as burned, punctured, or delaminated skin plies. Damage you cannot see can also be there. This damage can extend around the area you can see. Signs of arcing and burning can also occur around the attachments to the supporting structure.

G. Airplane components made of ferromagnetic material may become strongly magnetized when subjected to lightning currents. Large current flow from the lightning strike in the airplane structure can cause this magnetization.

H. A lightning strike usually attaches to the airplane in Zone 1 (Fig. 201) and goes out a different location in Zone 1. Frequently a lightning strike can enter the nose radome and go out of the airplane at one of the horizontal stabilizer trailing edges. The external components most likely to be hit are listed below:
   (1) Nose Radome
   (2) Nacelles
   (3) Wing Tips
   (4) Horizontal Stabilizer Tips
   (5) Elevators
   (6) Vertical Fin Tips
   (7) Ends of the Leading Edge Flaps
   (8) Trailing Edge Flap Track Fairings
   (9) Landing Gear
   (10) Water Waste Masts
   (11) Pitot Probes

I. Zone 2 (Fig. 201) is where an initial entry or exit point is not usual, but where a lightning channel may be pushed back from an initial entry or exit point. As an example, the nose radome may be the area of an initial entry point, but the lightning channel may be pushed back along the fuselage aft of the radome by the forward motion of the airplane.

J. Lightning strikes can cause problems to the electrical power systems and the external light wiring. The electrical system is designed to be resistant to lightning strikes. But, a strike of unusually high intensity can possibly damage the electrical system components below:
   (1) Fuel Valves
   (2) Generators
   (3) Power Feeders
   (4) Electrical Distribution Systems

K. Frequently, a lightning strike is referred to as a static discharge. This is incorrect and may cause you to think that the static dischargers found on the external surfaces of the airplane prevent lightning strikes. These static dischargers are for bleeding off static charge only; they provide no lightning protection function. As the airplane flies through the air, it can pick up a static electrical charge from the air (or dust/water particles in the air). This static charge can become large enough to bleed off the airplane on its own. If the charge does not bleed off on its own, it will usually result in noise on the VHF or HF radios. The static dischargers help to bleed the static charge off in a way that prevents radio noise.

L. The static dischargers are frequently hit by lightning. The dischargers have the capacity to carry only a few micro-Amps of current from the collected static energy. The approximate 200,000 Amps from a lightning strike will cause damage to the discharger or make it fully unserviceable.

TASK 05-51-13-052-072

2. Examine External Surfaces for Lightning Strike Damage

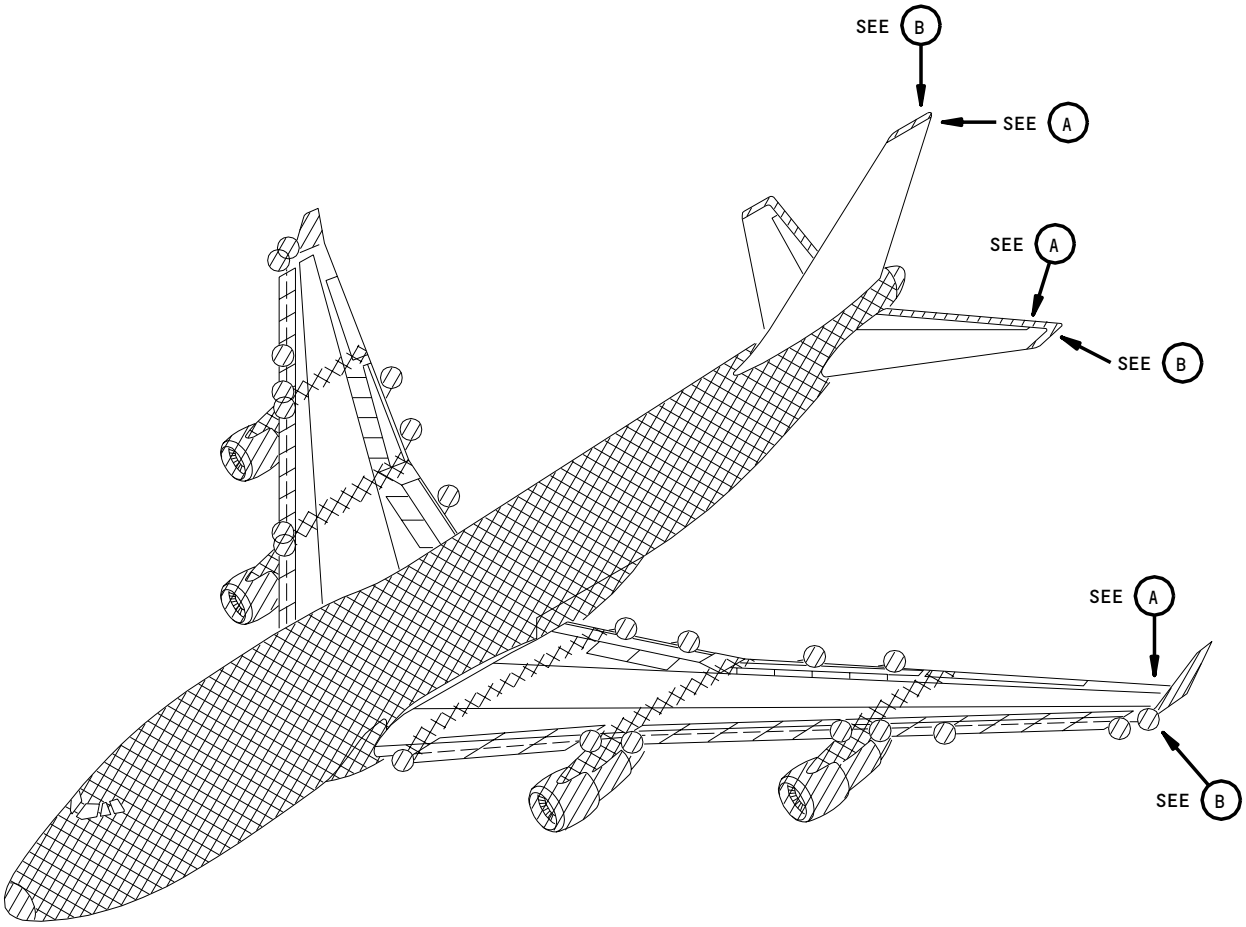
A. References

(1) AMM 23-61-01/201, Static Dischargers
(2) AMM 28-11-00/201, Fuel Tanks
(3) AMM 28-11-03/401, Door - Access, Wing Surge Tanks
(4) AMM 23-11-00/001 HF, Communications System
(5) AMM 23-12-00/001, VHF, Communications System
(6) AMM 27-11-00/201, Ailerons
(7) AMM 27-21-00/501, Rudder
(8) AMM 27-31-00/501, Elevators
(9) AMM 28-41-00/501, Fuel Quantity Indicating System
(10) AMM 34-31-30/201, ILS Navigation System
(11) AMM 34-32-00/501, Marker Beacon System
(12) AMM 34-33-00/501, Radio Altimeter System
(13) AMM 34-43-00/501, Weather Radar System
(14) AMM 34-51-00/501, VOR System
(15) AMM 34-53-00/501, ATC System
(16) AMM 34-55-00/501, DME System
(17) AMM 34-57-00/501, Automatic Direction Finder (ADF)
(18) AMM 53-52-01/201, Nose Radome
(19) SRM 51-70-14, Allowable Damage and Repair of Flame-Sprayed Aluminum Coatings
(20) D6-7170 Nondestructive Instrumental Tests for Structure

B. Examine the Airplane External Surface

S 212-109

(1) Examine the Zone 1 (Figure 201) surface areas for signs of lightning strike damage.
(a) Do the examinations that follow:
1) Examine the external surfaces carefully to find the entrance and exit points of lightning strike.



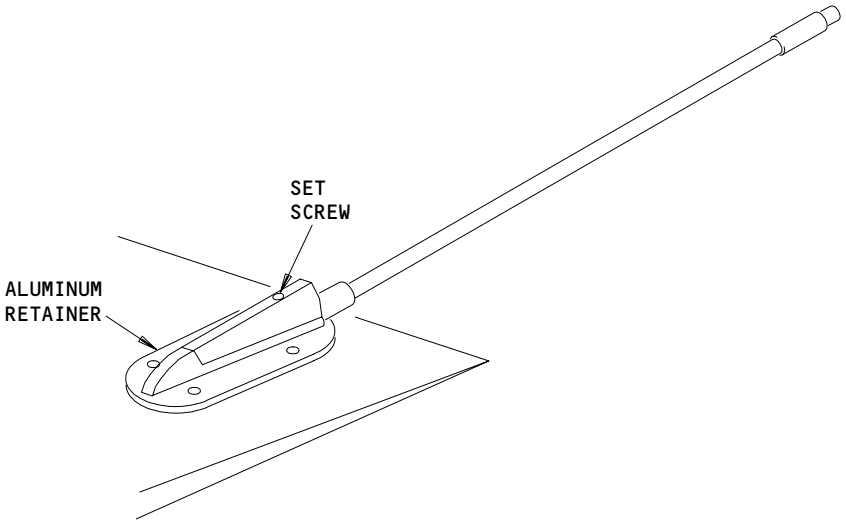
LEGEND

ZONE 1, HIGHLY POSSIBLE

ZONE 2, POSSIBLE

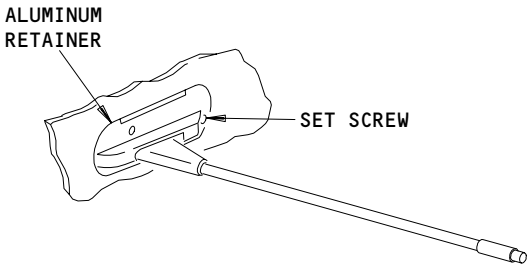
ZONE 3, LESS POSSIBLE

External Lightning Strike Areas
Figure 201 (Sheet 1)



TRAILING EDGE SURFACE INSTALLATION
(EXAMPLE)

(A)



STABILIZER TIP AND FIN CAP INSTALLATION
(EXAMPLE)

(B)

External Lightning Strike Areas
Figure 201 (Sheet 2)

2) Make sure to look in the areas where one surface stops and another surface starts.
3) Examine the internal and external surfaces of the nose radome for burns, punctures, and pin holes in the composite honeycomb sandwich structure.
4) Examine the metallic structure for holes, pits, burned or discolored skin and rivets.
5) Examine the external surfaces of the composite components for discolored paint, burned, punctured, or delaminated skin plies in the honeycomb sandwich structure.
6) You need to use instrumental NDI methods or tap tests to find composite structure damage you cannot see.

NOTE: Damage you cannot see, such as delamination, can extend to the area you can see. Delamination can be detected by instrumental NDI methods or by a tap test. For a tap test, use a solid metal disk and tap the area adjacent to the damaged area lightly. If there is delamination, you will hear a sound that is different than the sound of a solid bonded area. Refer to Nondestructive Test Manual D6-7170.

S 212-076

(2) Examine the Zone 2 (Figure 201) surface areas for signs of lightning strike damage.
(a) Do the examinations that follow:
1) Examine the external surfaces carefully to find the entrance and exit points of the lightning strike.
2) Make sure you look in the areas where one surface stops and the other surface starts.
3) Examine the metallic structure for holes, pits, burned or discolored skin and rivets.
4) Examine external surfaces of composite components for discolored paint, burned, punctured, or delaminated skin plies in the honeycomb sandwich structure.

5) You need to use instrumental NDI methods or tap tests to find composite structure damage you cannot see.

NOTE: Damage you cannot see, such as delamination, can extend to the area you can see. Delamination can be detected by instrumental NDI methods or by a tap test. For a tap test, use a solid metal disk and tap the area adjacent to the damaged area lightly. If there is delamination, you will hear a sound that is different than the sound of a solid bonded area. Refer to Nondestructive Test Manual D6-7170.

S 212-113

(3) If the entrance and exit points are not found during the examination of Zones 1 and 2 areas, examine Zone 3 (Fig. 201) surface areas for signs of lightning strike damage.

(a) Do the examinations that follow:

1) Examine the external surfaces carefully to find the entrance and exit points of the lightning strike.
2) Make sure you look in the areas where one surface ends and another surface starts.
3) Examine the metallic structure for holes, pits, burned or discolored skin and rivets.
4) Examine external surfaces of composite components for discolored paint, burned, punctured, or delaminated skin plies.
5) You need to use instrumental NDI methods or tap tests to find composite structure damage you cannot see.

NOTE: Damage you cannot see, such as delamination, can extend to the areas around the damaged area you can see. Delamination can be detected by instrumental NDI methods or by a tap test. For a tap test, use a solid metal disk and tap the area adjacent to the damaged area lightly. If there is delamination, you will hear a sound that is different that the sound of a solid bonded area. Refer to Nondestructive Test Manual D6-7170.

S 212-112

(4) If you find lightning strike damage to aluminum coated composite panels, refer to SRM 51-70-14 for allowable damage, time limited repairs and permanent repair procedures.

CAUTION: MAKE SURE TO SEAL OR REPAIR ALL DAMAGE. FAILURE TO SEAL OR REPAIR DAMAGE CAN CAUSE MORE INTERNAL DAMAGE BECAUSE MOISTURE CAN GET IN AND FREEZE AT ALTITUDE.

(a) Repair or seal the damaged areas. See SRM 51-70-14.

S 712-095

(5) Make sure the navigation lamps, rotary lights, and the landing lights operate.

S 212-096

(6) Examine the flight control surfaces for signs of lightning strike damage.
   (a) Do the examinations that follow:
      1) If the rudder shows signs of a lightning strike, examine the surface hinges, bearings,and bonding jumpers for signs of damage.
      2) If the elevators show signs of a lightning strike, examine the surface hinges, bearings, and bonding jumpers for signs of damage.
      3) If the ailerons show signs of a lightning strike, examine the surface hinges, bearings, and bonding jumpers for signs of damage.
      4) If the speed brakes show signs of a lightning strike, examine the surface hinges, bearings, and bonding jumpers for signs of damage.
      5) If the main landing gear doors show signs of a lightning strike, examine the surface hinges, bearings, and bonding jumpers for signs of damage.

6) If the trailing edge flaps show signs of a lightning strike, examine the surface hinges, bearings, and bonding jumpers for signs of damage.
7) If the leading edge flaps/slats show signs of a lightning strike, examine the surface hinges, bearings, and bonding jumpers for signs of damage.

(b) Do an operational test of the rudder if the are signs of lightning strike damage to the rudder or vertical stabilizer (AMM 27-21-00).

(c) Do an operational test of the elevator if there are signs of lightning strike damage (AMM 27-31-00).

(d) Do an operational test of the ailerons if there are signs of lightning strike damage to the ailerons (AMM 27-11-00).

(e) Do an operational test of the speed brakes if there are signs of lightning strike damage to the speed brake system (AMM 27-62-00).

S 212-110

(7) Examine the wingtip.

(a) If the wingtip shows lightning strike damage, do a visual inspection of the fuel vent surge tanks.

1) Open the access panel for the affected surge tank (AMM 28-11-03/401).
2) Do a visual inspection of the surge tank and the components in the tank.
a) If damage is found, repair or replace the damaged component.
3) Close the surge tank access panel (AMM 28-11-03/401).

S 212-111

(8) Examine the static dischargers.

(a) Visually examine all of the static dischargers. Make sure the static dischargers are securely mounted. Make sure that all of the static dischargers are not broken and all of the static dischargers are there.

(b) Examine the static dischargers for burns, roughened black conductive static discharger material, and pitted retainers.

(c) Examine the static discharger for errosion of the static discharge material. Look at the tip cap for static discharge material which is not there.

NOTE: Leading edge erosion of static dischargers should not extend back more than 1/3 the width of the discharger.

(d) If the static discharger is damaged, do a check of the static discharger resistance (AMM 23-61-00/201).

TASK 05-51-13-202-014

3. Examine Internal Components for Lightning Strike

A. References

(1) AMM 06-09-05/201, Body Section 48 Access Doors and Panels
(2) AMM 24-11-00/501, Generator Drive System
(3) AMM 24-20-00/501, AC Generation
(4) AMM 24-21-04/501, Lightning Protector
(5) AMM 24-23-01/501, Generator and Bus Control Units
(6) AMM 27-81-00/201, Leading Edge Flap System
(7) AMM 28-16-01/501, Reserve Tank Transfer Valve Actuator
(8) AMM 28-16-04/401, Main Tank Transfer Valve Actuator
(9) AMM 28-17-00/501, Horizontal Stabilizer Tank Transfer System
(10) AMM 28-22-00/501, Engine Fuel Feed System
(11) AMM 28-25-00/501, APU Fuel Feed System
(12) AMM 28-31-00/501, Fuel Jettison System
(13) AMM 28-41-00/501, Fuel Quantity Indicating System
(14) AMM 29-11-00/201, Main Hydraulic Supply System
(15) AMM 23-32-00/501, Passenger Entertainment System
(16) AMM 34-21-00/501, Inertial Reference System
(17) AMM 34-43-00/501, Weather Radar System
(18) AMM 53-52-01/601, Nose Radome
(19) Chapter 20 WDM (SWPM Standard Wiring Practices Manaual)

B. Fuel System

NOTE: Do these fuel system procedures before you refuel, defuel, or transfer fuel. If there is pressure in the refuel/jettison manifold, fuel can spill from the jettison nozzles when the nozzle valves are opened.

S 732-015

(1) If the fuel quantity indicating system appears incorrect, do a check of the applicable tank units and compensator (AMM 28-41-00/501).

S 712-015
(2) Operate the horizontal stabilizer fuel isolation valves (AMM 28-17-00/501).
  (a) Replace the horizontal stabilizer fuel isolation valves if necessary.

S 712-016
(3) Operate the engine fuel shutoff valves (AMM 28-22-00/501).
  (a) Replace the engine fuel shutoff valves if necessary.

S 712-064
(4) Operate the engine fuel crossfeed valves (AMM 28-22-00/501).
  (a) Replace the engine crossfeed valves if necessary.

S 712-017
(5) Operate the fuel jettison valves (AMM 28-31-00/501).
  (a) Replace the fuel jettison valves if necessary.

S 712-065
(6) Operate the fuel jettison nozzle valves (AMM 28-31-00/501).
  (a) Replace the fuel jettison nozzle valves if necessary.

S 712-018
(7) Operate main tank transfer valves (AMM 28-16-04/401 Test Operation of Main Tank Transfer Valve).
  (a) Replace the main tank transfer valves if necessary.

S 712-066
(8) Operate the reserve tank transfer valves (AMM 28-16-01/501).
  (a) Replace the reserve tank transfer valves if necessary.

S 712-019
(9) Operate the APU fuel shutoff valve (AMM 28-25-00/501).
  (a) Replace the APU fuel shutoff valve if necessary.

C. AC Generation System

S 212-018

(1) If the lightning strike has caused only loss of power from a generator do these steps:

NOTE: The equipment on the main ac distribution buses will be operative when power is supplied from the other generators.

WARNING: WHEN INSPECTING POSSIBLE DAMAGE IN THE WING LEADING EDGE AREAS, INSTALL LEADING EDGE FLAP SAFETY LOCKS BEFORE ENTERING AREA. REFER TO AMM 27-81-00/201 FOR LOCK INSTALLATION PROCEDURE. FLAPS WILL RETRACT IN 7 SECONDS. INSTALL LOCKS ON ALL EXTENDED LEADING EDGE FLAPS TO PREVENT INJURY FROM INADVERTENT FLAP OPERATION.

(a) Examine these items and related wires for possible lightning strike damage:

NOTE: Replace or repair any component, related wiring or, circuit breakers which are damaged.

1) Generator Power Feeders (Leading Edge Flap Cavity)
2) Integrated Drive Generator (Engine Gear Box)
3) Generator Circuit Breakers (Main Power Centers)
4) Generator Control Units (Main Equipment Center)
5) Lightning Protectors (Main Power Centers)

(b) Examine the lightning protection circuit breakers.
1) Make sure the lightning protection circuit breakers are closed.

(c) Do the Lightning Protector Adjustment/Test procedure (AMM 24-21-04/501).

(d) Do the Generator and Bus Control Units Adjustment/Test procedure (AMM 24-23-01/501).

(e) Do the AC Generation Adjustment/Test procedure (AMM 24-20-00/501).
(f) Do the Generator Drive System Adjustment/Test procedure (AMM 24-11-00/501).

S 212-020
(2) If the lightning strike has caused loss of power from a generator and additional damage to the electrical distribution system, do these steps:

NOTE: Equipment on one or more ac buses will be inoperative.

(a) Complete all examinations and procedures in step 3.C.(1)(a) thru 3.C.(1)(c).
(b) Examine these items and related wires for possible lightning strike damage:

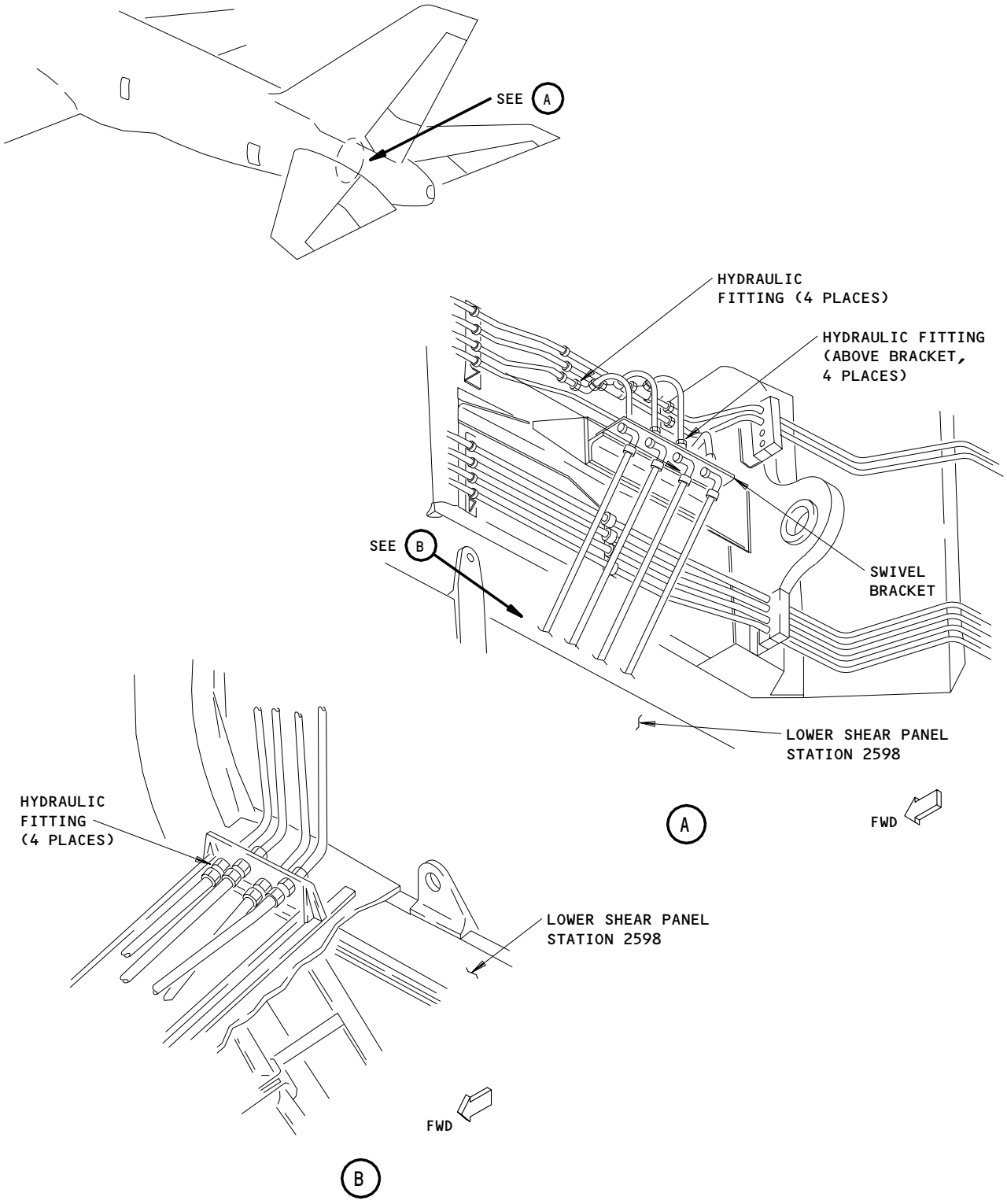
NOTE: Replace or repair any component, related wiring, or circuit breakers which are damaged.

1) Bus Tie Breakers (Main Power Centers)
2) Split System Breaker (P92 Panel)
(c) Do the Generator and Bus Control Units Adjustment/Test procedure (AMM 24-23-01/501).
(d) Do the AC Generation Adjustment/Test procedure (AMM 24-20-00/501).
(e) Do the Generator Drive System Adjustment/Test procedure (AMM 24-11-00/501).

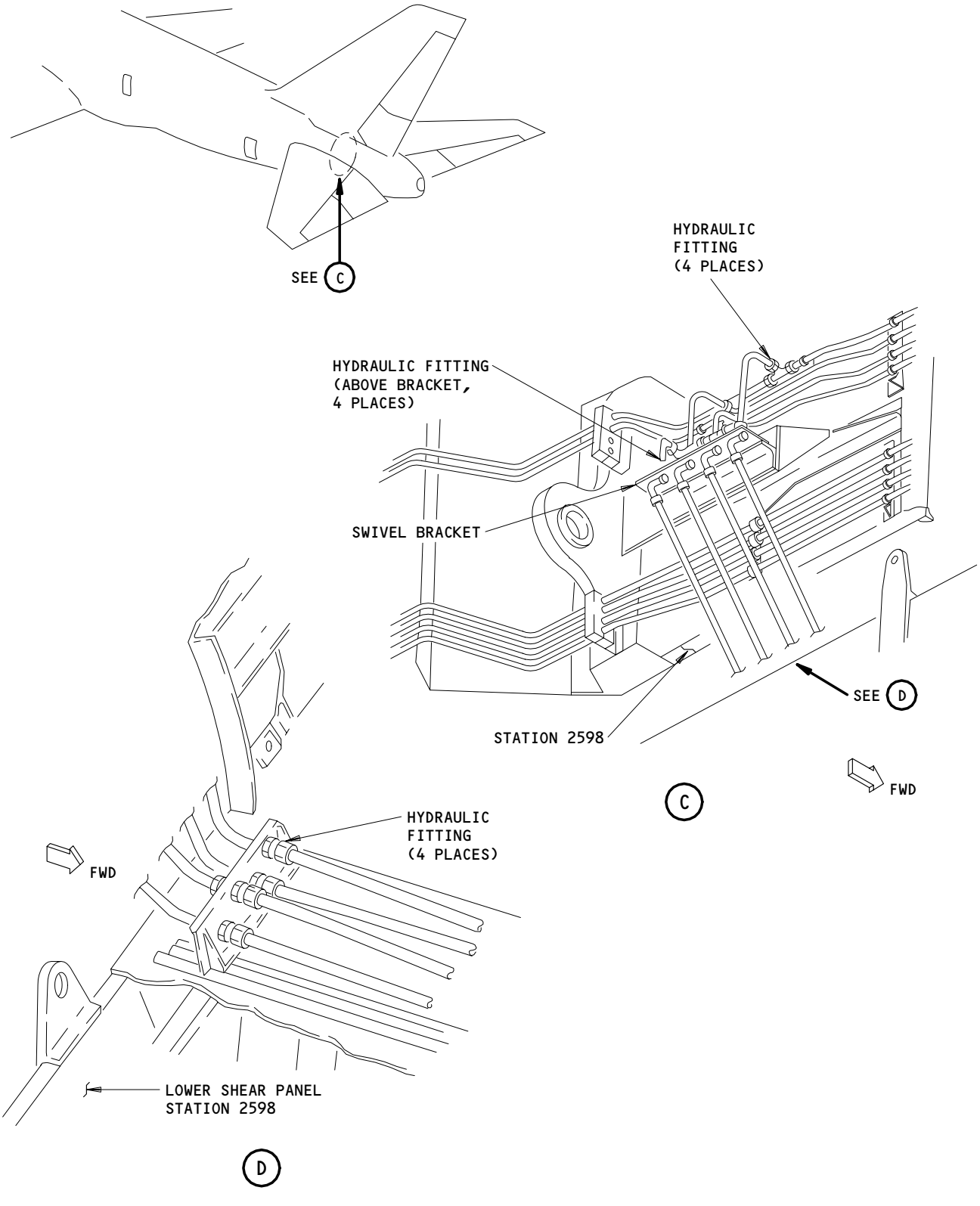
D. Examine the hydraulic parts in the compartment forward of the APU firewall (Fig. 202).

S 012-043
(1) Open the access door 315AL (AMM 06-09-05/201).

S 212-044
(2) Do a check of the hydraulic fittings as shown on Fig. 202 for leaks.
(a) Write down which hydraulic fittings leak.



Internal Lightning Strike Areas
Figure 202 (Sheet 1)



Internal Lightning Strike Areas
Figure 202 (Sheet 2)

S 032-047

(3) If leaks are found do the following:

(a) Remove the pressure from hydraulic systems No. 1, 2, 3, and 4 (Ref 29-11-00/201).

(b) Remove the hydraulic fittings which were written down as leaking.

NOTE: Use an appropriate container to collect the hydraulic fluid.

1) Disassemble the hydraulic fittings which were written down as leaking.
2) Examine the hydraulic fitting part(s) for surfaces which are pitted.
3) If the part(s) are pitted, replace the part(s).
4) Reassemble the hydraulic fittings.
5) Tighten the hydraulic fittings.

(c) Pressurize hydraulic systems No. 1, 2, 3, and 4 (AMM 29-11-00/201).

(d) Do a check of the replaced hydraulic fittings and look for leakage.

E. Examine the bonding jumpers.

S 212-049

(1) Examine the bonding jumper between stabilizer rear spar and station 2598 partial bulkhead, outboard of stabilizer right and left hinge bearings.

(a) Face the aft side of station 2598.

(b) Put hand into the hole in the skin by the elevator power package pushrod.

(c) Examine the two bonding jumper terminals for discoloration due to an overheat condition.

(d) Examine the two bonding jumpers for melted or broken strands.

(e) Make sure the two bonding jumper attach bolts are tight.

S 212-062

(2) Examine the bonding jumpers between horizontal stabilizer center box and the fuselage hinge fitting at Station 2598 (2 left and 2 right).

(a) Examine all of the bonding jumper terminals for signs of discoloration due to an overheat condition.

(b) Examine all of the bonding jumpers for melted or broken strands.
(c) Make sure all of the bonding jumper attach bolts are tight.

S 962-063
(3) Replace any damaged bonding jumpers (AMM 20-11-15/401).

F. Examine the Passenger Entertainment System

S 212-068
(1) If time permits, make a check of the area video, in-seat video, and cabin entertainment system operation (AMM 23-32-00/501).

TASK 05-51-13-712-017

4. Inspection and Operational Check of the Radio and Navigation Systems

A. General

(1) The radio and navigation systems must have a full examination after the airplane was hit by lightning. The examination is also necessary after heavy static discharges. The level of the inspections and operation tests come from flight crew information and the airplane conditions during and after the incident.

NOTE: It is not necessary to examine the coaxial cables and the connectors if the :
- radio system had no problems during and after the incident.
- operational checks were done and no problems were found.

B. References

(1) AMM 23-11-00/501, HF Communication System
(2) AMM 23-12-00/501, VHF Conmmunication System
(3) AMM 34-31-00/501, ILS Navigation System
(4) AMM 34-32-00/501, Marker Beacon System
(5) AMM 34-33-00/501, Radio Altimeter System
(6) AMM 34-51-00/501, VOR System
(7) AMM 34-53-00/501, ATC System
(8) AMM 34-55-00/501, DME System
(9) AMM 34-57-00/501, Automatic Direction Finder (ADF) System

(10) AMM 34-22-00/201, Standby Magnetic Compass

C. Examine the Radio and Navigation Systems

S 212-053

(1) Examine the HF system for damage.
  (a) Examine the antennas for damage.
    1) Replace damaged antennas as necessary.
  (b) Examine the tuners for damage and arcing.
    1) Replace damaged tuners as necessary.
    2) Deleted HF arrester inspection.

S 212-054

(2) Examine the VHF-VOR-DME-ATC-MARKER systems for damage.
  (a) Examine the antennas for damage.
    1) Replace damaged antennas as necessary.
  (b) Examine the coaxial cables and connectors for damage if it is necessary.
    1) Replace the damaged coaxial cables if it is necessary.

S 212-055

(3) Examine the Radar System (Radome) (AMM 53-52-01/601).
  (a) Look for pin holes, punctures, and paint that has chipped.
  (b) Repair the radar system if it is necessary.
  (c) Replace damaged radome if it is necessary.
  (d) Examine the radome diverter strips (AMM 53-52-01/601).
    1) Make sure the the diverter strips are correctly attached to the airframe.
    2) Replace the damaged radome diverter strips if it is necessary.
  (e) If the radome is damaged, examine the antenna and the waveguide for damage.
    1) Replace damaged antenna and waveguide if it is necessary.

D. Radio and Navigation System Operational Checks

S 712-059

(1) Do an operational check of the radio and navigation systems.

NOTE: After a lightning strike, an operational check of all radio and navigational systems must be done. If a malfunction is found or reported by the flight crew, do the detailed operational check as shown in the applicable maintenance manual section.

  (a) Do an operational check on some frequencies of each HF system (AMM 23-11-00/501).
    1) Deleted step to make sure the VSWR is within tolerance.
    2) Monitor many active frequencies on each system to make sure the HF receiver operates.

3) Do a ground check of each system with a station that is not less than 100 miles away.

(b) Do an operational check of the VHF system (AMM 23-12-00/501).
1) Do a loading check on some frequencies on each VHF transmitter.
a) Make sure all transmitter indications are correct.
2) Monitor many active frequencies on each system to make sure the VHF receiver operates.
3) Do a ground check of each VHF system with the local control tower facility to make sure the system operates.

(c) Do an operational check operation of the VOR system on the local VOR and/or localizer facility (AMM 34-51-00/501).

NOTE: If VOR ramp test set is available, do an operational check of the VOR, localizer, and glide slope.

(d) Do an operational check of the ILS system on a local station or with a ramp testor (AMM 34-31-00/501).

(e) Do an operational check of the ADF system (AMM 34-57-00/501).
1) Do an operationl check of the receivers on Ant, Loop, and ADF functions.
2) Make sure that each system reads a bearing on stations that are not less than 100 miles away.

(f) Examine the standby compass
1) Check the standby magnetic compass if the flight crew found a deviation that is not within tolerance, do this task: Standby Magnetic Compass Tow Around procedure or the Standby Magnetic Compass Calibrator procedure (AMM 34-22-00/201).

(g) Do an operational check of the Radio Altimeter system (AMM 34-33-00/501).

(h) Do an operationl check of the DME system on a local station or a ramp tester (AMM 34-55-00/501).

(i) Do an operational check of the ATC transponder system (AMM 34-53-00/501).

(j) Do an operational check of the Marker Beacon system (AMM 34-32-00/501).

(k) Do an operational check of the Weather Radar system. (AMM 34-43-00/501).

(l) Make sure that all of the fault lights of the receiver/transmitter units are off (AMM 34-43-00/501).

NOTE: Use targets at appropriate ranges.

(m) Do an operational test on ACARS (AMM 23-27-00/501).
(n) Do an operational test for the Integrated Display System (AMM 31-61-00/501).
(o) Do an operational test on TCAS (AMM 34-45-00/501).
(p) Do an operational test on the Global Positioning System (AMM 34-58-00/501).
(q) Do an operational test on the Flight Management Computer System (AMM 34-61-00/501).

S 422-061
(2) Replace all components that you find damaged.

BIRD/HAIL STRIKE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. The inspections that follow are for a bird strike and a hail strike condition. Examine all the external areas of the airplane for damage in the general area of the bird/hail strike. If the initial inspection shows structural damage, then you must do an inspection of the internal structure. Also do an inspection of the hydraulic, the pneumatic, and the other systems in the area of the bird/hail strike. The steps that follow are for the airplane structure in general. But you can use them to do an inspection of the general area of the bird/hail strike only.
   B. When the conditional inspection tells you to "examine" a component, look for these conditions. Reject or repair components that have one or more of these conditions:
      (1) Cracks
      (2) Openings
      (3) Loose paint (paint flakes)
      (4) Twisted parts (distortions)
      (5) Bent parts
      (6) Bent structure
      (7) Fastener holes that become larger or longer
      (8) Loose fasteners
      (9) Fasteners that have pulled out or are not there
      (10) Misalignment
      (11) Interference
      (12) Other signs of damage.
   C. This inspection is provided by these two tasks:
      (1) Bird/Hail strike conditional inspection (in flight).
      (2) Hail strike on the ground conditional inspection.
   D. For allowable hail damage, refer to the aerodynamic smoothness and investigation and cleanup of damage (SRM 51-10-00).

TASK 05-51-14-202-001

2. Bird/Hail Strike Conditional Inspection
   A. References
      (1) 27-81-00/201, Leading Edge Flap System
      (2) 71 FAULT CODE INDEX - FIM
   B. Procedure

S 492-016

WARNING: YOU MUST CAREFULLY DO THE STEPS IN THE TASK BELOW TO INSTALL THE LE FLAP SAFETY LOCKS. THE LE FLAPS CAN MOVE QUICKLY IF YOU DO NOT INSTALL THE SAFETY LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Install the safety locks on the leading edge flaps (Ref 27-81-00/201).

S 212-014

(2) Do the inspections for the bird/hail strike that follow:

(a) Examine the wing, the nacelle strut, and the leading edge fairing of the horizontal stabilizer and the vertical stabilizer.

(b) Examine the pylon panels, the doors, and the structure.

(c) Examine the leading and the trailing edge structure of the wing, the panels, and the doors.

NOTE: Examine all sides of the honeycomb panels for cracks, delamination, soft areas, and core damage.

(d) Examine the flap mechanism of the leading edge and the trailing edge flaps and the track fairing links.

(e) Make sure the control surfaces move freely and there is no free play or misalignment.

(f) Examine the skins.

(g) Examine the landing gear doors of the nose, wing and body landing gear.

(h) Examine the pilot's window and the adjacent structure.

(i) Examine the forward passenger windows and the adjacent structure.

NOTE: If the window panes do not align correctly in the center of the frame, cabin air can leak from the window.

(j) Examine the forward body nose section and the radome.

(k) Examine the internal sides and the external sides of the radome for damage to the honeycomb core and soft spots.

(l) Examine the engines, the nose cowl and the inlet.

NOTE: If the engine shows signs of a bird/hail strike or suspected bird/hail strike on the nacelle, refer to the applicable bird strike trouble shooting procedures (Ref 71 FAULT CODE INDEX - FIM).

S 092-015

WARNING: YOU MUST CAREFULLY DO THE STEPS IN THE TASK BELOW TO REMOVE THE LE FLAP SAFETY LOCKS. THE LE FLAPS CAN MOVE QUICKLY IF YOU DO NOT REMOVE THE SAFETY LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Remove the safety locks from the leading edge flaps (Ref 27-81-00/201).

TASK 05-51-14-212-018

3. Hail Strike on the Ground Conditional Inspection

A. References
(1) 27-51-00/201, Trailing Edge Flap System
(2) 27-81-00/201, Leading Edge Flap System

B. Access
(1) Location Zones
200 Upper Half of Fuselage
300 Empennage and Body Section 48
400 Power Plants and Nacelle Struts
500 Left Wing
600 Right Wing
700 Landing Gear and Landing Gear Doors
800 Doors

C. Procedure

S 042-019

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE FLAP/SLAT ACTUATION SYSTEMS. INJURY TO A PERSON OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE FLAPS/SLATS MOVE. FLAP/SLAT ACTUATION SYSTEMS MUST NOT BE OPERATED DURING THIS INSPECTION. FAILURE TO OBEY CAN CAUSE INJURY TO PERSONS.

(1) Do the deactivation procedure for the leading edge slat system (AMM 27-81-00/201).

S 042-020
(2) Do the deactivation procedure for the trailing edge flap system (AMM 27-51-00/201).

S 212-021
(3) Do the visual examinations of the areas that follow:

NOTE: When you examine the honeycomb panels, look at the two sides for cracks, delaminations, soft spots and core damage.

(a) The external fuselage structure.
1) If no sign of hail damage is found, the procedure is complete and no other inspections are necessary.
2) If signs of hail damage to the external fuselage structure is found, continue with this inspection.
3) Refer to SRM 51-10-00 for the aerodynamic smoothness and investigation and clean-up of damage.
(b) The nose radome.
(c) The flight compartment windows, for signs of hail damage as follows:
1) Cracks.

2) Displacement of the outer window.
3) Other types of window damage.

(d) The forward fuselage section above the flight compartment windows and the radome.

(e) The wings, for signs of hail damage to the areas that follow:
1) All horizontal surfaces.
2) Leading edges.
3) Trailing edges.
4) Panels.

(f) The wing tip fairings and navigation lights.

(g) The flight control surfaces.

(h) The leading edge fairings on the horizontal stabilizer.

(i) The leading edge fairings on the vertical stabilizer.

(j) The passenger and cargo dooors.

(k) The nacelle strut.

(l) The nose landing gear doors.

(m) The main landing gear doors.

(n) The passener compartment windows for signs of hail damage as follows:
1) Cracks.
2) Displacement of the outer window.
3) Crazing.
4) Other types of window damage.

(o) Examine the nose cowl and the engine for signs of foreign object damage.

S 222-022

(4) The allowable damage shown in the Structural Repair Manual is to be used to define the limits of damage within each component. (SRM 51-10-00).

S 442-023

(5) Do the reactivation procedure for the leading edge slat system. (AMM 27-81-00/201).

S 442-024

(6) Do the reactivation procedure for the trailing edge flap system (AMM 27-51-00/201).

BATTERY ELECTROLYTE CONTAMINATION CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. This procedure has these two tasks:
      (1) Lead Acid Battery Contamination
      (2) Alkaline Battery Contamination.
   B. The primary source of acid contamination is in the battery compartments.
   C. Battery electrolytes can overflow during battery charging, or leak when the battery is serviced.
   D. Contamination occurs at times and the acid must be made neutral before corrosion damage can occur.
   E. Electrolyte contamination, unless you make it neutral, can quickly corrode a metalic structure.
   F. Electrolyte can cause damage to materials such as fabrics, wood, leather, and other non-metalic materials.
      (1) Electrolyte contamination can cause discoloration on the surface it touches.

TASK 05-51-15-112-001

2. Lead Acid Battery Contamination
   A. Standard Tools and Equipment
      (1) Rubber or plastic gloves
      (2) G02057 Goggles - Safety
      (3) Face shield
      (4) Aprons
      (5) Boots
      (6) Head gear
   B. Consumable Materials
      (1) B00334 - Bicarbonate of Soda
      (2) B00095 Chemical - Sodium Bicarbonate (O-S-576)
   C. Procedure

      S 942-002

      WARNING: DO NOT GET BATTERY ELECTROLYTE (ACID) IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATH THE FUMES FROM THE BATTERY ELECTROLYTE. PUT ON PROTECTIVE SPLASH GOGGLES AND GLOVES WHEN YOU CLEAN UP THE BATTERY ELECTROLYTE CONTAMINATION. KEEP THE FUMES FROM SPARKS, FLAMES, AND TEMPERATURES ABOVE THE FLASHPOINT. BATTERY ELECTROLYTE IS A POISONOUS AND FLAMMABLE MATERIAL WHICH CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) You must do the safety steps that follow when lead acid contamination or leakage is found.
   (a) Do not let the acid leakage move to adjacent areas which will not be cleaned.
   (b) In the battery areas, protect the equipment below the batteries with plastic sheets.
   (c) Make sure the area is vented.
   (d) Use protective covers to prevent contamination of adjacent areas with acids or the solution to make the acid neutral.
   (e) You must always wear protective clothing when you clean up acid contamination.

S 112-003

(2) Do the steps that follow to clean-up the battery electrolyte contamination:
   (a) Soak up the excess fluids with a cloth.
   (b) Neutralize the contaminated area with a 20 percent sodium bicarbonate solution.

      NOTE: One pound of sodium bicarbonate mixed into one gallon of water will make the necessary solution.

   (c) Apply the solution with a cloth, mop, brush, or sponge.

      NOTE: Do not put the sodium bicarbonate solution into the battery.

      1) Make sure the solution goes into the contaminated faying surface joints.

         NOTE: A pressure application of the solution can be necessary to flush the faying surface joints and some access areas fully.

      2) Apply the solution until the bubbling of the acid/solution stops.

         NOTE: When the bubbling stops, the acid has become neutral.

         a) Let the solution stay on the surface for 5 minutes more after the bubbles stop.
   (d) Remove the solution with a mop or sponge.
      1) Discard the contaminated clean-up materials into a plastic container.

(e) Flush the area with large quantities of clean water.

NOTE: A pressure application of water to the solution can be necessary to flush the faying surface joints and some access areas fully.

1) Rub the surface with a soft brush.

(f) Do a test of the cleaned area with litmus paper.
(g) Make the area dry with clean cloths.
(h) Repair the area if it is necessary after it is fully dry.

TASK 05-51-15-112-004

3. Alkaline Battery Contamination

A. Standard Tools and Equipment
(1) Rubber or plastic gloves
(2) GO2057 Goggles - Safety
(3) Face shield
(4) Aprons
(5) Boots
(6) Head gear

B. Consumable Materials
(1) Acetic acid
(2) Household vinegar

C. Procedure

S 942-005

CAUTION: DO NOT GET BATTERY ELECTROLYTE (ACID) IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATH THE FUMES FROM THE BATTERY ELECTROLYTE. PUT ON PROTECTIVE SPLASH GOGGLES AND GLOVES WHEN YOU CLEAN UP THE BATTERY ELECTROLYTE CONTAMINATION. BATTERY ELECTROLYTE IS A POISONOUS AND CAUSTIC MATERIAL WHICH CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) You must do the safety steps that follow when alkaline contamination or leakage is found.
(a) Do not let the alkaline leakage move to adjacent areas which will not be cleaned.
(b) In the battery areas, protect the equipment below the batteries with plastic sheets.
(c) Make sure the area is vented.
(d) Use protective covers to prevent contamination of adjacent areas with alkaline, or the solution to make the alkaline neutral.
(e) You must always wear protective clothing when you clean-up alkaline contamination.

S 112-006

(2) Do the steps that follow to clean-up the battery alkaline electrolyte contamination:

(a) Soak up the excess fluids with a cloth.

(b) Neutralize the contaminated area with a 5 percent acetic acid solution.

NOTE: When acetic acid is not available, you can use household vinegar at its full strength.

(c) Apply the solution with a cloth, mop, brush, or sponge.

1) Make sure the solution goes into the contaminated faying surface joints.

NOTE: A pressure application of the solution can be necessary to flush the faying surface joints and some access areas fully.

2) Apply the solution until the chemical reaction stops.

NOTE: When the chemical reaction stops, the alkaline has become neutral.

a) Let the solution stay on the surface for 5 minutes more after the chemical reaction stops.

(d) Remove the solution with a mop or sponge.

1) Discard the contaminated clean-up materials into a plastic container.

(e) Flush the area with large quantities of clean water.

NOTE: A pressure application of water to the solution can be necessary to flush the faying surface joints and some access areas fully.

1) Rub the surface with a soft brush.

(f) Do a test of the cleaned area with litmus paper.

(g) Make the area dry with clean cloths.

(h) Repair the area if it is necessary after it is fully dry.

LANDING GEAR DOWN OVERSPEED CONDITION - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is above maximum gear down placard speed conditional inspection.

   TASK 05-51-16-202-001

2. Above Maximum Gear Down Placard Speed Conditional Inspection
   A. Procedure

      S 212-004
      (1) Examine these items of the nose, wing, and body landing gear areas for signs of damage:

      NOTE: Look for distortion, displacement, cracks, items not aligned, fastener hole extension or tear out, pulled fasteners, and fasteners which are not there.

      (a) Landing Gear Doors
      (b) Landing Gear Door Hinges
      (c) Landing Gear Door Linkages
      (d) Landing Gear Door Linkage Supports

      S 212-005
      (2) Examine all other systems installations in the nose, wing, and body landing gear wheel wells for any signs of damage.

WHEEL BEARING FAILURE/DAMAGE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. This inspection must be done before the next flight.
   B. This section gives an inspection procedure for landing gear wheels, brakes, axle sleeves, and axles after a wheel bearing failure.
   C. The degradation of wheel bearing components can occur as follows:
      (1) Lubrication that is incorrect or not sufficient
      (2) A decrease of the wheel bearing preload
      (3) Contamination in the bearings
      (4) Other damage that occurs.
   D. When you operate with damaged bearings, it will cause heat in the adjacent parts.
      (1) Some of these parts are:
         (a) The axles
         (b) The axle sleeves
         (c) The spacers
         (d) The wheel hubs.
      (2) These parts can be scored if the bearing damage causes a seizure.
   E. Make an inspection of the wheel bearings carefully during each tire change.

      NOTE: Follow the wheel supplier's (Overhaul Manual) recommended procedures.

TASK 05-51-17-212-001

2. Wheel Bearing Failure
   A. General
      (1) The failure of a wheel bearing can be found by the symptoms or conditions that follow:
         (a) Contamination of the wheel bearing grease with unwanted material
         (b) Metal particles in the area of the wheel and the brake
         (c) The hubcap is damaged or is missing (main gear only)

(d) The brake cooling fan
(e) The wheel is damaged
(f) The wheel brake for the main landing gear is damaged
(g) A wheel that is canted wheel more than usual
(h) The wheel and tire assembly are missing.

B. Standard Tools and Equipment

WARNING: THE POWER CABLE OF THE BORESCOPE MUST BE IN A GOOD CONDITION. IF THERE ARE CIRCUMFERENTIAL CUTS, FRAYED AREAS, OR RUPTURES TO THE EXTERNAL RUBBER COVER OF THE CABLE, INJURY TO PERSONS CAN OCCUR.

(1) Borescope - Fiber Optic Light Supply - Model BLS-97, American Cystoscope Makers Inc., Industrial Division, Pelham, New York
(2) Borescope - Fiber Optic Light Supply - Model BLS-98, American Cystoscope Makers Inc., Industrial Division, Pelham, New York
(3) Rigid Borescope - Model BF0-3920A, American Cystoscope Makers Inc., Industrial Division, Pelham, New York
(4) Flexible Borescope - Model BF1F-3127DD, Cystoscope Makers Inc., Industrial Division, Pelham, New York
(5) Fiber Light Carrier - Model F0-400-5A, Cystoscope Makers Inc., Industrial Division, Pelham, New York
(6) Rigid Borescope - Model FIB 730, Richard Wolf Medical Instruments Corp., Rosemont, Illinois
(7) Rigid Borescope - Model FIB 740, Richard Wolf Medical Instruments Corp., Rosemont, Illinois
(8) Rigid Borescope - Model FIB 760, Richard Wolf Medical Instruments Corp., Rosemont, Illinois

C. References
(1) AMM 32-41-15/401, Landing Gear Brake Unit - Removal/Installation
(2) AMM 32-41-15/601, Landing Gear Brake Unit - Inspection/Check
(3) AMM 32-42-04/401, Antiskid Transducer - Removal/Installation
(4) AMM 32-45-01/401, Main Landing Gear Tire/Wheel Assembly - Removal/Installation
(5) AMM 32-45-02/401, Nose Landing Gear Tire/Wheel Assembly - Removal/Installation
(6) AMM 32-45-03/601, Wheels - Inspection/Check
(7) AMM 32-45-11/401, Main Gear Tire Pressure Indication System - Removal/Installation
(8) AMM 32-45-12/401, Nose Gear Tire-Pressure-Indicating-System - Removal/Installation

D. Wheel Inspection

S 212-002

(1) Do the wheel inspection (AMM 32-45-03/601).

(a) When a main wheel shows signs of a wheel bearing failure, or other signs of damage, remove the wheel and tire assembly (AMM 32-45-01/401).

NOTE: The wheel and tire assembly, and the bearings must be sent to the shop for disassembly and a detailed inspection.

(b) When a nose wheel shows signs of a wheel bearing failure, or other signs of damage, remove the wheel and tire assembly (AMM 32-45-02/401).

NOTE: The wheel and tire assembly, and the bearings must be sent to the shop for disassembly and a detailed inspection.

(c) Make sure the correct wheel bearings are installed in the wheels that are removed.

E. Brake Inspection

S 212-003

(1) Do the inspections of the brake assembly (main landing gear only) (AMM 32-41-15/601).

(a) Examine the parts that follow if the failure of a wheel bearing let the wheel touch the brake:

1) Rotors
2) Stators
3) Torque tube
4) Other parts of the brake assembly that can become damaged.

(b) When a brake assembly shows signs of damage or does not operate correctly, remove the brake assembly (AMM 32-41-15/401).

NOTE: The brake assembly must be sent to the shop for disassembly and a detailed inspection.

F. Main Landing Gear (MLG) Axle Inspection

S 212-004

(1) Do the inspection of the main gear axle and the brake sleeve.

NOTE: If axle heat damage is suspected, remove the axle sleeve and examine the inner diameter (ID) and outer diameter (OD) of the axle.

(a) Remove the components that follow if they have not been removed:

NOTE: Make sure you inspect them for damage.

1) The brake assembly (AMM 32-41-15/401)
2) The wheel speed transducer (AMM 32-42-04/401)
3) The wheel interface for the tire pressure indicating system (TPIS), if it is installed (AMM 32-45-11/401
4) the brake cooling fan motor if it is installed.

(b) Remove the grease or corrosion inhibitive compound (CIC) from the ID of the axle.

(c) Examine the components that follow and look for paint or primer discoloration, blistering, and structural damage:

NOTE: Damage is scoring, metal transfer, and/or displacement of material.

Discoloration is green primer that has turned brown or black and/or enamel turned yellow, brown, or black.

1) The outer diameter of the axle sleeve
2) The outer diameter of the axle through the holes and slots in the axle sleeve
3) The inner diameter of the axle

WARNING: THE POWER CABLE OF THE BORESCOPE MUST BE IN A GOOD CONDITION. IF THERE ARE CIRCUMFERENTIAL CUTS, FRAYED AREAS, OR RUPTURES TO THE EXTERNAL RUBBER COVER OF THE CABLE, INJURY TO PERSONS CAN OCCUR.

a) Examine the green primer on the inner surfaces (bore) of the axle with a borescope.

4) The brake sleeve (Ref 32-41-15/601).
5) If no damage, discoloration/blistering is found, you can leave the axle in service as it is.

NOTE: No further inspections to the axle are necessary.

6) Apply grease/CIC to the axle inner diameter.
7) Install the components that follow:
   a) The brake assembly (AMM 32-41-15/401)
   b) The anti-skid system (AMM 32-42-04/401)
   c) The wheel interface unit for the tire pressure indicating system, if it is installed (AMM 32-45-11/401)
   d) The wheel and tire assembly (AMM 32-45-01/401).

(d) If damage to the axle is found, remove and replace the axle.

(e) If discoloration/blistering on the axle OD or ID, or damage to the axle sleeve or brake is found, do the step that follows:

NOTE: If discoloration or blistering on the ID of the axle is found, and it is not practical to do the Ammonium Persulfate Etch Inspection on the airplane, remove and replace the axle. If no cadmium plate damage is found, repair the axle per the OHM 32-00-05. If cadmium plate damage is found, discard the axle.

1) Remove the axle sleeve or brake sleeve and repair the sleeves as necessary.

(f) If the paint/primer shows only a small discoloration on the OD and ID of the axle do the heat damage inspection when the airplane goes back to the primary base.

NOTE: Do not land the the airplane more than three times before you do the complete inspection.

1) Install the components that follow:
   a) The brake assembly (AMM 32-41-15/401)
   b) The wheel speed transducer (AMM 32-42-04/401)
   c) The wheel interface unit of the tire pressure indicating system (TPIS) if it was installed (AMM 32-45-11/401)

d) The wheel and tire assembly (AMM 32-45-01/401).

(g) Locally strip off the discolored or blistered paint and examine the cadmium (or cadmium/titanium) plating.

NOTE: Such damage can cause cadmium embrittlement of the steel substrate. The damage is not always found by non-destructive tests such as ammonium persulphate etch.

1) Examine the cadmium (or cadmium/titanium) plating.

NOTE: Such damage can cause cadmium embrittlement of the steel substrate. The damage is not always found by non-destructive tests such as ammonium persulphate etch.

a) Look for a white oxide material, and blistered or melted (balled up) cadmium plating.

2) If the plating shows signs of heat damage, replace the axle.

NOTE: Cadmium embrittlement of the axle cannot be eliminated through overhaul methods. Boeing suggest the axle be discarded.

3) If the cadmium plating no signs of heat damage, do the Ammonium Persulfate Etch Inspection.

G. Nose Landing gear (NLG) Axle Inspection

S 212-052

(1) Do an inspection of the nose landing gear axle.

(a) Visually examine the parts that follow for scoring or other damage:

1) The wheel bearing washer
2) The axle nut
3) The inner wheel bearing spacer.

(b) Repair or replace the components when it is necessary.

(c) Examine the axle for damage.

1) Remove the grease or corrosion inhibitive compound (CIC) from the ID of the axle.
2) Examine the components that follow and look for paint or primer discoloration, blistering, and structural damage:

NOTE: Damage is scoring, metal transfer, and/or displacement of material.

NOTE: Discoloration is green primer that has turned brown or black and/or enamel turned yellow, brown, or black.

a) The outer diameter of the axle sleeve

b) The inner diameter of the axle

WARNING: THE POWER CABLE OF THE BORESCOPE MUST BE IN A GOOD CONDITION. IF THERE ARE CIRCUMFERENTIAL CUTS, FRAYED AREAS, OR RUPTURES TO THE EXTERNAL RUBBER COVER OF THE CABLE, INJURY TO PERSONS CAN OCCUR.

c) Examine the green primer on the inner surfaces (bore) of the axle with a borescope.

3) If no damage, discoloration/blistering is found, you can leave the axle in service as it is.

NOTE: No further inspections to the axle are necessary.

4) Apply grease/CIC to the axle inner diameter.
5) The wheel interface for the tire pressure indicating system (TPIS), if it is installed (AMM 32-45-12/401).
6) Install the wheel and tire assembly (AMM 32-45-02/401).
7) If damage to the axle is found, remove and replace the axle.
8) If the paint/primer shows only a small discoloration on the OD and ID of the axle do the heat damage inspection when the airplane goes back to the primary base.

NOTE: Do not land the the airplane more than three times

before you do the complete inspection.

9) Locally strip off the discolored or blistered paint and examine the cadmium (or cadmium/titanium) plating.

NOTE: Such damage can cause cadmium embrittlement of the steel substrate. The damage is not always found by non-destructive tests such as ammonium persulphate etch.

10) Examine the cadmium (or cadmium/titanium) plating.

NOTE: Such damage can cause cadmium embrittlement of the steel substrate. The damage is not always found by non-destructive tests such as ammonium persulphate etch.

a) Look for a white oxide material, and blistered or melted (balled up) cadmium plating.

11) If the plating shows signs of heat damage, replace the axle.

NOTE: Cadmium embrittlement of the axle cannot be eliminated through overhaul methods. Boeing suggest the axle be discarded.

12) If the cadmium plating no signs of heat damage, do the Ammonium Persulfate Etch Inspection.

TASK 05-51-17-212-036

3. Ammonium Persulfate Etch Inspection of the Axle

A. General

(1) Do this inspection to find if the high strength steel that showed sign of heat damage has changed.

(a) It will look for a change in the temper or heat treat properties.

WARNING: DO NOT BREATHE THE FUMES OF THE SOLVENTS OR ETCH SOLUTIONS. DO NOT GET THEM IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. INJURY TO PERSONS CAN OCCUR.

(2) This inspection can occur on the components of the landing gear axles.

(a) Discolored or blistered paint or plating shows that heat has affected the paint or has changed the temper of the axle.

1) When this occurs, the ammonium persulphate procedure must be applied to the damaged part of the axle.

NOTE: This procedure can be done on the outer surface of an axle while the axle is still on the airplane.

NOTE: This procedure to the inner surface (bore) of an must only be done in the maintenance shop.

B. References

(1) AMM 32-41-15/401, Landing Gear Brake Unit - Removal/Installation
(2) AMM 32-42-04/401, Wheel Speed Transducer - Removal/Installation
(3) AMM 32-45-01/401, Main Landing Gear Tire/Wheel Assembly - Removal/Installation
(4) AMM 32-45-02/401, Nose Landing Gear Tire/Wheel Assembly - Removal/Installation
(5) AMM 32-45-11/401, Main Gear Tire Pressure Indication System - Removal/Installation
(6) AMM 32-05-12/401, Nose gear Tire Pressure Indicating System - Removal/Installation
(7) SOPM 20-10-02, Standard Overhaul Practices Manual - Examination for Heat Damage

C. Ammonium Persulphate Etch Inspection

S 122-055

WARNING: DO NOT LET THE ETCHANT SOLUTION TOUCH THE CADMIUM PLATED SURFACES. POISONOUS FUMES CAN OCCUR AND CAUSE INJURY TO PERSONS.

(1) Do the Ammonium Persulfate Etch Inspection (SOPM 20-10-02).
(a) When you are not sure of the heat treat condition in the etched area, replace the axle.

NOTE: A metallurgist can help when you are not sure about the results of the etch.

1) If the axle shows signs of retempering burns or reharding burns, replace the damaged axle.

NOTE: If you will repair the axle, refer to the OHM 32-00-05.

(b) When the axle is servicable, do the steps that follow:
1) Remove the etched material with alluminum-oxide or silicon-carbide abrasive cloth, 180 grit or finer.
2) Locally shot peen the area where the plating was removed (SOPM 20-10-03).
3) Stylus cadmium plate the area where the plating was removed (SOPM 20-42-10).
4) Re-finish the axle with the correct primer and paint.

D. Airplanes original condition/configuration component installation instructions.

S 422-053
(1) Install the components that follow if they are servicable or install replacement parts:
(a) Install the main gear components that follow if it is applicable:
1) Install the brake sleeve and axle sleeve.

NOTE: To make sure the installation of the brake sleeve is correct, use the temperature differential procedure in OHM 20-50-03.

2) Install the brake assembly (AMM 32-41-15/401).
3) Install the wheel speed transducer (AMM 32-42-04/401).
4) Install the wheel interface unit for the tire pressure indicating system (TPIS), if it is installed (AMM 32-45-11/401).
5) Install the brake cooling fan motor if it was installed.
6) Install the MLG wheel and tire assembly (AMM 32-45-01/401).

(b) Install the nose gear components that follow if it is applicable:
1) Install the interface unit for the nose gear tire pressure indicating system (AMM 32-45-02/401).
2) Install the NLG wheel and tire assembly (AMM 32-45-02/401).

PRESSURE/DEICING DUCT FAILURE CONDITION - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is pressure/deicing duct failure conditional inspection.

TASK 05-51-18-202-001

2. Pressure/Deicing Duct Failure Conditional Inspection
   A. Procedure

S 212-002

(1) Examine the internal structure of the nacelle strut and wing leading edge for heat damage (i.e. Discoloration).

NOTE: Examine the midspar chords, webs, and stiffeners carefully.

S 252-003

(2) If damage is found in step (1), do the eddy current inspection of the damaged area.

NOTE: Midspar chord - 2024T3511 aluminum alloy. (Equivalent to T-3 for eddy current inspection.) Midspar web - 2024-T3 aluminum. (Webs have two .020 sheets bonded.) Midspar cross stiffeners - 7075-T6 aluminum alloy.

S 212-004

(3) Examine these items for heat damage:
   (a) Electrical Wires
   (b) Electrical Wire Supports
   (c) Hydraulic Lines
   (d) Hydraulic Line Supports
   (e) Control Cables
   (f) Pulleys

(g) Fairleads

LEADING EDGE DEVICES RETRACTION SYSTEM (REVERSER ACTUATED) INOPERATIVE - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. Any time reverse thrust is used with the leading edge devices deployed, an inspection of the leading edge area must be conducted.
   B. Inspection will be a visual inspection of the leading edge devices and fixed structure normally protected by the retracted leading edge devices.
   C. Refer to specific structure of system chapter as required for isolation of cause of any malfunction or repair of damage found.

TASK 05-51-19-212-001

2. Leading Edge Flaps Extended during T/R Operation - Conditional Inspection
   A. Procedure

S 212-002

(1) Examine leading edge flaps for evidence of distortion, heat damage or thrown particle damage.

S 212-003

(2) Examine actuating mechanism for evidence of damage, contamination or degradation of lubricants by foreign material.

S 212-004

(3) Examine all fiberglass panels and fixed leading edge support structure for evidence of delamination, distortion or damage.

S 712-006

(4) Observe retraction of leading edge devices for evidence of faulty operation.

LANDING WITH FUEL IN THE TAIL TANK -MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General

A. Two tasks are supplied with this procedure.
(1) The first task is to do an examination of the the horizontal stabilizer and fuel tank.
(2) The second task is to do an examination of the lower aft fuselage structure.
B. These examinations are to be done when the airplane completes a normal landing at or below the limitations for landing with more than 1000 gallons (6,700 pounds) of fuel in the horizontal stabilizer fuel tank.

TASK 05-51-20-202-001

2. Examination of the Horizontal Stabilizer and Fuel Tank

A. References
(1) AMM 28-11-19/401, Horizontal-Stabilizer Tank Access-Door
(2) AMM 05-51-39/201, Overweight Landing Condition
B. Access
(1) Location Zones
330 Horizontal Stabilizer (left)
340 Horizontal Stabilizer (right)

(2) Access Panels
338AZ Horizontal Stabilizer Tank Access Door

C. Procedure

S 212-007
(1) Do a visual examination of the lower surfaces of the horizontal stabilizer.

S 212-002
(2) Do a visual inspection of the center section of the horizontal stabilizer and examine for these items:
(a) Fuel leak.
(b) Damaged skin (buckling)
(c) Cracks
(d) Pulled fasteners
(e) Missing fasteners

S 212-003
(3) If you see a fuel leak or damage to the fuselage, continue with this procedure and do the examination of the horizontal stabilizer fuel tank.

S 212-004
(4) If you do not see a fuel leak or damage to the fuselage, the inspection is completed.

S 212-008
(5) Do an examination of the horizontal stabilizer fuel tank as follows:
(a) Open the horizontal-stabilizer fuel-tank access-door. (AMM 28-11-19/401).
(b) At the hinge rib at BL 43.5, do the visual inspections that follow:
1) Examine all stringer splices for damage.
2) Examine all rib chords for damage.
(c) Inside the fuel tank, on the lower surface, examine the items at follow:
1) Rib chord-to-stringer attachments
2) Fasteners
3) Rib chords
4) Stringer flanges.
(d) When the inspection is completed and all necessary work is done, close the horizontal-stabilizer fuel-tank access-door. (AMM 28-11-19/401).

TASK 05-51-20-202-016

3. Examination of the Lower Aft-Fuselage Structure

A. References
(1) AMM 05-51-39/201, Overweight Landing Condition

B. Access
(1) Location Zones
310 Aft Fuselage (STA 2360 - 2792)

(2) Access Panels
315A Access Door, area aft of stabilizer box compartment

C. Procedure

S 212-009
(1) Do a visual examination of the aft lower-fuselage structure, aft of body station 1480 and examine for these items:
(a) Damaged skin (buckling)

(b) Cracks
(c) Pulled fasteners
(d) Missing fasteners

S 212-014
(2) If you see damage to the fuselage, continue with this procedure and do the examination of the bulkhead at body station 2598.

S 212-015
(3) If you do not see damage to the fuselage, the inspection is completed.

S 012-010
(4) Open door 315A for access.

S 212-011
(5) Do an examination of the bulkhead at body station 2598, as follows:
(a) Do a visual check of the bulkhead web.
(b) Do a visual check of the web to chord fasteners.
(c) Do a visual check of the diagonal struts and attachment fasteners.

S 212-012
(6) Do a visual examination of the bulkhead and examine for these items:
(a) Damaged skin (buckling)
(b) Cracks
(c) Pulled or loose fasteners
(d) Missing fasteners.

S 412-013
(7) When the inspection is completed and all necessary work is done, close the access door 315A.

HOLDING OR DESCENT IN MODERATE TO SEVERE ICING CONDITIONS - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. When the airplane has a moderate to severe icing condition during a holding or descent the acoustical liner must be examined. Examine the acoustical liner immediately fwd/aft of the engine fan blades. Look for ice impact damage. Signs of ice impact damage is shown in the form of 360-degree annular dents.

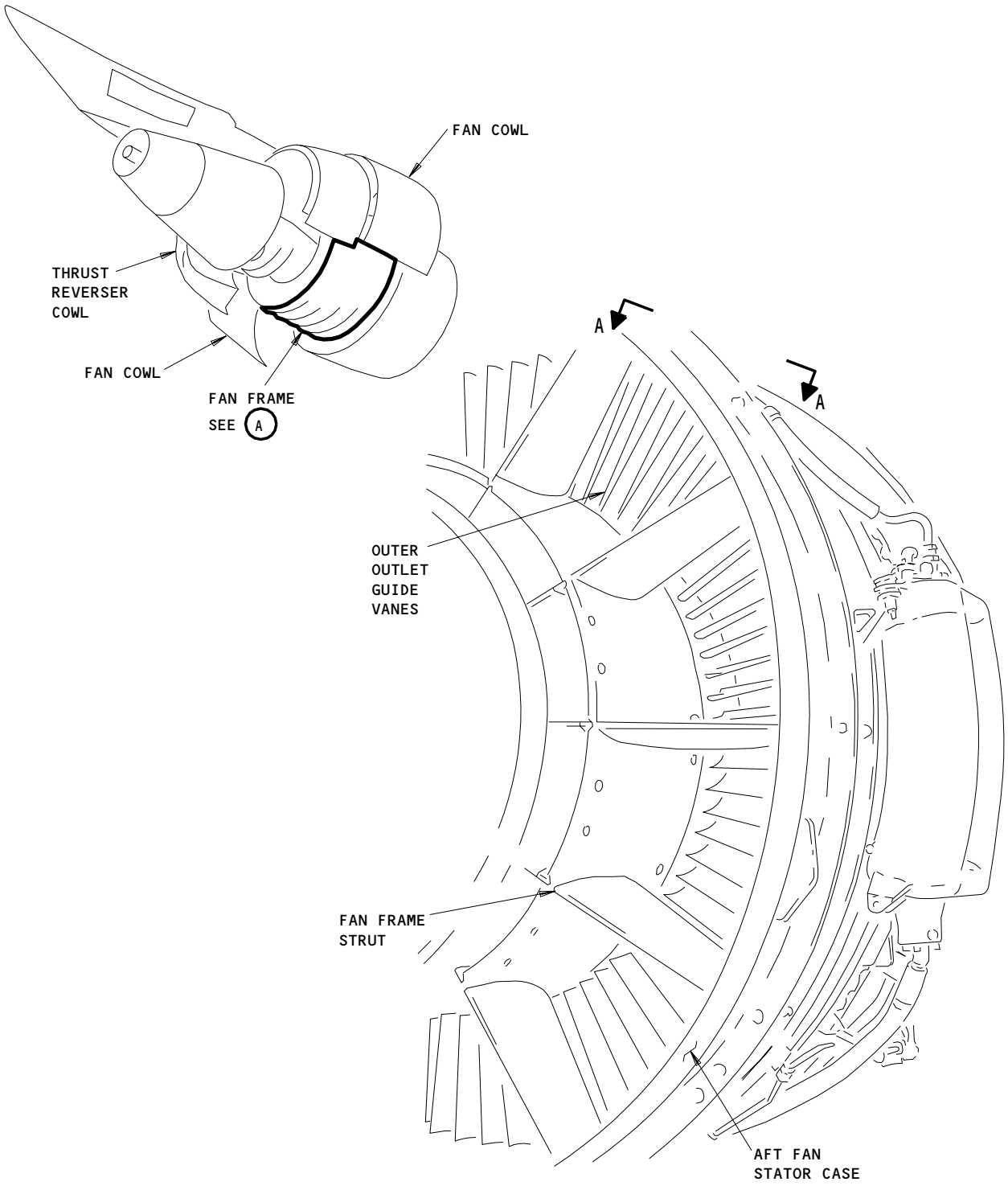
TASK 05-51-21-212-001

2. Fan Case Acoustical Panel Conditional Inspection
   A. References
      (1) 72-00-00/601, Engine
      (2) 72-33-01/401, Aocoustical Liner Segments
   B. Procedure

      S 212-002
      (1) Visually examine the fwd/aft acoustical panels of the engines forward fan case for dents.

      S 022-004
      (2) If damage to the acoustical liner is found, remove/replace the unserviceable panels (AMM 72-33-01/401).

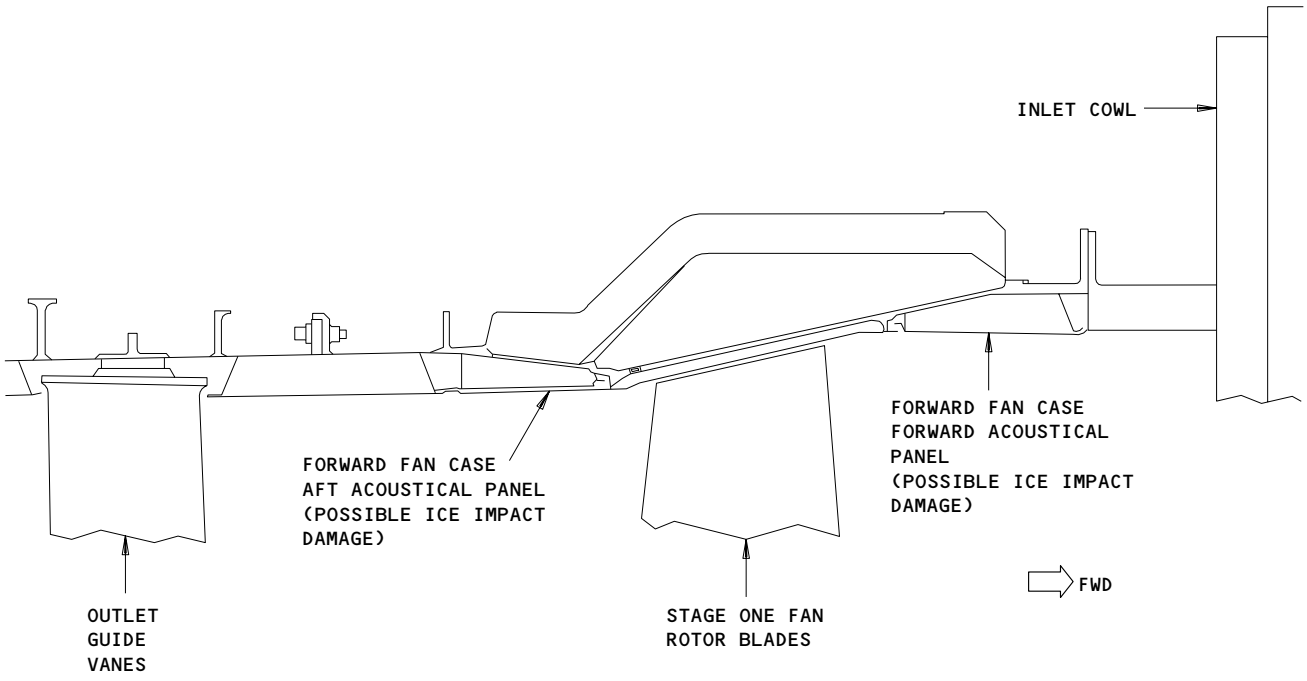
      S 282-005
      (3) Follow the Acoustical Liners Over-Serviceable-Limit Extension procedures for the engine forward fan case (AMM 72-00-00/601).



FAN FRAME

A

Fan Case Acoustical Panels Inspection
Figure 201 (Sheet 1)



Fan Case Acoustical Panels Inspection
Figure 201 (Sheet 2)

CONDITIONED AIR PACK OUTLET DUCT SYSTEM FAILURE - MAINTENANCE PRACTICES

1. General
   A. This procedure contains the task to examine the conditioned air check valve after an upstream duct failure.
      (1) The conditioned air check valve can be damaged when there is an upstream duct failure of the pack outlet.
      (2) When there is a duct failure, the applicable conditioned air check valve must be removed and inspected.
      (3) There is a conditioned air check valve for each of the three air conditioning packs.
         (a) There is one conditioned air check valve found downstream of each air cooling pack, near the forward bulkhead of the ECS bay.

TASK 05-51-23-212-008

2. Conditioned Air Check Valve Conditional Inspection
   A. References
      (1) AMM 21-21-01/401, Conditioned Air Check Valve
   B. Access
      (1) Location Zone
         135 Wing Landing Gear Well, LH
         136 Wing Landing Gear Well, RH
         241 Passenger Cabin Second to Third Door, LH
         242 Passenger Cabin Second to Third Door, RH

   C. Procedure

      S 022-002
      (1) Remove the conditioned air check valve for inspection (AMM 21-21-01/401).

      S 212-003
      (2) Do a visual inspection of the conditioned air check valve.

         NOTE: If there is damage to the valve, the valve must be replaced.

         (a) Look for:
            - missing parts
            - cracks
            - corrosion
            - flapper deformation
            - restricted flapper movement.

S 422-004
(3) Install the conditioned air check valve (AMM 21-21-01/401).

S 842-005
(4) Put the airplane back to its usual condition.

CABIN DEPRESSURIZATION CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is cabin depressurization conditional inspection.

      NOTE: This examination applies only when cabin depressurization occurs because of the outflow valve.

   B. The cabin depressurization conditional inspection examines these items:
      (1) Inflight Depressurization Blowout Panels
      (2) Sidewall Dado Panels
      (3) Containerized Cargo Compartment Sidewall Panels
      (4) Containerized Cargo Compartment Insulation
      (5) Containerized Cargo Compartment Lining
      (6) Outflow Valve

   TASK 05-51-24-202-001

2. Cabin Depressurization Conditional Inspection
   A. References
      (1) 21-31-01/601, Pressurization Outflow Valve
      (2) 25-21-01/401, Sidewall and Ceiling Isulation
      (3) 25-52-00/001, Containerized Cargo Compartments
      (4) 53-20-01/01, Blowout Panel
   B. Procedure

      S 212-002
      (1) Examine the inflight depressurization blowout panels for movement (Ref 53-20-01/401).

      S 212-003
      (2) Do a check to see if the sidewall dado panels are open (Ref 25-21-01/401).

      S 212-004
      (3) Examine the containerized cargo compartment for these conditions (Ref 25-52-00/001):
      (a) Moved Sidewall Panels

(b) Moved Insulation
(c) Moved Lining

S 212-005
(4) Examine the outflow valve (AMM 21-31-01/601).

S 212-006
(5) Examine the area around the outflow valve for damage.

BLOWN/FLAT SPOTTED TIRES CONDITION - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. Two tasks are supplied in this procedure. The first task is single flat spotted or blown tire checks. The second task is multiple flat spotted or blown tire check.

      NOTE: These conditional inspections are for cases where blown/flat spotted tires occur because of a locked wheel slide condition (not a tire structural failure). Also, the cause of the locked wheel slide is not clear.

   B. The blown/flat spotted tires conditional inspection examines these components:
      (1) Brakes
      (2) Wheels
      (3) Wheel Bearings
      (4) Hydraulic Lines
      (5) Anti-skid Control Unit and Valve
      (6) Return Filter
      (7) Wiring to the Anti-skid Control Unit
   C. Phase I checks are for cases where a single tire is flat spotted or blown. Phase II checks are for cases with multiple flat spotted or blown tires.
   D. The checks should be made in the order listed.

TASK 05-51-25-202-001

2. Single Flat Spotted or Blown Tire Checks
   A. References
      (1) 32-41-15/601, Landing Gear Brake Unit
      (2) 32-42-00/501, Brake Control System
      (3) 32-42-01/401, Brake System Control Unit
      (4) 32-42-02/401, Antiskid Modular Assembly
      (5) 32-45-03/601, Wheels
   B. Procedure

      S 282-002
      (1) Examine the brake for correct operation and condition (Ref 32-41-15/601).

      S 282-003
      (2) Do a check for a cracked wheel and/or loose wheel bearings (Ref 32-45-03/601).

      S 212-004
      (3) Do the anti-skid system test to make sure the brake system control unit operates correctly (Ref 32-42-00/501).

      S 712-005
      (4) Do the anti-skid system brake release test on the damaged wheel to make sure the brake releases correctly (Ref 32-42-00/501).

S 212-006
(5) Examine the hydraulic lines and electrical wiring. Make sure the hydraulic lines and electrical wirirng are installed correctly.

S 712-020
(6) Do the transducer spin test to make sure that the correct brake releases when the transducer movement has stopped (Ref 32-42-00/501).

S 022-007
(7) Remove the brake system control unit (Ref 32-42-01/401).

S 752-007
(8) Do a bench test of the brake system control unit.

S 022-008
(9) Remove the related anti-skid control valve (Ref 32-42-02/401).

S 752-009
(10) Do a bench test of the anti-skid control valve.

TASK 05-51-25-202-009

3. Multiple Flat Spotted or Blown Tire Check

A. References
(1) 05-51-201, Hard Landing or High Drag/Side Load Landing Condition
(2) 29-11-29/201, Return Module
(3) 32-41-15/601, Landing Gear Brake Unit
(4) 32-42-00/501, Brake Control System
(5) 32-42-01/401, Brake System Control Unit
(6) 32-42-02/401, Antiskid Modular Assembly
(7) 32-44-04/401, Parking Brake Module

B. Procedure

S 212-018
(1) Do the Phase I and Phase II examinations of the Hard Landing or High Drag/Side Load Landing Condition procedure (Ref 05-51-05/201).

S 212-010
(2) Examine the brakes for correct operation and condition (Ref 32-41-15/601).

S 212-011
(3) Do the anti-skid system test to make sure the brake system control unit operates correctly (Ref 32-42-00/501).

S 712-012
(4) Do the anti-skid system brake release test on the damaged wheels to make sure the brake releasees correctly (Ref 32-42-00/501).

S 212-013
(5) Examine the hydraulic return filter. Make sure that the hydraulic return filter is not partially or fully blocked (Ref 29-11-29/201).

S 212-014
(6) Examine the hydraulic lines and electrical wiring. Make sure the hydraulic lines and electrical wirirng are installed correctly.

S 712-015
(7) Do the transducer spin test to make sure that the correct brake releases when the transducer movement has stopped (Ref 32-42-00/501).

S 712-019
(8) Do a check of the parking brake valve for correct operation. Make sure that the valve is completely open when the parking brake is released (Ref 32-44-04/401).

S 022-016
(9) Remove the related anti-skid control valve (Ref 32-42-02/401).

S 752-017
(10) Do a bench test of the anti-skid control valve.

S 022-017
(11) Remove the brake system control unit (Ref 32-42-01/401).

S 752-018
(12) Do a bench test of the brake system control unit.

HOT OR COLD BRAKES CONDITION - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is hot or cold brakes conditional inspection.
   B. This task examines a single hot brake, a single cold brake, and all brakes on the left or right side of the airplane hot or cold.

TASK 05-51-26-202-001

2. Hot or Cold Brake Conditional Inspection
   A. References
      (1) 32-41-00/201, Hydraulic Brake System
      (2) 32-41-00/501, Hydraulic Brake System
      (3) 32-41-15/601, Landing Gear Brake Unit
      (4) 32-42-00/501, Brake Control System
      (5) 32-42-01/401, Brake System Control Unit
      (6) 32-42-02/401, Antiskid Modular Assembly
      (7) 32-42-12/201, Autobrake Shuttle Valve Assembly
   B. Single Hot Brake

      S 282-002
      (1) Examine the brake for correct operation and condition (Ref 32-41-15/601).

      S 712-003
      (2) Remove and the related anti-skid control valve (Ref 32-42-02/401).

      S 722-012
      (3) Do a bench test of the anti-skid control valve.
         (a) Make sure the brake is calibrated correctly.
   C. Single Cold Brake

      S 212-004
      (1) Do a check for a closed hydraulic fuse (Ref 32-41-00/201).

      S 712-005
      (2) Remove the related anti-skid control valve (Ref 32-42-02/401).

S 722-013
(3) Do a bench test of the anti-skid control valve.

S 212-006
(4) Do a check of the antiskid transducer for correct operation (Ref transducer spin test, 32-42-00/501).

S 712-007
(5) Remove the brake control unit (Ref 32-42-01/401).

S 722-014
(6) Do a bench test of the brake control unit.

S 282-008
(7) Examine the brake for correct operation and condition (Ref 32-41-15/601).

D. All Brakes on the Left or Right Side of the Airplane Hot or Cold

S 212-009
(1) Do a check of the retraction braking actuators for correct operation (Ref 32-41-00/501).

S 712-010
(2) Do a check of the brake metering valves for correct operation (Ref 32-41-00/501).

S 712-015
(3) Make sure the brake metering valves are adjusted correctly (Ref 32-41-00/501).

S 712-011
(4) Do a check of the auto-brake shuttle valves for correct operation (Ref 32-42-12/201).

CABIN OVERPRESSURIZATION CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is spare air data unit conditional inspection.
   B. This task examines system and components which can be damaged due to overpressurization.

TASK 05-51-27-202-001

2. Standby indicator Conditional Inspection
   A. References
      (1) 34-13-01/401, Standby Altitude Indicator
      (2) 34-13-02/401, Standby Airspeed Indicator
   B. If cabin overpressurization occurs (18 psia for air data units), Do these steps:

      S 722-002
      (1) Do a check of all the standby indicators in the airplane (Ref 34-13-01/401 and 34-13-02/401).

      S 722-003
      (2) Do a check of all the air data units with disconnected pitot static lines (Ref 34-13-01/401 and 34-13-02/401).

NACELLE/STRUT PRESSURE RELIEF DOORS OPEN CONDITION -
MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. Two tasks are supplied in this procedure. The first task is to examine the nacelle/strut structure. The second task is to examine the pneumatic ducting.
   B. The pressure relief doors are designed to open in order to protect the nacelle/strut structure from overpressurization. The nacelle/strut overpressurization might ouccur due to a ruptured pneumatic duct(s).
   C. Also, the pressure relief doors might open if a condition occurs which may cause temporary or permanent distortion. Example conditions are as follows but not limited too:
      (1) Hard Landing
      (2) Severe Turbulance
      (3) Engine Vibration

TASK 05-51-28-202-001

2. Examine the Nacelle/Strut Structure
   A. Procedure

      S 212-002

      (1) Examine the nacelle/strut inner and outer surfaces for distortion, cracks, pulled rivets, and rivets which are not there.

         NOTE: Carefully examine the surfaces for discoloration and/or flaking paint. This could be a sign of a ruptured pneumatic duct.

TASK 05-51-28-202-003

3. Examine the Pneumatic Ducting
   A. Procedure

      S 212-004

      (1) Examine the hard ducts and flexible sense lines for cracks and tears.

S 282-005

(2) Inspect the clamps, nuts, and fastners for tightness.

EXCEEDING MAXIMUM NOSE LANDING GEAR TOWING ANGLE OR MAXIMUM TOWING LOAD - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. The following procedure is required for an accidental turn of the nose landing gear greater than the maximum steering angle with torsion links attached, applying without deactivating the steering system, or towing more than the maximum towing loads.

      NOTE: Exceeding maximum steering angle with torsion links attached is also known as an oversteer.

   B. If the towing angle is more than the 70° limit with the airplane above the maximum gross weight, the Phase II inspection should be done.
   C. This inspection procedure is divided into two phases (Phase I and Phase II).
      (1) If the inspection during Phase I does not shown that damage has occurred, no more inspections are necessary.
      (2) If the Phase I inspection shows that damage has occurred, the Phase II inspection must be done.
      (3) The Phase I inspection must be completed prior to the Phase II inspection.
   D. When the conditional inspection tells you to "examine" a component, look for these conditions (replace or repair components, if it is necessary).
      (1) Cracks
      (2) Pulled apart structure
      (3) Loose paint (paint flakes)
      (4) Twisted parts (distortion)
      (5) Bent components
      (6) Fasteners holes that become larger or longer
      (7) Loose fasteners
      (8) Fasteners that have pulled out or are gone
      (9) Delaminations
      (10) Misalignment
      (11) Interference
      (12) Hydraulic fluid leakage
      (13) Other signs of damage

   TASK 05-51-29-202-001
2. Phase I Inspection
   A. References
      (1) AMM 09-11-00/201, Tow the Airplane
      (2) AMM 32-00-40/001, Landing Gear Control Cables -
      (3) AMM 32-45-03/601, Wheels Fast Check (Wheel Installed on the Airplane)
      (4) AMM 32-45-03/601, Wheels Inspection (Wheel Removed from the Airplane)
      (5) AMM 32-45-04/601, Tires Inspection

B. Access
(1) Location Zone
700 Landing Gear and Landing Gear Doors

C. Nose Landing Gear Area, Exceeding Maximum Steering Angle, (AMM 09-11-00/201).

S 202-002
(1) Examine the nose landing gear areas that follow:
(a) The tires, do this task: Tires Inspection (AMM 32-45-04/601).
(b) The wheels, do this task: Wheels Fast Check (Wheel Installed on the Airplane) (AMM 32-45-03/601).
1) If the examination finds any wheels damaged, do this task: Wheels Inspection (Wheel Removed from the Airplane) (AMM 32-45-03/601).
(c) Make sure all of the fasteners are installed in the correct positions on the nose landing gear and the nose wheel well.
(d) Examine the steering cable control system for signs of cable overload, do this task: Landing Gear Control Cables - Location and Part Data (AMM 32-00-40/001).
1) Verify the cable pulley brackets are not deformed.
2) Verify the proper cable rigging.
(e) Examine the nose gear steering actuator rods for signs of necking, hydraulic leakage, or contact with the steering collar.
1) Verify the actuator rods are not bent or deformed.
(f) Examine the actuator rod end attachments to the steering collar for signs of deformation and excessive freeplay.
(g) Examine the actuator trunnion attachments to the steering plates for signs of deformation and excessive freeplay.
(h) Examine the upper and lower ends of the shock strut of the nose gear for fluid leakage.
(i) Examine the outer cylinder of the nose landing gear.
(j) Examine the nose landing gear trunnions for signs of damage.
(k) Examine the nose landing gear inner cylinder at tow fitting attach points.
(l) Examine the nose gear torque links for signs of deformation and excessive freeplay.
(m) Examine the nose landing gear inner cylinder torque link attach lugs.
(n) Examine the nose landing gear trunnion attachment areas for signs of damage.
(o) Examine the doors, hinges and retraction mechanism of the nose landing gear for signs of damage.

(p) Examine the tow fitting and inner cylinder attachment for signs of damage.
(q) Operationally check the steering system by commanding slow tiller inputs in both directions.
1) Verify no system binding occurs and there is no leakage from steering actuator rod seals.
2) Examine the nose landing gear steering angle, AMM 32-51-00/501.

TASK 05-51-29-202-003

3. Phase II Inspection

A. References
(1) AMM 12-15-05/301, Nose Landing Gear Shock Strut Servicing
(2) AMM 32-21-03/601, Nose Landing Gear Torsion Link Connection
(3) AMM 32-34-00/501, Nose Landing Gear Extension and Retraction System - Functional Test (Airplane on the Jacks)
(4) AMM 32-51-00/501, Nose Landing Gear Steering System - Functional Test
(5) AMM 32-51-05/401, Nose Landing Gear Steering Actuator Removal

B. Access
(1) Location Zone
700 Landing Gear and Landing Gear Doors

C. Nose Landing Gear Operational Check

S 712-004
(1) Retract and then extend the nose landing gear with the normal system to make sure it operates correctly.
(a) Do this task: Nose Landing Gear Extension and Retraction System - Functional Test (Airplane on the Jacks) (AMM 32-34-00/501).

D. Nose Landing Gear Inspections

S 202-005
(1) Examine the nose landing gear areas that follow:
(a) Nose Landing Gear Torsional Freeplay Inspection, do this task: Nose Landing Gear Torsion Link Connection (AMM 32-21-09/201).
(b) Examine the shock strut of the nose landing gear to make sure the pressure is satisfactory.
1) Do this task: Nose Landing Gear Shock Strut Servicing (AMM 12-15-05/301).
(c) If there is damage to the nose landing gear, do these steps:
1) Remove the inner cylinder and examine it for distortion and cracks.
2) Make sure there are no loose fasteners in the web of the nose wheel wall near the trunnion support fittings.

(d) Do a check of the rigging of the steering mechanism.
1) Do this task: Nose Landing Gear Steering System - Functional Test (AMM 32-51-00/501).
(e) Do a check of the steering system:
1) Do this task: Nose Landing Gear Steering System - Functional Test (AMM 32-51-00/501).
2) Remove and examine the actuators, do this task: Nose Landing Gear Steering Actuator Removal (AMM 32-51-05/401).
3) Examine the attach pins.
4) Examine the steering plate.

S 212-006
(2) Examine the areas of the body landing gear that follow:
(a) the body landing gear tires (AMM 32-45-04/601)
(b) the body landing gear wheels (AMM 32-45-03/601)
(c) the body landing gear truck beams
(d) the body landing gear truck torque links
(e) the body landing gear drag strut linkage
(f) the body landing gear side strut
(g) the body landing gear trunnion link for cracks and bolt distortion
(h) the body landing gear shock strut upper end for signs of cracks or bolt distortion
(i) the body landing gear outer cylinder lugs.
(j) Remove and disassemble the inner cylinder of the body gear for and inspection if you find (AMM 32-13-02/401):
1) damage in the 9 steps listed above, or

S 212-007
(3) Examine the areas of the wing landing gear that follow:
(a) the wing landing gear tires (AMM 32-45-04/601)
(b) the wing landing gear wheels (AMM 32-45-03/601)
(c) the wing landing gear truck beams
(d) the wing landing gear truck torque links
(e) the wing landing gear drag strut linkage
(f) the wing landing gear side strut
(g) the wing landing gear trunnion link for cracks and bolt distortion
(h) the wing landing gear shock strut upper endfor signs of cracks or bolt distortion

(i) the wing landing gear outer cylinder lugs
(j) the wing landing gear beam for cracks and bolt distortion.
(k) remove and disassemble th inner cylinders of the wing gear for and inspection if you find (AMM 32-11-02/401):
    1) damage in the 9 steps above, or
    2) the fluid level in the shock struts is low.
(l) Repair the wing landing gear if it is necessary (AMM 32-11-02/801).

HOT AIR DUCT RUPTURE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is hot air duct rupture conditional inspection.
   B. This task examines the airplane structure for possible heat damage caused by a ruptured duct.

TASK 05-51-30-202-001

2. Hot Air Duct Rupture Conditional Inspection
   A. References
      (1) 51-00-00, Part 6, Nondestructive Test Manual
   B. Procedure

      S 282-002
      (1) Examine any airplane structure which has gone through a high heat condition caused by a ruptured pneumatic duct. Make sure the structure has not been damaged (Ref 51-00-00, Part 6, Nondestructive Test Manual).

STRUT OVERHEAT CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this subject. The task is strut overheat conditional inspection.
   B. Structure in the area of the strut overheat sensor should be examined for overheat damage whenever a strut overheat condition is reported by EICAS.

   TASK 05-51-32-202-001

2. Strut Overheat Conditional Inspection
   A. References
      (1) NDT Part 6, 51-00-00.
   B. Procedure

      S 212-002
      (1) Examine the structure in the overheat area for primer discoloration or other signs of heat damage.

      S 252-003
      (2) If primer discoloration or other signs of heat damage are seen, do the eddy current test per NDT Manual to determine the extent of the structural damage (NDT Part 6, 51-00-00).

      NOTE: In areas where conductivity exceeds the limits shown in the NDT manual, do a hardness test to determine the extent of the structural damage.

TIRE TREAD LOSS OR TIRE BURST CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is tire tread loss conditional inspection.
   B. When a landing gear tire loses a tread or a tire bursts, a careful examination of some areas is required. These examinations look for damage and/or blockage caused by pieces of the tire.
   C. Damaged caused by the tire pieces can be seen as rubber and/or bitumen marks on the surface of the structure.

TASK 05-51-34-202-001

2. Tire Tread Loss Conditional Inspection
   A. References
      (1) 32-45-04/601, Tires
   B. Procedure

S 212-002

(1) Examine these areas for damage, delamination or local seperation, and soft spots due to core crush:

NOTE: To find delamination or local seperation areas tap the surface with a coin. To find areas of core crush, push on the surface.

(a) Wing Upper Inboard Fixed Trailing Edge Panel
(b) Trailing Edge Flaps
(c) Flap Canoe Fairings
(d) Automatic Direction Finder Sense Antenna
(e) Lower Fuselage Wing-to-Body Fairing Panels

S 212-004

(2) Examine the trailing edge flap jackscrews, actuating linkages and rods for damage and blockage due to pieces of the tire.

S 212-006

(3) Examine the landing gear wheel well areas for damage and obstruction from pieces of the tire.

NOTE: Carefully examine the hydraulic plunbing, flap torque tubes, and control cables and mechanisims for damage or distortion.

S 212-007

(4) Examine the landing gear assemblies, related components and hydraulic lines for damage and/or hydraulic fluid leakage.

S 212-008

(5) Examine the wheel well doors and wheel well door actuating rods for damage and/or blockage from pieces of the tire.

S 212-009

(6) Examine the other tires for possible damage (Ref 32-45-04/601).

NOTE: Carefully inspect the other tires for slash and/or wire penatration damage of the tread or the sidewall.

VOLCANIC ASH CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. Flight crew reports of electrostatic discharge across the windshields are indications of a volcanic ash condition. Other indications are a bright light produced by a heated material in the engine inlets, and a subsequent engine shutdown. Also, a possible decreased view through the windshields and windows can occur.
   B. Volcanic ash is a very abrasive material that is usually found to be noncorrosive. But, because volcanic ash is very abrasive, finished surfaces open to volcanic ash can become corroded.
   C. The texture is almost the same as talcum powder. The dimensions of most ash particles are less than 5 microns with trace quanities that are more than 50 microns. Volcanic ash is very abrasive. Be careful when you wash the airplane because you can cause damage to the airplane if you rub the surface too hard.
   D. Volcanic ash will stay on bare lubricated surfaces. It can go into many conventional seals, go into the engine gas path or go into the air condition system. It is possible for the ash to go into other openings on the airplane. Bare lubricated surfaces that are known to be contaminated with volcanic ash must be cleaned and relubricated . Do this as soon as it is possible to prevent unusual worn areas to the parts that move. Some of these parts are the inner cylinders of the landing gear shock strut, and hydraulic actuator rods. Also there are stabilizer trim and flap screw mechanisms. You must monitor parts that turn or slide for signs of volcanic ash related damage. This procedure must be done as a program that follows if initial damage was not found.
   E. Volcanic ash incidents that have occured to engines have shown that the ash will change conditions. As the ash goes through the combustor, it will change to between a plastic flow and molten condition. In this condition, it will have very high adhesive qualities and properties. The ash will bond to the nozzle guide vanes of the high pressure turbine. It will also bond to the rotor blades of the high pressure turbine. When the ash bonds to these components, it will cause a decrease in the turbine flow area. It also will cause a decrease of nozzle guide vane and turbine blade cooling air.

F. Do this conditional inspection if one or more of the conditions that follow occur:
(1) An airplane's flight path went through a cloud of volcanic ash.
(2) Volcanic ash covers the airplane during ground operations (towing, taxiing, parking, etc.) during volcanic ash fallout conditions.
(3) An airplane does a landing or takeoff during volcanic ash fallout conditions.

WARNING: DO NOT BREATHE VOLCANIC ASH. DO NOT GET VOLCANIC ASH IN YOUR EYES. PUT ON A RESPIRATOR MASK THAT IS SUFFICIENT TO FILTER THE VOLCANIC ASH PARTICLES. ALSO PUT ON PROTECTIVE CLOTHES AND EYE GOGGLES. VOLCANIC ASH CAN CAUSE EYE IRRITATION AND INJURY TO THE RESPIRATORY SYSTEM.

G. Volcanic ash can cause discomfort to persons during fallout conditions. Precautions must be followed when you do work in a volcanic ash environment. This will prevent the entry of volcanic ash into the eyes and the respiratory system.
H. Air movement in positive or negative pressure vented cavities can cause particles of volcanic ash to collect. This is in non-pressurized parts of the airplane.

TASK 05-51-35-202-001

2. Volcanic Ash Conditional Inspection
A. References
(1) 12-11-03/301, Fuel Sump Servicing (Drainage)
(2) 12-14-01/301, Potable Water Tanks
(3) 21-25-01/401, Overhead Recirculating Fan
(4) 21-25-05/401, Overhead Recirculating Fan Filter Element
(5) 21-31-01/601, Valve - Pressurization Outflow
(6) 21-51-01/401, Flow Control and Shutoff Valve
(7) 21-51-03/401, Heat Exchanger
(8) 21-51-04/401, Air Cycle Machine (ACM)
(9) 21-51-05/201, Water Separator
(10) 21-51-06/401, Compressor Bypass Check Valve
(11) 21-51-14/401, Cooling Air Check Valve
(12) 21-51-15/401, Ram Air System Screen
(13) 21-61-08/401, Trim Air Supply Valve
(14) 21-62-01/401, ACM Turbine Bypass Valve
(15) 21-62-03/401, Ram Air Inlet Door Actuator
(16) 21-62-05/401, Ram Air Exit Door Actuator
(17) 27-81-03/201, Flap Pneumatic Drive Unit and Installed Components
(18) 28-11-03/401, Surge Tank Access Door
(19) 29-00-00/601, Hydraulic Power
(20) 29-11-08/401, Air-Driven Pump Turbine Drive
(21) 29-17-01/201, Reservoir Pressurization Module
(22) 30-11-03/401, Wind Anti-Ice Valve
(23) 30-21-03/401, Nacelle Anti-Ice Control Valve

(24) 30-81-01/401, Ice Detector Probe
(25) 34-11-01/601, Probe - Pitot Static
(26) 34-12-02/401, Probe - Total Air Temperature
(27) 34-12-03/401, Sensor - Angle of Attack
(28) 35-11-18/401, Mask/Regulator/Stowage Box
(29) 35-21-04/401, Continuous Flow Control Unit
(30) 36-11-02/401, Intermediate Bleed Port Check Valve
(31) AMM 36-11-03/401, HP Offtake Duct Pressure Relief Valve
(32) 36-11-04/401, Pressure Regulating and Shutoff Valve
(33) 36-11-05/401, High-Stage Bleed Air Valve
(34) 36-11-07/401, Wing Isolation Valve
(35) 36-11-08/401, APU Check Valve
(36) 36-11-09/401, APU Bleed Air (Shutoff Valve)
(37) 36-11-19/401, Pressure Regulating Valve
(38) 36-12-01/401, Bleed Air Precooler (Heat Exchanger)
(39) 36-12-04/401, Precooler Cooling Air Valve
(40) 38-14-01/401, Transmitter - Water Quantity
(41) 38-15-03/401, Compressor - Air
(42) 38-15-04/201, Filter - Air
(43) 38-15-05/401, Valve - Check
(44) 49-21-00/601, APU Engine
(45) 49-27-03/401, Oil Filter Element
(46) 49-27-04/601, Chip Detector
(47) 49-31-02/401, Fuel Metering Adapter
(48) 49-52-03/401, Air Cooled Oil Cooler
(49) AMM 49-53-00, APU Surge Bleed System
(50) 71-00-00/601, Power Plant
(51) 72-00-00/601, Engine

B. Airplane Leading Edge External Surfaces

S 212-002

(1) Examine the airplane and look for abrasions in the areas that follow:
    (a) The front of the fuselage (this includes the weather radome)
    (b) The engine nacelles
    (c) The vertical stabilizer
    (d) The horizontal stabilizer
    (e) The wing
        1) Examine wing the leading edge of the wing for dents.
        2) Also, refer to the Structural Repair Manual to make sure the skin is at the correct thickness.

(f) Windshield and Windows
1) Look for abrasion damage that will keep vision to a limit.

C. Engines

S 212-006
(1) Examine the CF6-80 series engines to see if the volcanic ash ingestion caused damage (Ref 72-00-00/601).

D. Probes and Sensors

S 212-080
(1) Examine the probes and sensors as follows:
(a) Examine the Pitot Static Probes to see if volcanic ash has collected or has caused blockage (Ref 34-11-01/601).
(b) Examine the Angle-of-Attack Sensors to see if volcanic ash has collected of caused blockage (Ref 34-12-03/401).
(c) Examine the Flush Static Prob Ports to see if volcanic ash has collected or caused blockage (Ref 34-11-01/601).
(d) Examine the Total Air Temperature Probe(s) to see if volcanic ash has collected or caused blockage (Ref 34-12-02/401).
(e) Examine the PT1 and PT2 Probes to see if volcanic ash has collected or caused blockage.
(f) Examine the Ice Detector Probes (if applicable) to see if volcanic ash has collected or caused blockage (Ref 30-81-01/401).

E. Air Conditioning System Examination

S 212-008
(1) Examine the Ram Air Inlet Doors. If volcanic ash is found, clean the doors, bearings, and movable joints, when it is necessary (Ref 21-62-03/401).

S 212-009
(2) Examine the Ram Air Exit Louvers. If volcanic ash is found, clean the louvers, bearings, and movable joints when it is necessary (Ref 21-62-05/401).

S 282-010
(3) Remove the water separators and examine them for volcanic ash contamination (Ref 21-62-05/401).
(a) If volcanic ash is found, clean the water separators and the coalescer bags if it is necessary.

S 282-011
(4) Remove the pack flow control valves and examine them for signs of volcanic ash (Ref 21-51-01/401).

NOTE: If signs of volcanic ash are found in this step, do the examination for the pack flow control valve filter and orifice contamination.

S 212-012
(5) Remove the wing isolation valves and examine them for signs of volcanic ash (Ref 21-51-01/401).

NOTE: If signs of volcanic ash are not found in the two steps above, the procedure to examine the air conditioning system is complete. The remaining steps in the Air Conditioning System Examination are not necessary.

The remaining steps are optional to the airline. But, this could prevent a possible shorter component service life if signs of volcanic ash are found in this step.

S 212-013
(6) Remove the master trim air valve and examine it for signs of volcanic ash (Ref 21-61-08/401).

S 212-014
(7) Remove the air cycle machines and examine them for signs of volcanic ash (AMM 21-51-04/401).

S 212-015
(8) Remove the turbine bypass valves examine them for signs of volcanic ash (Ref 21-62-01/401).

S 212-016
(9) Remove the compressor bypass check valves and examine them for signs of volcanic ash (Ref 21-51-06/401).

S 332-017
(10) Remove the trim air modulating valves and examine them for signs of volcanic ash (Ref 21-61-08/401).

S 212-018
(11) Examine the ram air inlet door actuators and examine them for signs of volcanic ash (Ref 21-62-03/401).

S 212-019
(12) Examine the ram air exit louver actuators and examine them for signs of volcanic ash (Ref 21-62-05/401).

S 212-020
(13) Remove the ram air inlet screens (if they are installed) and examine for them for signs of volcanic ash (Ref 21-51-15/401).

S 212-021
(14) Remove the ram air inlet check valves and examine for them for signs of volcanic ash (Ref 21-51-14/401).

S 212-022
(15) Remove the air cycle pack heat exchangers and examine for them for signs of volcanic ash (Ref 21-51-03/401).

S 212-023
(16) Remove the overhead recirculating fans and screens for signs of volcanic ash (Ref 21-25-01/401).

S 212-081
(17) Remove the overhead recirculating fan filter elements and examine them for signs of volcanic ash (Ref 21-25-01/401).

S 212-024
(18) Examine the outflow valve for signs of volcanic ash (Ref 21-31-01/601).

S 212-025
(19) Remove the electrical/electronic cooling centrifugal air cleaner and examine it for signs of volcanic ash.

S 212-026
(20) Remove the electrical/electronic cooling ground exhaust skin valve and examine it for signs of volcanic ash.

S 212-027
(21) Remove the electrical/electronic cooling smoke override skin valve and examine it for signs of volcanic ash.

S 212-028
(22) Remove the electrical/electronic cooling inboard exhaust valve and examine it for signs of volcanic ash.

S 212-082
(23) Remove the electrical/electronic cooling inboard supply valve and examine it for signs of volcanic ash.

S 212-083
(24) Remove the electrical/electronic cooling bypass valve and examine it for signs of volcanic ash.

S 212-029
(25) Remove the electrical/electronic cooling supply and exhaust fans and examine them for signs of volcanic ash.

S 212-030
(26) Open the access doors to the electrical/electronic bay power panels and look for signs of volcanic ash.

F. Examine the Pneumatic System

S 212-031
(1) Remove the bleed air precoolers (heat exchanger) and examine them for signs of volcanic ash (Ref 32-12-01/401).

NOTE: If signs of volcanic ash are not found in the outlet side of the bleed air precooler, the procedure to examine the pneumatic system is complete. The remaining steps in the Examine the Pneumatic System are not necessary.

S 212-032
(2) Remove the high stage bleed air valves and examine them for signs of volcanic ash (Ref 36-11-05/401).

S 212-033
(3) Remove the pressure regulating and shutoff valves and examine them for signs of volcanic ash (Ref 36-11-04/401).

S 212-034
(4) Remove the intermediate bleed port check valves and examine them for signs of volcanic ash (Ref 36-11-02/401).

S 212-035
(5) Remove the pressure relief valves and examine them for signs of volcanic ash (Ref 36-11-03/401).

S 212-036
(6) Remove the system precooler cooling air valves and examine them for signs of volcanic ash (Ref 36-12-04/401).

S 212-037
(7) Remove the wing isolation valves and examine them for signs of volcanic ash (Ref 36-11-07/401).

S 212-038
(8) Remove the APU check valves and examine them for signs of volcanic ash (Ref 36-11-08/401).

S 212-039
(9) Remove the APU bleed air (shutoff) valves and examine them for signs of volcanic ash (Ref 36-11-09/410).

S 212-040
(10) Examine the ground air connectors for signs of volcanic ash.

S 212-041
(11) Examine the air-driven pump pneumatic screens (if installed) for signs of volcanic ash.

S 212-042
(12) Remove the pressure regulating valves and examine them for signs of volcanic ash (Ref 36-11-19/401).

S 212-043
(13) Do a pneumatic system operation check of the duct pressure transmitters (Ref 36-12-01/401).

G. Examine the External Light Lenses

S 212-044
(1) Examine the external light lenses for abrasions. If the lenses are frosted of damaged, they must be replaced when it is possible.

H. Examine the Fuel System

S 212-045
(1) Get fuel samples from each fuel tank sump and examine them for signs of volcanic ash (Ref 12-11-03/301).

S 212-046
(2) Get fuel samples from each surge tank sump (if there is fuel in the surge tanks) and examine them for signs of volcanic ash (Ref 12-11-03/301).

S 212-047
(3) Examine each surge tank internally for signs of volcanic ash (Ref 28-11-03/401).

I. Examine the Oxygen System

NOTE: Do these steps only if there are signs of volcanic ash contamination in the control cabin and passengers cabin.

S 212-049
(1) Examine the oxygen system as follows:
(a) Examine the oxygen mask/regulator storage boxes for signs of volcanic ash.
(b) Examine the flow control units for signs of volcanic ash.
(c) Examine the oxygen masks of the portable oxygen cylinders for signs of volcanic ash.
(d) Examine the passenger and crew oxygen masks for signs of volcanic ash.

J. Examine the Auxiliary Power Unit (APU)

S 212-053
(1) Examine the APU inlet and exhaust ducts for signs of volcanic ash.

NOTE: If there are no signs of volcanic ash, the procedure to examine the APU is completed. The remaining APU steps are not necessary.

S 212-054
(2) Do an inspection of the APU compressor and turbine sections with a borescope for signs of volcanic ash (Ref 49-21-00/601).

S 022-055
(3) Remove the magnetic chip detector of the APU oil sump to be examined (Ref 49-27-04/601).

S 212-076
(4) Examine the magnetic chip detector of the oil sump. Look for metallic particles and signs of volcanic ash (Ref 49-27-04/601).

S 212-056
(5) Remove the APU oil filters and look for signs of volcanic ash (Ref 49-27-03/401).

S 212-078
(6) Remove the APU air filters and look for signs of volcanic ash (Ref 49-52-03/401).

S 212-077
(7) Remove the APU fuel filters and look for signs of volcanic ash (Ref 49-31-02/401).

S 212-057
(8) Disconnect the discharge pressure lines of the APU compressor and examine them for signs of volcanic ash (Ref 49-53-01/401).

S 212-079
(9) Disconnect the bleed air lines of the APU compressor and examine them for signs of volcanic ash (AMM 49-53-00).

S 212-058
(10) Remove the APU electrical and pneumatic control valves and examine them for signs of volcanic ash (Ref 49-52-03/401).

K. Examine the Potable Water System

S 212-059
(1) Remove the air filters that follow and look for signs of volcanic ash (Ref 38-15-04/201):

NOTE: If there are no signs volcanic ash in the air filters, the procedure to examine the Potable Water System is completed. The remaining steps to examine the Potable Water System are not necessary.

(a) The Bleed Air filter
(b) The Compressor Intake air filter
(c) The Compressor Outlet air filter.

S 212-060
(2) Remove the potable water compressor and look for signs of volcanic ash (Ref 38-15-03/401).

S 212-061
(3) Get a water sample from the water tanks and examine them for signs of volcanic ash contamination (Ref 12-14-01/301).

S 212-062
(4) Remove the potable water pressurization check valves and look for signs of volcanic ash contamination (Ref 38-15-05/401).

S 212-063
(5) Remove the Water Quantity Transmitters and look for signs of volcanic ash (Ref 38-14-01/401).

L. Examine the Smoke Detectors

S 212-064
(1) Examine the smoke detectors of the cargo compartment for signs of volcanic ash. If there are signs of ash, replace the detector units.

S 212-085
(2) Examine the smoke detectors of the equipment cooling system for signs of volcanic ash. If there are signs of ash, replace the detector units.

M. Examine the Fire Extinguisher Bottle Nozzles

S 212-065
(1) Examine the fire extinguisher bottle nozzles in the areas that follow for signs of volcanic ash contamination:
(a) The Engines
(b) The APU
(c) The Lower Cargo Compartment
(d) The Main Deck
(e) The Lower Lobe Galleys.

N. Examine All Engine Accessories

S 212-066

(1) Examine all engine accessories (this includes the constant speed drive and the oil cooler). Look for signs of volcanic ash contamination .

O. Examine the Landing Gear

S 212-067

(1) Examine the landing gear for signs of volcanic ash contamination. Do the steps that follow:
   (a) Examine the bare inner cylinders of the body, wing, and nose landing gear shocks struts.
   (b) Examine the bare piston rods of all hydraulic actuators.
   (c) Examine all of the attachment points of the landing gear components.
   (d) Examine all landing gear components that follow:
      1) The door hinges
      2) The lock mechanisms
      3) The ground door release cables and pulleys
      4) The ground door release handle bearings.
      5) The door safety bar linkage bearings, tracks, and secondary cams for signs of volcanic ash.
   (e) Examine all cables and pulleys.
   (f) Examine the landing gear brakes.
   (g) Examine the brake metering valves.
   (h) Examine the proximity switches (sensors).
   (i) Examine the body, wing, and nose landing gear:
      1) alternate extension system
      2) electrical actuators and related drive mechanism.

P. Examine the Hydraulic System

S 212-068

(1) Get samples of the hydraulic fluid and examine the samples for signs of volcanic ash contamination (Ref 29-00-00/601).

S 212-086
(2) Remove the air-driven pump turbine drives from the hydraulic system and examine them for signs of volcanic ash (Ref 29-11-08-/401).

S 212-087
(3) Remove and examine the pressurization modules of the hydraulic reservoirs (Ref 29-17-01/201).

S 212-088
(4) Examine the pressurization module components that follow for volcanic ash contamination:
(a) The air filters
(b) The air pressure regulators
(c) The vent filters
(d) The module check valves
(e) The module bleed valves
(f) The relief valve.

S 212-089
(5) Remove the ADP in-line filters and water separators and do the steps that follow:
(a) Examine for signs of volcanic ash contamination
(b) Clean the course screen and water vents of the water separators.
(c) Replace the air filters if it is necessary.

Q. Examine the Flight Controls

S 212-069
(1) Do the steps that follow and examine the flight controls for signs of volcanic ash contamination:
(a) Examine the actuator bare piston rods of the components that follow:
1) The aileron
2) The elevator

3) The rudder
4) The spoiler

(b) Examine all control cables.
(c) Examine the stabilizer jackscrew.
(d) Examine all surface hinges of the flight controls.
(e) Examine the track and flap mechanisms of the trailing edge flaps.
(f) Examine the track fairings and linkages of the trailing edge flaps.
(g) Examine the leading edge flaps, leading edge slats, and mechanisms.
(h) Examine the elevator feel unit (cam and loading cylinder).

S 212-070
(2) Examine the section 48 internally for signs of volcanic ash.

S 212-071
(3) Remove the pneumatic drive units of the leading edge flaps and examine them for signs of volcanic ash (Ref 27-81-03/201).

S 212-072
(4) Remove the thermal anti-ice valves of the wing and examine them for signs of volcanic ash (Ref 30-11-03/401).

S 212-073
(5) Remove the anti-ice control valves of the engines and nacelles and examine them for signs of volcanic ash (Ref 30-21-03/401).

R. Examine the Airplane Internally

S 212-074
(1) Examine the airplane internal areas that follow for signs of volcanic contamination:
(a) The upper and main deck compartments
(b) The closets
(c) The passenger seats
(d) The powered crew seats
(e) The flight instruments
(f) The electrical/electronic control panels
(g) The floor coverings
(h) The lavatories
(i) The lavatory components
(j) The galleys
(k) The galley components
1) The refrigeration /chiller units
2) The food and beverage units (if they are installed)
3) The personnel/cart elevator of the lower lobe galley
4) The cart lift of the upper deck (if it is installed).
(l) Examine the baggage/cargo systems for signs of volcanic ash contamination.
(m) Examine the main electrical/electronics bay and compartments for volcanic ash contamination.

S 212-075

(2) Examine the control stand components as follows for signs of volcanic ash contamination (if cabin contamination is found):
(a) The thrust lever brakes
(b) The flap lever brakes
(c) The flap lever RVDT's
(d) The autothrottle gearbox
(e) The thrust lever position resolvers.

S 212-091

(3) If you find ash on the air conditioning ducts on the flight deck, remove and examine the flight deck modules (Ref Chapter 31).

S. Put the Airplane Back To Its Initial Condition

S 862-090

(1) Put the airplane back to its initial condition after all necessary volcanic ash conditional inspections are completed.

DRAGGED TAIL CONDITION - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is examine for dragged tail damage.
   B. This task examines the lower and exterior fuselage skins for damage caused by a dragged tail condition.

TASK 05-51-36-202-001

2. Examine for Dragged Tail Damage
   A. References
      (1) SRM 51-60-00, Structural Repair Manual
   B. Procedure

S 212-005

(1) Examine the airplane areas that follow:
   (a) Visually examine the exterior lower fuselage skin from B Sta 1700 to the APU compartment.
      1) Look for signs of
         - scrapes
         - burns
         - cracks
         - holes
         - buckled belly skins and/or drain masts
         - fasteners that are loose
         - fasteners that are not there.
   (b) If external damage is seen, examine the fuselage internally in the area of the damage.
      1) Look for signs of bent or cracked
         - stringers
         - lower chord flanges
         - frames
         - pressure bulkheads
         - clips.
      2) Also, look for
         - buckled or wrinkled webs
         - fasterners that are loose
         - fasteners that are not there.

(c) Visually examine
- STA 2360 bulkhead
- STA 2484 bulkhead
- STA 2598 bulkhead (this includes the stabilizer support structure and diagonal braces)
- APU support structure
- Crown skin and stringers, from BS 1700 aft to the dorsal fin (do a visual inspection for signs of bucklings).

1) Look for signs of
   - buckling
   - crippling
   - distorted structural elements
   - missing fasteners
   - distorted fasteners.

S 352-004

(2) If any damage is found, repair the damaged area (SRM 51-60-00, Structural Repair Manual), or other approved procedures.

LANDING GEAR DEPARTS HARD SURFACE CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. One task is supplied in this procedure. The task is landing gear departs hard surface conditional inspection.
   B. When an airplane accidentally goes off a hard taxiway or runway, the brake equalizer rods on the wing and body landing gear must be examined for possible damage.

      NOTE: The inspection is most important if the slope of the taxiway or runway is greater than 20 percent.

TASK 05-51-37-202-001

2. Landing Gear Departs Hard Surface Conditional Inspection
   A. References
      (1) 05-51-05/201, Hard Landing or High Drag/Side Load Landing Condition
      (2) 12-21-01/301, Landing Gear
      (3) 12-25-01/301, Exterior Cleaning
   B. Procedure

      S 162-002
      (1) Clean the dirty areas of the airplane (Ref 12-25-01/301).

      S 212-003
      (2) Visually examine the airframe for general condition and serviceablility.

      S 212-004
      (3) Examine the landing gear brake equalizer rods and attach points, load sensor assembly, wheels, and tires carefully for damage. Also, examine the landing gear door for scraped, bent, broken, or punctured components.

      NOTE: If too high of loads are indicated, refer to 05-51-05/201, High Drag/Side Load Landing.

      S 642-005
      (4) Apply grease to all of the lubricated joints to remove any unwanted material (Ref 12-21-01/301).

AIRFRAME VIBRATION CONDITION (CONDITIONAL INSPECTION) - MAINTENANCE PRACTICES

1. General
   A. One task is supplied in this procedure. The task is airframe vibration conditional inspection.
   B. In the past, operators have experienced airframe vibration and have not been able to identify the cause of the vibration. This procedure supplies a list of known causes of airframe vibration and gives a description of when the vibration occurs. Also, the corrective action is listed in the table.
   C. The items listed below have been identified as causes for airframe vibration:
      (1) Wheel/Tire imbalance
      (2) Loose stanchions in the electrical equipment bay
      (3) Inboard elevator PCP rod end bearing wear
      (4) Inboard aileron inboard hinge support looseness
      (5) Inboard aileron reaction link bearing wear or support fitting looseness
      (6) Air conditioning access door latch looseness
      (7) Fuel tank vent float valves
      (8) Nose wheel well aft door looseness
      (9) Nose gear vibration
      (10) Vibration felt from NLG after liftoff
      (11) Engine main fuel pump worn drive splines
      (12) Upper deck external door handles not fully closed
      (13) Main gear vibration
      (14) Loose filters for the underfloor recirculation fans.
      (15) Flap carriage spindle and ball screw actuator lubrication.

TASK 05-51-38-202-001

2. Airframe Vibration Conditional Inspection

A. General

ITEM	DESCRIPTION	CAUSES	CORRECTIVE ACTION
Wheel/Tire Imbalance	Vibration during takeoff roll from main or nose gear area - increases with speed. Note: Vibration can start when affected gear lifts off the ground. Vibration normally stops when gear is stowed.	Uneven tire wear/ tire out of round Missing wheel balance weights	Replace affected tires and wheels (AMM 32-45-01/401, AMM 32-45-02/401). Replace balance weights (Ref Supplier CMM).
Loose Stanchions in the Electrical Equipment Bay	Vibration in cruise/cockpit rumble	Loose stanchions in E/E bay	As necessary
Inboard Elevator PCP Rod End Bearing Wear	Vibration in climb from 17,999 to 31,000 ft	Inboard elevator PCP rod end bearing wear	Replace the PCP (AMM 27-31-07/201).
Inboard Aileron Inboard Hinge Support Looseness	Vibration in cruise	Looseness of inboard aileron inboard hinge support	Replace the bearing/ fitting (References AMM 27-11-02/401, AMM 57-42-00/001, OHM 57-51-81).
Inboard aileron Reaction Link Bearing Wear Fitting Looseness	Vibration in cruise	Looseness of inboard aileron reaction link bearing or support fitting	Replace the bearing/ fitting (Reference AMM 27-11-12/201).

ITEM	DESCRIPTION	CAUSES	CORRECTIVE ACTION
Air conditioning Access Door Latch Looseness	Vibration at 10,000 ft with speed increasing from 250/300 kts	Air conditioning bay access door worn latch	Inspect the latch (AMM 52-48-01/601) Replace if necessary.
Fuel Tank Vent Float Valves	Low frequency vibration in climb at 16,000 to 30,000 ft. Fog from fuel vent system. Rumbling noise evident.	Inoperative vent float valve	Replace the vent float valves (AMM 28-13-02/401).
Nose Wheel Well Aft Door Looseness	Moderate vibration after lift-off and prior to flap retraction	Nose wheel well aft door looseness caused by worn bushings and bolts	Inspect and replace (AMM 32-22-04/401).

ITEM	DESCRIPTION	CAUSES	CORRECTIVE ACTION
Nose Gear Vibration	Abnormal Nose Gear Vibration during takeoff and/or landing	Wheel/tire not in balance	Replace affected tires and wheels (AMM 32-45-02/401).
		Worn torsion links	Replace the nose gear torsion links (AMM 32-21-03/401).
		Faulty steering metering valve.	Inspect the steering metering valve (AMM 32-51-04/601).
		Torsional freeplay	Check torsional free-play (AMM 32-21-03/601).
		Faulty nose gear actuator snubbing valve.	Replace the actuator (AMM 32-34-01/401).
		Faulty nose gear snubber.	Inspect the nose gear snubber (AMM 32-45-05/201).
		Loss of wheel bearing preload.	Inspect and torque the wheel bearings (AMM 32-45-02/401).
Vibration felt from the NLG after liftoff.	Vibration experienced after liftoff which was thought to be from the nose landing gear. The actual cause may be from a faulty MLG retract braking system.	Faulty MLG retract braking system.	Test the MLG retract braking system (AMM 32-41-00/501).

ITEM	DESCRIPTION	CAUSES	CORRECTIVE ACTION
Engine Main Fuel Pump Worn Drive Splines	Vibration experienced during cruise followed by spooldown of engine	Monitor engine and listen for ratcheting noise in vicinity of main fuel pump. Check for worn main drive splines in pump.	Replace the fuel Pump (AMM 73-11-01/401 All engine modules).
Upper deck external door handles not fully closed.	Vibration after takeoff in climb and cruise.	Door handle jammed out of position which puts the handle into the airstream.	Make sure that all doors are correctly closed.
Main Gear Vibration	Abnormal main gear vibration during take-off or landing. Possible main cabin vibration at doors 4L/4R.	Faulty gear retract braking Loss of wheel bearing preload Uneven tire wear/ tire out of round	Test the gear retract braking system (AMM 32-41-00/501). Inspect and torque the wheel bearings (AMM 32-45-01/401). Replace affected tires and wheels (AMM 32-45-01/401).
Loose Filters for the Underfloor Recirculation Fans.	Buzzing and high frequency vibration coming from the under-floor recirculation fan filters in the floor area forward of the main deck door number 3.	Filters are loose in their trays.	Replace the filter boxes and filter trays with ones that have shock mounts. (Ref SB 747-21-2352)
Flap carriage spindle and ball screw actuator lubrication.	Airframe vibration from takeoff until flap retraction.	Flap carriage spindles and ball screw actuators lubrication.	Lubricate the flap carriage spindles and the ball screw actuators. (AMM 12-21-20/301)

OVERWEIGHT LANDING CONDITION - MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. Two tasks are supplied in this procedure. The first task is the phase I examination. The second task is the phase II examination.
   B. Overweight Landing
      (1) When an airplane lands at a weight above the maximum design landing weight (MLW), the landing is an overweight landing and the examination given below must be done.
   C. The Examination
      (1) The examination is divided into Phase I and II. Phase I step 2A examination is applicable when comments from the flight crew indicate the overweight landing sink rate was low to moderate. Phase I step 2B examination is applicable when comments from the flight crew indicate the overweight landing sink rate was more than moderate.
      (2) If the examination per Phase I shows no signs of damage, the inspection is complete. If the Phase I step 2A shows any signs of damage, the Phase I step 2B must be done. If the Phase I step 2B examination shows any signs of damage, the Phase II examination must be done.

TASK 05-51-39-202-001

2. Phase I Examination
   A. Examine the airplane structure for an overweight landing condition at a low to moderate sink rate.

      S 212-007
      (1) Examine the lower fuselage structure aft of body station 2000 for signs of runway contact.

      S 212-002
      (2) Examine the body landing gear.
         (a) Examine the body landing gear for cracked paint or chipped paint.

(b) Examine the body landing gear support structure for cracked or chipped paint.
(c) Examine the body landing gear tires for signs of damage.
(d) Examine the body landing gear wheels for signs of damage.
(e) Examine the upper and lower ends of the body landing gear shock strut for signs of fluid leakage.

NOTE: A small amount of fluid on the body landing gear shock strut inner cylinder is normal.

(f) Examine the body landing gear truck beams for signs of distortion.

S 212-069
(3) Examine the wing landing gear.
(a) Examine the wing landing gear for cracked paint or chipped paint.
(b) Examine the wing landing gear support structure for cracked or chipped paint.
(c) Examine the wing landing gear tires for signs of damage.
(d) Examine the wing landing gear wheels for signs of damage.
(e) Examine the upper and lower ends of the wing landing gear shock strut for signs of fluid leakage.

NOTE: A small amount of fluid on the wing landing gear shock strut inner cylinder is normal.

(f) Examine the wing landing gear truck beams for signs of distortion.

S 212-070
(4) Examine the nose landing gear.
(a) Examine the nose landing gear tires for signs of damage.
(b) Examine the nose landing gear wheels for signs of damage.
(c) Examine the nose landing gear for cracked or chipped paint.
(d) Examine the nose landing gear support structure for cracked or chipped paint.
(e) Examine the upper and lower ends of the nose landing gear shock strut for signs of fluid leakage.

NOTE: A small amount of fluid on the nose landing gear shock strut inner cylinder is normal.

B. Examine the airplane structure for an overweight landing at more than a moderate sink rate.

S 212-009

(1) Examine these areas of the nacelle-strut for buckling, cracks, pulled fasteners, and fasteners which are not there:
   (a) Nacelle-Strut Doors
   (b) Nacelle-Strut Panels
   (c) Nacelle-Strut Structure

S 212-010

(2) Examine the leading edge fairing for fastener hole elongation, fastener tear-out, skin cracks, pulled fasteners, and fasteners which are not there.

S 212-071

(3) Examine the body landing gear.
   (a) Examine the body landing gear tires for damage.
   (b) Examine the body landing gear wheels for cracks.
   (c) Examine the body landing gear shock strut upper and lower ends for signs of fluid leakage.

       NOTE: A small amount of fluid on the body landing gear shock strut inner cylinder is normal.

   (d) Examine these items for distortion, cracks, and/or other signs of damage:
       1) Body Landing Gear Strut Doors
       2) Body Landing Gear Strut Door Linkage
   (e) Examine these items for bolt distortion, component distortion, cracks, and other signs of damage:
       1) Body Landing Gear Trunnion
       2) Body Landing Gear Shock Strut Upper End
       3) Body Landing Gear Drag Strut
       4) Body Landing Gear Trunnion Attach Fittings
       5) Body Landing Gear Truck Positioning Mechanisim
       6) Body Landing Gear Truck Positioning Linkage
       7) Body landing Gear Truck Beams

S 212-072

(4) Examine the wing landing gear.
   (a) Examine the wing landing gear tires for damage.
   (b) Examine the wing landing gear wheels for cracks.
   (c) Examine the wing landing gear shock strut upper and lower ends for signs of fluid leakage.

       NOTE: A small amount of fluid on the wing landing gear shock strut inner cylinder is normal.

(d) Examine these items for distortion, cracks, and/or other signs of damage:
1) Wing Landing Gear Shock Strut Doors
2) Wing Landing Gear Door Linkage

(e) Examine these items for bolt distortion, component distortion, cracks, and other signs of damage:
1) Wing Landing Gear Trunnion
2) Wing Landing Gear Shock Strut Upper End
3) Wing Landing Gear Truck Positioning Mechanisim
4) Wing Landing Gear Truck Positioning Linkage
5) Wing Landing Gear Truck Beams

(f) Examine the wing landing gear beam to rear spar attachment for signs of damage.

(g) Examine the wing landing gear trunnion to rear spar attachment for signs of damage.

(h) Examine the wing landing gear trunnion to landing gear beam attachment for signs of damage.

(i) Do a check of the inside diameter of the fuse pins at the wing landing gear forward trunion to rear spar attachment.

S 212-073

(5) Examine the nose landing gear.

(a) Examine the nose landing gear tires for damage.

(b) Examine the nose landing gear wheels for cracks.

(c) Examine the nose wheel well area for buckling, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

NOTE: Look closely at the web of the nose wheel well in the area of the trunnion and the drag strut support fittings.

(d) Examine the nose landing gear shock strut upper and lower ends for signs of fluid leakage.

NOTE: A small amount of fluid on the nose landing gear shock strut inner cylinder is normal.

(e) Examine the nose landing gear outer cylinder for distortion, cracks, and flaking paint.

S 212-024

(6) Examine the lower fuselage structure aft of body station 2000 for signs of runway contact.

S 212-025

(7) Examine the trailing edge aft flap drive rods, aft flap drive mechanism, and the fairing aft drive rod for distortion, cracks, or other signs of damage.

S 212-063

(8) If the airplane landed with more than 1000 gallons (6,700 pounds) in the horizontal stablizer fuel tank, examine the lower surface of the horizontal stabilizer including the center section for fuel leaks, buckling, cracks, pulled fasteners, and fasteners which are not there.

TASK 05-51-39-202-026

3. Phase II Examination

A. References

(1) 05-51-06/201, Dragged Engine Nacelle/Engine Seizure/Engine and Strut Damage Condition
(2) 07-11-01/201, Jacking Airplane
(3) 27-11-00/501, Aileron and Aileron Trim Control System
(4) 27-21-00/501, Rudder and Rudder Trim Control System
(5) 27-31-00/501, Elevator Control System
(6) 27-41-00/501, Horizontal Stabilizer Trim Control System
(7) 27-51-00/501, Trailing Edge Flap System
(8) 27-61-00/501, Spoiler Control System
(9) 27-81-00/501, Leading Edge Flap System
(10) 32-11-02/401, Wing Gear Shock Strut
(11) 32-13-02/401, Body Gear Shock Strut
(12) AMM 32-21-01/601, Nose Landing Gear
(13) 32-31-00/501, Landing Gear Control

(14) 72-31-02/601, Fan Rotor Blades
(15) AMM 72-33-00/601, Forward Fan Case

B. Examine the airplane structure.

S 212-027

(1) Examine the lower fuselage structure for skin buckling, flaking paint, cracks, pulled fasteners, and fasteners which are not there.
(a) Examine closely the areas below the body floor beams and from body stations 1480 to 1680.

NOTE: Keel beam vertical web wrinkles are normal.

S 212-028

(2) Examine the main landing gear wheel well bulkheads for distortion, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

S 212-086

(3) Examine the horizontal deck located AFT of Body Station 1350; WL 152; at the side of the body for signs of local buckling, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

S 212-049

(4) Examine the fuselage skin attachments above the landing gear beam at body station 1350 for distortion, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

S 212-075

(5) Examine the wing-to-body fuselage joints at body station 1000 to body station 1241 for distortion, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

S 212-029

(6) Examine the upper fuselage structure at body stations 1000, 1241, and 1480 for buckling, distortion, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

S 212-030

(7) Examine the bulkhead at body station 400 and fuselage structure immediately outboard of the nose landing gear wheel well for buckling, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

NOTE: This examination can be done from the aft side of the bulkhead at body station 400 in the main electrical/electronics equipment center.

S 212-031

(8) Examine these areas for fluid leakage (i.e. fuel, hydraulic fluid, etc..):
(a) Wings
(b) Nacelles
(c) Nacelle-Struts
(d) Fuselage External Surfaces
(e) Nose Landing Gear Wheel Well
(f) All Areas of the Body Landing Gear Wheel Wells
(g) All Areas of the Wing Landing Gear Wheel Wells

S 212-034

(9) Examine the ribs at wing buttock lines 150 and 195 for cracks in region of the rear spar.

S 212-074

(10) Examine the rear spar and the midspar for permanent buckles in the webs between wing station 467 rib and the side of the body.

S 212-035

(11) Examine the refuel manifold between WS 359 and WS 386 side of body rib for buckles, cracks, distortion, or other signs of damage. Examine carefully the tubes 65B92605-9 or -15 LH and 65B92605-8 or -16 RH which are installed between WS 359 and WS 386.

NOTE: This inspection requires tank entry and should be accomplished in conjunction with steps 2.B.(9) and 2.B.(10). Damaged refuel lines can cause inadvertent fuel transfer into inboard main during subsequent fueling operations.

S 212-047

(12) If signs of runway contact are found, examine these areas for breaks or distortion:
(a) APU Firewall
(b) APU Drain
(c) APU Door
(d) Outflow Valve
(e) Drain Mast

(f) Lower Fuselage Skin
(g) Stringers
(h) Frames
(i) Shear Ties

C. Examine the landing gear and landing gear structure.

S 212-076

(1) Examine the body landing gear.
(a) Examine the body landing gear inner and outer cylinder lugs for cracks, and visible distortion.
(b) Examine these items of the body landing gear for distortion, cracks, and/or other signs of distortion:
1) Body Landing Gear Side Strut Linkage
2) Body Landing Gear Side Struts
3) Body Landing Gear Drag Strut Linkage
4) Body Landing Gear Drag Struts
5) Body Landing Gear Side Strut Attachments (Body Station 1480)
6) Body Landing Gear Truck Positioning Mechanisim
7) Body Landing Gear Truck Positioning Linkage
8) Body Landing Gear Truck Beams
(c) Examine the body landing gear drag strut support fitting for distortion, flaking paint, cracks, pulled fasteners, and fasteners which are not there.
(d) Examine the body landing gear vertical trunnion support fittings and attachments at body station 1480 bulkhead. Look for distortion, flaking paint, cracks, pulled fasteners, and fasteners which are not there.
(e) Examine all of the bolts and pin connections in the body landing gear for signs of distortion.
(f) If body landing gear wheel removal is necessary because of blown tires, do these steps:
1) Examine the body landing gear wheel structure for cracks.
2) Examine the body landing gear brake assemblies for damage.
(g) Do a check of the body landing gear shock strut fluid level.

S 212-077

(2) Examine the wing landing gear.
(a) Examine the wing landing gear inner and outer cylinder lugs for cracks, and visible distortion.
(b) Examine these items of the wing landing gear for distortion, cracks, and/or other signs of damage:
1) Wing Landing Gear Side Strut Linkage
2) Wing landing Gear Side Struts
3) Wing Landing Gear Drag Strut Linkage
4) Wing Landing Gear Drag Struts
5) Wing Landing Gear Side Strut Attachments (Body Station 1350)
6) Wing Landing Gear Truck Positioning Mechanisim
7) Wing Landing Gear Truck Positioning Linkage
8) Body Landing Gear Truck Beams

(c) Examine all of the bolts and pin connections in the wing landing gear for signs of distortion.
(d) Examine these items for signs of cracks or deformation:
1) Wing Landing Gear Side Strut-to-Wing Attachments
2) Shear Bolts at the Side Strut Upper Link
3) Shear Bolts at the Side Strut Diagonal Brace
(e) Examine the wing landing gear side strut support beam (FWD of Body Station 1350; WL 140) for local buckling, flaking paint, cracks, pulled fasteners, and fasteners which are not there.
(f) If wing landing gear wheel removal is necessary because of blown tires, do these steps:
1) Examine the wing landing gear wheel structure for cracks.
2) Examine the wing landing gear brake assemblies for damage.
(g) Do a check of the wing landing gear shock strut fluid level.

S 212-078
(3) If an overweight landing is combined with a high drag/side load landing, or if the fluid levels of the wing landing gear or the body landing gear shock struts are low, do these steps:
(a) Remove the body landing gear.
(b) Remove the wing landing gear.
(c) Disassemble the landing gears and examine for distortion and cracks per the Overhaul Manual.

S 212-084
(4) Examine the nose landing gear (AMM 32-21-01/601).
(a) Examine the nose wheel well area for buckling, flaking paint, cracks, pulled fasteners, and fasteners which are not there.

NOTE: Look closely at the web of nose wheel well in the area of trunnion and drag strut support fittings.

(b) Examine these items of the nose landing gear for distortion cracks, flaking paint, pulled fasteners, loose fasteners, and fasteners which are not there:
1) Nose Landing Gear Cylinder Trunnion Fitting Area
2) Nose Landing Gear Drag Brace Assemblies
(c) Do a check of the nose landing gear shock strut fluid level (Ref 12-15-05/301).

NOTE: Make sure the shock strut can keep pressure.

1) If the examinations in steps 2.C.(4)(b) and 2.C.(4)(c) show any signs of damage, or if the overweight landing causes the nose landing gear to hit hard, remove the nose landing gear inner cylinder and inspect for distortion and cracks.
2) If the examinations in steps 2.C.(4)(b) and 2.C.(4)(c) show no signs of damage, examine the nose landing gear shock strut inner cylinder at the first suitable time after the overweight landing is reported.

(d) Do a check of the nose wheel steering mechanism (Ref 32-51-00/501).
1) Make sure the nose landing gear steering mechanisim is rigged correctly.

S 862-050
(5) Jack the airplane (Ref 07-11-01/201).

S 862-052
(6) Retract and extend the landing gears (Ref 32-31-00/501).

S 212-085
(7) Examine all of the landing gear for signs of interference, misalignment, or distortion.

D. Examine the flight controls.

S 212-041
(1) Do a check of the flight controls.
(a) Make sure the flight controls move freely.

S 222-042
(2) Examine these tensions of the flight control cables:
(a) Aileron (Ref 27-11-00/501)
(b) Rudder (Ref 27-21-00/501)
(c) Elavator (Ref 27-31-00/501)
(d) Spoilers (Ref 27-61-00/501)

E. Examine the cargo area.

S 712-080
(1) Do an operational check of the containerized cargo system.
(a) Make sure the cargo containers and pallets load and unload correctly.

S 212-065
(2) Examine the the cargo restraint system in all of the cargo compartments.

S 212-079
(3) Examine these items in the containerized cargo compartment for breaks, cracks, and retainer lips which are not there:
(a) Side Guides
(b) Seat Tracks
(c) Pallet Locks
(d) Rollers (Downside of the Compartment)

S 212-081
(4) Do a check of the cargo loading rollers (Where Installed).
(a) Make sure the rollers move freely.

F. Examine the engines.

S 212-045
(1) On all engines, examine the fan case for damage or abraidable material wear (AMM 72-33-00/601).

S 212-046
(2) Do the dragged engine nacelle conditional inspection (Ref 05-51-06/201).

G. Examine the horizontal stabilizer fuel tank.

S 212-064
(1) If the landing was made with more than 1000 gallons (6,700 pounds) of fuel in the horizontal stabilizer fuel tank, do these steps:
(a) Examine the hinge rib at BL 43.5 for damage. The examination must include all stringer splices at this rib as well as the rib chords.
(b) Examine all of the rib chord-to-stringer attachments, fasteners, rib chords, and stringer flanges on the lower surface within the fuel tank.

NOTE: Tank entry is necessary for these inspections.

LANDING WITH ONE MAIN GEAR UP - MAINTENANCE PRACTICES
(CONDITIONAL INSPECTION)

1. General
   A. Landing with One Main Gear Up
      (1) When the airplane makes a landing with one wing or one body gear retracted, you must do the procedure that follows.
      (2) This procedure is divided into two Phases. Phase I gives instructions for the condition of the airplane with one landing gear retracted. You must do all of Phase I of the procedure. If you find no damage from the Phase I inspection, you are done with the procedure. If the Phase I items in paragraph 2.B (Landing with one wing gear retracted) show signs of damage or problems, you must do Phase II of the inspection. If Phase I items in paragraph 2.C (Landing with one body gear retracted) show signs of damage or problems, you must repair those items. This will complete the inspection.

TASK 05-51-40-202-027

2. Phase I Airplane Examination
   A. References
      (1) 32-45-03/601, Wheels
      (2) 32-45-04/601, Tires
   B. Landing with one wing gear retracted.

S 202-001

      (1) Examine the body landing gear and its support structure on the side of the wing landing gear that is retracted.
         (a) Replace the wheel and tire assemblies.
         (b) Discard the tires you removed.
         (c) Examine the brake assemblies for damage.
         (d) Examine the oleo upper and lower ends for signs of fluid leakage or problems to keep satisfactory pressure.

NOTE: A small quantity of fluid on the inner cylinder is not a sign of problems.

         (e) Examine the gear strut door and linkage for distortion, cracks, or other problem signs.
         (f) Examine the trunnion and the upper end of the shock strut for cracks and bolt distortion.
         (g) Examine the components that follow for damage:
            1) The drag strut
            2) The support fitting for the drag strut
            3) The side strut
            4) The side strut attachments

5) The trunnion attach fittings for distortion

(h) Examine the area for cracks and fasteners that are pulled or are not there.

(i) Examine the positioning mechanism of the body truck and the linkage for distortion, cracks or other problem signs.

(j) Examine the body truck beams for distortion, cracks, or other problem signs.

S 202-002

(2) Examine the other wing and body gear wheels installed on the airplane for cracks (Ref 32-45-03/601).

C. Landing with one body gear retracted

S 202-003

(1) Examine the wing and body gear tires for damage (Ref 32-45-04/601).

S 202-004

(2) Examine the wing and body gear wheels installed on the airplane for cracks (Ref 32-45-03/601).

TASK 05-51-40-202-028

3. Phase II Examination

A. References

(1) 07-11-01/201, Jacking Airplane
(2) 32-11-02/401, Wing Landing Gear Shock Strut
(3) 32-13-02/401, Body Landing Gear Shock Strut
(4) 32-31-00/501, Landing Gear Control System

B. Examine the Airplane Structure

S 202-005

(1) Examine the lower fuselage structure for skin buckling, paint flakes, cracks, and fasteners that are pulled or not there.

S 202-006

(2) Carefully examine the area below the body floor beams and the area from BS 1480 to 1680.

NOTE: Wrinkles to the Vertical web of the Keel Beam is not a sign of problems.

S 202-007

(3) Examine the wheel well bulkheads and wing to fuselage joints at BS 1000 to 1241.

S 202-023
(4) Look for distortion, paint flakes, cracks, and fasteners that are pulled or not there.

S 202-008
(5) Examine the upper fuselage structure at BS 1000, 1241, and 1480.

S 202-024
(6) Look for buckling, distortion, paint flakes, cracks, and fasteners that are pulled or not there.

S 202-009
(7) Examine the fuselage external structure and wheel well areas of the main landing gear.

S 202-029
(8) Look for signs of fuel and other leaks in the landing gear area.

S 202-010
(9) Examine the body landing gear outer and inner cylinder lugs for cracks and surface distortion.

S 202-011
(10) Examine the shock strut of the body landing gear for fluid level.
  (a) If there are signs of leakage and if you find damage on the landing gear drag or side strut, remove the gear that leaks.

S 022-012
(11) Disassemble the landing gear.
  (a) Look for distortion or cracks.

S 202-013
(12) At Body Station 1480 bulkhead, examine the fitting attachments to the vertical trunnion support of the body gear.

S 202-025
(13) Look for distortion, paint flakes, cracks and fasteners that are pulled or not there.

S 202-014
(14) Examine the fuselage skin attachments above the landing gear beam at Body Station 1350.

S 202-026
(15) Look for distortion, paint flakes, cracks and fasteners that are pulled or not there.

S 202-015
(16) Look for problems of clearance or signs of distortion.

S 202-016
(17) Look for parts that do no align with each other.
(a) Lift the airplane (Ref 07-11-01/201).
(b) Retract and extend the landing gear (Ref 32-31-00/501).

S 202-017
(18) If a wheel removal is necessary because of blown tires, examine the wheel structure for cracks.

S 202-018
(19) Examine the brake assemblies for damage.

S 202-019
(20) Examine all bolts and pin connections in the wing landing gear for signs of distortion (Ref 32-11-02/401).

S 202-020
(21) Examine all bolts and pin connections in the body landing gear for signs of distortion (32-13-02/401).

S 202-021
(22) Examine the side strut beam forward of Body Station 1350 and at waterline 140.
(a) Look for local buckling, paint flakes, cracks and fasteners that are pulled or not there.

S 202-022
(23) Examine the horizontal deck at waterline 152 and at the side of the body and aft of Body Station 1350.
(a) Look for local buckling, paint flakes, cracks and fasteners that are pulled or not there.

LANDING WITH DEFLATED LANDING GEAR SHOCK STRUT -
MAINTENANCE PRACTICES (CONDITIONAL INSPECTION)

1. General
   A. Use this procedure when the airplane lands with a shock strut that is deflated. This examination will verify the integrity of the shock struts and the airplane structure.

TASK 05-51-41-202-001

2. Landing with Deflated Landing Gear Shock Strut Inspection
   A. References
      (1) 5-51-05/201, Hard Landing or High Drag/Side Load Landing Condition
      (2) 5-51-55/201, Landing with Deflated Nose Gear Shock Strut Condition
   B. Access
      (1) Location Zone
          100 Lower Half of Fuselage

   C. Procedure

      S 212-002
      (1) If the airplane landed with a deflated shock strut of the main landing gear, examine it:

      S 212-005
      (2) If the airplane landed with a deflated shock strut of the main landing gear, do the Phase I and Phase II examinations of all the landing gear and the adjacent structure (AMM 05-51-05/201).

      S 212-003
      (3) If the airplane landed with a deflated shock strut of the nose landing gear, examine it:
          (a) Examine the nose landing gear and the adjacent structure (AMM 05-51-55/201).

FLAP SKEW INSPECTION - MAINTENANCE PRACTICES

1. General
   A. Do this inpsection if you find a flap skew condition.

   TASK 05-51-43-212-001

2. Flap Skew Inspection
   A. Procedure

      S 212-002
      (1) Flap Skew Inspection
         (a) Pressurize the hydraulic systems No.1 and 4. (AMM 29-11-00/201).
         (b) Extend the inboard trailing edge flap as a unit to between 5 to 30 degrees and determine the best possible position for inspection. (AMM 27-51-00/201).
         (c) Remove pressure from the hydraulic systems No.1 and 4. (AMM 29-11-00/201).
         (d) Do a detailed external visual inspection of the inboard sequence carriage (WBL 235) and outboard sequence carriage (WBL 353). Look for cracks, wear or deformation of the parts listed in the table below. (AMM 27-51-24/601).

Part Name	Look For
Toggle Detent Rollers	Wear
Toggle Clevis	Wear
Toggle Cross Bar	Deformation
Toggle Side Arms	Deformation
Flight Load Rollers	Cracks and Deformation
Flight Load Roller Lugs	Wear
Side Guides	Wear and Cracks
Clevis Lugs	Cracks and Deformation
Clevis Bushings	Migration and Correct Orientation

         (e) Do a detailed external visual inspection of the inboard fore flap in areas near the sequence carriages including the inboard attach link assembly (WBL 235) and outboard attach fitting (WBL 353). Make sure the shims are in place between the horizontal flange and the fore flap skin. Look for cracks or migrated bushings. Look for loose fasteners common to the horizontal flange of the attach fitting, refer to 747-400 MPD S57-054B.
         (f) Do a detailed external visual inspection of the inboard fore flap track including the attachment to lever and lever to fore flap attachment at WBL 162, 300, and 411. Look for cracks or deformation of the fore flap track. (AMM 27-51-02/601). Refer to 747-400 MPD S57-055B.

(g) Disconnect the track from the lever. Make sure that the track rolls in and out of the mid flap without binding on the flight load rollers or the dead weight rollers. Clean the fore flap cavity of the mid flap if/as necessary to prevent dirt and grit from contaminating the rollers. Refer to 747-400 AMM 27-51-02/201 for track disconnect instructions. Refer to 747 AMM 27-51-01/601 for wear limits.

(h) Connect the track to the lever. Refer to 747 AMM 27-51-02/201 for track connect instructions.

(i) Do a detailed external visual inspection of the main inboard flap tracks at WBL 235 and WBL 353. Look for gouges or scoring in the center cam surface. Look for cracks or deformation of the flap track. (747-400 AMM 27-51-22/601 and AMM 27-51-25/601).

(j) Do a detailed external visual inspection of the Fore Flap leading edge. Look for dents and gouges. Refer to 747-400 SRM 57-53-01 for wear limits.

(k) Do a detailed external visual inspection of the mid flap upper panel. Examine the area surrounding the flore flap track cavity for damage. Look for dents and gouges. Refer to 747-400
SRM 57-53-01 for wear limits.

(l) Do a detailed external visual inspection of the flap drive torque tubes. Look for damage. (747-400 AMM 27-51-20/601).

(m) Do a detailed external visual inspection of the fixed trailing edge structure. Look for damage to the aileron hinge rib and systems braketry.

(n) Pressurize the hydraulic systems No.1 and 4. (747-400 AMM 29-11-00/201).

(o) Put the flap control lever in the UP detent to retract the trailing edge flaps.

(p) Remove pressure from the hydraulic systems No.1 and 4. (747-400 AMM 29-11-00/201).

(q) Put the Airplane Back to Its Usual Condition.

LANDING WITH DEFLATED NOSE GEAR SHOCK STRUT CONDITION (CONDITIONAL INSPECTION) - MAINTENANCE PRACTICES

1. General
   A. One task is supplied in this procedure. The task is landing with deflated nose gear shock strut conditional inspection.
   B. This examination is to make sure the nose landing gear shock strut is servicable and to find the cause for the nose landing gear shock strut to be deflated.
   C. If an airplane lands with a deflated shock strut, and the procedures examination in this procedure finds damage, deformation, cracks, buckling, etc, make an inspection for hard landing of the specific landing gear with the deflated shock strut and the area of the airplane adjacent to the deflated shock strut per:
      (1) The Phase I and Phase II examination of the nose landing gear and the adjacent structure (AMM 05-51-05/201).

TASK 05-51-55-202-001

2. Landing with Deflated Nose Gear Shock Strut Conditional Inspection
   A. References
      (1) AMM 07-11-02/201, Jacking Airplane Nose
      (2) AMM 12-15-05/301, Nose Landing Gear Shock Strut
      (3) AMM 29-11-00/201, Main Hydraulic Supply System
      (4) AMM 32-21-02/301, Nose Gear Shock Strut
      (5) FIM 32-51-00/101, Nose Wheel Steering System
   B. Examine the Airplane Structure.

      S 212-002
      (1) Examine the nose gear tires for cuts, bruises or signs of damage.

      S 212-003
      (2) Examine the nose gear wheels for cracks or deformation.

      S 212-004
      (3) Examine these items of the nose gear for distortion, cracks, and/or flaking paint:
         (a) Nose Gear Outer Cylinder
         (b) Nose Gear Inner Cylinder
         (c) Nose Gear Drag Strut
         (d) Nosa Gear Side Struts
         (e) Nose Gear Tripod Braces

      S 212-005
      (4) Examine the nose gear wheel well area for buckling, flaking paint, cracks and fasteners which are not there.

         NOTE: Look closely at the trunion support fittings and the drag strut support fittings.

S 782-006
(5) Measure the nose gear shock strut pressure (AMM 12-15-05/301).

S 612-008
(6) If nose gear shock strut pressure is less than 100 psi, pressurize strut with air or nitrogen to 100 psi.

S 212-007
(7) Examine the nose gear shock strut upper and lower ends for signs of fluid leakage. Repair or replace nose gear, as necessary.

NOTE: A small amount of fluid on the nose landing gear shock strut inner cylinder is normal.

S 362-009
(8) If fluid leakage is found, do these steps as necessary:
(a) Remove the air charging valve to make sure the nose gear shock strut is fully deflated.
(b) Service the noes gear shock strut with fluid per the service chart and write down the volume of fluid used (AMM 12-15-05/301, AMM 32-21-02/301).
(c) If more than 300 cubic inches of fluid (5 quarts) is used to service the nose gear shock strut, jack airplane nose (AMM 07-11-02/201).
(d) With the air charging valve open, move the nose gear inner cylinder up and down through it's full stroke range. Listen for clunking noises and examine the nose gear inner cylinder to see inner cylinder binds or is unusually loose. Also, do a check of the fully extended "A" dimension per strut servicing chart ± 0.20 inch. Repair or replace gear as necessary.
(e) Remove the jacks (AMM 07-11-02/201).

S 612-010
(9) Service the nose gear shock strut with air or nitrogen per servicing chart (AMM 12-15-05/301, AMM 32-21-02/301).

S 212-011
(10) Pressurize hydraulic system No. 1 (AMM 29-11-00/201) and cycle nose gear steering left and right (FIM 32-51-00/101). Do a check for unusual noises, leaks or any other unusual conditions.

NOTE: Make sure the nose gear torsion links are connected.

S 212-014

(11) If unusual conditions are found, including damage, deformation, cracks, buckling, etc, make an inspection for hard landing of the specific landing gear with the deflated shock strut and the area of the airplane adjacent to the deflated shock strut per:
(a) The Phase I and Phase II examination of the nose landing gear and the adjacent structure (AMM 05-51-05/201).

S 612-012

(12) If no unusual conditions are found, release the airplane for service. Do a check of the nose gear shock strut after several landings. Service the nose gear shock strut as necessary. Nose gear shock struts which are serviced continiously should be written down in the Maintenance Log.

NOTE: A small decrease in pressure is normal because the air is absorbed in the oil. Oil and/or air leaks which are continiously serviced require a close examination. Repair or replace strut as necessary.

ACID SPILLAGE CONDITION - MAINTENANCE PRACTICES

1. General
   A. This procedure has one task.
      (1) A conditional inspection for acid spillage.
   B. This task has an inspection and clean up procedure for areas where acid has touched the airplane.
   C. The primary source of acid spillage is in the battery compartments where acid electrolytes may overflow during charging or spill during battery servicing.
   D. Acid based corrosion removal compounds and airplane cleaners are used quite extensively during routine maintenance repair. Spills do occur at times and thorough neutralizing and/or rinsing is necesssary to preclude corrosion damage.
   E. Containers of acid concentrates or acid based chemicals may be part of a cargo and may be broken during loading or unloading. Spillage from sources are usually large in scale than spills previously mentioned. It is, therefore, advisable that the acid spillage be neutralized as soon as possible.
   F. Operators should also be cognizant of the fact that acids may deteriorate nonmetallic materials such as fabrics, wood, leather, etc.

   TASK 05-51-57-052-001
2. Corrosion Removal After Acid Spills
   A. Equipment
      (1) Aprons
          (commercially available)
      (2) Boots
          (commercially available)
      (3) Gloves - Rubber, Elbow Length
          (commercially available)
      (4) Goggles - Safety
          (commercially available)
      (5) Head Gear
          (commercially available)
      (6) Shield - Face
          (commercially available)
   B. Consumable Materials
      (1) Chemical, Sodium bicarbonate - O-S-576
      (2) Cleaner, Bicarbonate of soda
      (3) Compound, Organic Corrosion Inhibiting - BMS3-23
   C. Procedure

S 342-005

WARNING: ACIDS ACCIDENTALLY SPILLED ON SKIN, CLOTHING OR OTHER MATERIAL SHOULD BE FLOODED IMMEDIATELY WITH CLEAN WATER. IF EYES ARE INVOLVED FLOOD WITH COPIOUS QUANTITY OF CLEAN WATER AND CONSULT A PHYSICIAN IMMEDIATELY.

(1) Take these precautions when you work with an acid spill condition:
   (a) Adequate protective clothing should be worn when handling or working in acid contaminated areas.
      1) gloves
      2) goggles
      3) shield
      4) aprons
      5) boots
      6) head gear
   (b) Wash hands after using acid neutralizing treatment solution and/or materials before eating or smoking.
   (c) Waste materials, solvents, chemical solutions, wiping rags, masking materials, etc., shall be collected and disposed of safely.

S 942-002

(2) Do these steps to isolate the contaminated areaa:
   (a) Do not allow acid spills to spread from areas of contamination.
   (b) Using plastic sheets is advised for protection of equipment beneath battery areas. If equipment is operating, venting requirements should be maintained.
   (c) Consider protecting uncontaminated areas by taping down protective material such as plastic sheets.

S 112-003

(3) Do these steps to clean the area of an acid spillage:
   (a) If equipment is adjacent to the treatment area use plastic sheets to cover the equipment to prevent inadvertent splashing of acids or treatment fluids.
   (b) Wipe up excess fluids with cloth and discard cloth into plastic container for disposition.

(c) Neutralize the treatment area with a 20% cleaner, bicarbonate of soda solution applied with a brush or cloth swab. Particular attention should be given to faying surface joints. Pressure application may be required to flush the joint thoroughly.

NOTE: One pound of chemical, O-S-576 in 1 gallon of water will give the necessary solution.

(d) Apply the solution with a cloth, mop, brush, or sponge.
1) Make sure the solution goes into the contaminated faying surface joints.

NOTE: A pressure application of the solution can be necessary to flush the faying surface joints and some access areas fully.

(e) Apply the solution until bubbles cease in the acid/solution.

NOTE: When the bubbles cease, the acid has become neutral.

(f) Then allow the solution to remain on the surface for an additional 5 minutes after the bubbles stop.
(g) Remove the solution with mop or sponge.
(h) Flush the area with large quantities of clean water.
1) Rub the surface with a soft brush.
(i) Do a test of the cleaned aera with litmus paper.

NOTE: The litmus paper should read between 7 and 8 when the area is fully cleaned.

(j) Wipe dry with clean cloths.
(k) After thoroughly dry, repair or replace damaged finishes if it is necessary. Refer to CPM 20-50-00 and CPM 20-60-00 for protective finish systems.
(l) Apply water displacing corrosion preventive compound, BMS3-23, over entire area.

NOTE: For details of application or compound, BMS3-23, refer to CPM 20-60-00.