A Textron Company

ALERT SERVICE BULLETIN 407-11-95

11 July 2011
Revision A, 12 August 2011
Revision B, 14 February 2012
Revision C, 20 April 2012
Revision D, 21 August 2020

MODEL AFFECTED **407**

SUBJECT: **UPPER LEFT LONGERON (CHANNEL) 206-031-314-037/-177 AND SPARE ASSEMBLY 206-031-314-219B, INSPECTION OF.**

HELICOPTERS AFFECTED: **Serial numbers 53000 through 53900, 53911 through 54061 and 54300.**

[Serial numbers 54062 through 54299 and 54301 and subsequent with improved longeron assembly 206-031-314-237B or 407-030-067-103 installed at the factory and affected helicopters listed above having longeron 206-031-314-237B or 407-030-067-105 procured as a replacement unit and installed are not affected by this bulletin.]

COMPLIANCE:

PART I: For helicopters delivered from factory with subject channel or having a replacement assembly 206-031-314-219B installed exceeding 1200 flight hours in service, within 50 flight hours after publication of this bulletin but no later than August 31st, 2011.

PART II: Within 10 flight hours after completion of PART I, and every 50 flight hours thereafter or every 150 flight hours thereafter when PART III is accomplished. Every 50 flight hours when Part IV is accomplished.

PART III: At customer's option.

PART IV: Before next flight when a longeron is found cracked.

PART V: At customer's option.

DESCRIPTION:

Bell has received reports of upper left longeron (channel) cracking in service. The cracks were located in the same region of the channel near frame at Fuselage Station (FS) 217.84. The channel 206-031-314-037 was installed at factory on 53001 through 53034. The channel 206-031-314-177 was installed at factory on 53035 through 53900, 53911 through 54061 and on 54300. The longeron assembly 206-031-314-219B was sold as a spare unit. PART I of this bulletin mandates a one-time inspection of the aft fuselage top skin 206-033-003-161/-167 on helicopters exceeding 1200 hours of flight time. PART II provides instructions for inspection of specific areas of the aft fuselage. PART III of this bulletin introduces the addition of three external strap doublers to extend the intervals of the recurring inspection described in PART II. PART IV of this bulletin provides a repair procedure for a cracked longeron and mandates the installation of the external straps as defined under PART III. PART V describes the installation of improved longeron assembly 206-031-314-237B or 407-030-067-105 and the three external CRES strap doublers under PART III of this bulletin as a terminating action to the inspections defined in this bulletin.

Revision A includes longeron assembly 206-031-314-219B in the title, changes the compliance time of PART I from 25 flight hours to 50 flight hours, describes the effectivity of channels 206-031-314-037/-177 as delivered from the factory, describes the longeron assembly 206-031-314-219B as being delivered as a spare longeron, lists additional rivets as part of kit CA-407-11-95-1 and emphasizes the requirement of the installation of the 3 external strap doublers, if PART V is accomplished and provides the amount of estimated man-hours to accomplish PART V.

Revision B refers to Technical Bulletin 407-12-96 as the approved instructions to comply with PART V of this bulletin and re-adjusts the estimated man-hours required for accomplishment of PART V in order to match those of TB 407-12-96.

Revision C modifies the warranty statement.

Revision D introduces the aft fuselage 2-piece upper left longeron assembly 407-030-067-105 (TB 407-17-125).

APPROVAL:

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

CONTACT INFO:

For any question regarding this bulletin, please contact:

Bell Product Support Engineering
Tel: 1-450-437-2862 / 1-800-363-8023 / productsupport@bellflight.com

MANPOWER:

Approximately 1.0 man-hour is required to complete PART I of this bulletin. Approximately 3.0 man-hours are required to complete PART II of this bulletin.

Approximately 6.0 man-hours are required to complete PART III of this bulletin.
Approximately 16.0 man-hours are required to complete PART IV of this bulletin.
Approximately 35.0 man-hours are required to complete PART V of this bulletin.
Man-hours are based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

Owners / Operators of Bell who comply with the instructions in this bulletin will be eligible to receive a credit for the replacement parts outlined in the material section of this bulletin only when a **cracked longeron** is found.

To receive this credit:

- Comply with the instructions contained in PART IV of this bulletin.
- Purchase replacement parts as required in the materials section of this bulletin from a Bell approved source.
- Submit an MMIR to the Bell Warranty Department.

Customers who fail to comply with the instructions in this bulletin within the applicable hours or calendar date in the compliance section of this bulletin are not eligible for the special warranty credit listed above. There is no labor associated with this bulletin.

Warranty compensation as stated above is no longer applicable for affected longerons found with a crack after June 30th, 2012.

MATERIAL:

Required Material:
The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

For the accomplishment of PART III of this bulletin, order installation kit # CA-407-11-95-1.

Part Number	Nomenclature	Qty (Note)	PART
407-530-020-115	Strap doubler	1 (1)	III
407-530-020-117	Strap doubler	1 (1)	III
407-530-020-119	Strap doubler	1 (1)	III
NAS9307M-4-04	Rivet	30 (2)	III
NAS9307M-4-05	Rivet	10 (2)	III
NAS9307M-4-06	Rivet	10 (2)	III
NAS9307M-4-07	Rivet	10 (2)	III
NAS9307M-5-05	Rivet	20 (2)	III
NAS9307M-5-06	Rivet	10 (2)	III
NAS9307M-5-07	Rivet	10 (2)	III

MS20470AD4-4	Rivet	20 (2)	III
MS20470AD4-5	Rivet	20 (2)	III
MS20470AD5-7	Rivet	5 (2)	III

For the accomplishment of PART IV of this bulletin, order installation kit # CA-407-11-95-2.

Part Number	Nomenclature	Qty (Note)	PART
407-530-020-121	Angle	1 (1)	IV
206-032-307-023S	Clip	1 (1)	IV
407-530-020-123	Radius block	2 (1)	IV
407-530-020-125	Radius block	1 (1)	IV
NAS9307M-5-02	Rivet	30 (2)	IV
NAS9307M-5-03	Rivet	30 (2)	IV
NAS9307M-5-05	Rivet	30 (2)	IV
NAS9307M-5-07	Rivet	30 (2)	IV
NAS9310M-5-03	Rivet	30 (2)	IV
NAS9310M-5-04	Rivet	30 (2)	IV
100-140-2	Identification plate	1	IV

NOTES:

1. Parts can be locally fabricated. See Figure 3 and Figure 4 for details.
2. Length of rivets may vary from one helicopter to another. The correct length of rivets must be determined at installation.

Consumable Material:
The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Center.

Part Number	Nomenclature	Qty (Note)	Reference
2010-10345-01	Sealant	1 PT (1)	C-308
2230-00425-00	Epoxy Polyamide Primer	1 PT (1, 2)	C-204
2100-06673-00	Isopropyl Alcohol	1 GAL (1, 3)	C-385
2100-00345-00	Chemical Film	1 QT (1)	C-100
2000-09182-01	Adhesive	50 GRAMS (1)	C-317
5060-60158-00	Abrasive Paper (320 grit)	1 Sheet	C-406

NOTES:

1. Quantity indicated is the format that the product is delivered in. Actual quantity required to accomplish the instructions in this bulletin may be less than what has been delivered.
2. Waterborne epoxy primer 2230-00441-00 (C-246) can be used as an alternate.
3. Toluene 2110-06227-00 (C-306) or Ethyl Alcohol (C-339) can be used as an alternate.

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Accomplishment of PART III will have the following effect on the Weight & Balance data sheet:

	Longitudinal		Lateral*	
Weight	**Arm**	**Moment**	**Arm**	**Moment**
+0.3 Lbs (+0.1 kg)	218.0 in. (5537 mm)	+65 in-Lbs (+7.5 kg x mm/100)	-5.0 in. (-127 mm)	-2 in-Lbs (-0.2 kg x mm/100)

Accomplishment of PART IV will have the following effect on the Weight & Balance data sheet:

	Longitudinal		Lateral*	
Weight	**Arm**	**Moment**	**Arm**	**Moment**
+0.7 Lbs (+0.3 kg)	217.0 in. (5512 mm)	+152 in-Lbs (+17.5 kg x mm/100)	-6.0 in. (-152 mm)	-4 in-Lbs (-0.5 kg x mm/100)

* In lateral calculations, - is left and + is right.

NOTE: This is the delta weight effect of this kit. It includes the weight and effect of the items removed when this kit is installed.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

407-MM Maintenance Manual, Chapter 53
407-MPI, Maintenance Planning Information, Chapter 5
BHT-ALL-SPM, Standard Practice Manual, Chapter 4
BHT-ALL-SRM, Structural Repair Manual, Chapter 3
TB 407-07-78, Aft Fuselage Bulkhead 407-030-027-101 at FS 231.4, Introduction of.
TB 407-12-96, Aft Fuselage Upper Left Longeron Assembly P/N 206-031-314-237B, Introduction of.
TB 407-17-125, Aft Fuselage 2-Piece Upper Left Longeron Assembly 407-030-067-105, Introduction of.

PUBLICATIONS AFFECTED:

407-MPI Maintenance Planning Information, Chapter 5.
BHT-407-IPB Illustrated Parts Breakdown, Chapter 53.

ACCOMPLISHMENT INSTRUCTIONS:

PART I: One-Time Inspection of the Aft Fuselage Top Skin

-NOTE-

This inspection applies to affected helicopters having channel 206-031-314-037/-177 installed by the factory or replacement longeron assembly 206-031-314-219B installed as a spare unit, all above having accumulated 1200 flight hours or more.

1. Gain access to the aft fuselage upper skin (5, Figure 1) by removing the oil cooler blower fairing (7).

2. Remove tailboom access panel (1, Figure 2).

3. Clean upper skin (5, Figure 1) and use a 10X magnifying glass as indicated in View A, Notes 1 and 2, to inspect the upper and lower surfaces of the upper skin for cracks in the area shown.

   a. If a crack is found, accomplish PART II before next flight.

4. If no crack is found in the aft fuselage top skin (5), reinstall the oil cooler blower fairing (7) and the tailboom access panel (1, Figure 2).

5. Make an entry in helicopter logbook and historical service records indicating compliance with PART I of this bulletin.

6. Accomplish PART II within the next 10 flight hours.

PART II: Inspection of the Upper Left Longeron Assembly

-NOTE-

This inspection applies to affected helicopters having channel 206-031-314-037/-177 installed by the factory or replacement longeron assembly 206-031-314-219B installed as a spare unit, all above having accumulated 1200 flight hours or more. It also applies to units that have been repaired in accordance with PART IV of this bulletin.

1. Remove the oil cooler blower fairing (7, Figure 1), the tailboom access panel (1, Figure 2), and the air dam cover (2) (407-MM, Chapter 53).

-NOTE-

Sealant providing fume tightness of the frame at Station 217.84, if not removed, may hide a crack in the longeron.

2. Inspect aft fuselage upper skin (5, Figure 1) as defined under PART I. If the top skin is not cracked, go to step 3 below. If inspection of the skin (5) as per PART I revealed a cracked, remove skin (5) as follows:

   a. Record fasteners type, size and location and remove the skin (5).

   b. Drill the two remaining rivets maintaining the splice (8, Figure 2, View C) in place against frame (4) at STA 217.84 and remove the splice (8).

   c. Remove all traces of sealant on the upper flange of the longeron (3) at STA 217.84 and inspect for a crack. Pay attention to the transition area (narrowing section) of the upper flange (STA. 217.84). If the longeron (3) is found cracked, go to step 6.

3. Remove all traces of sealant covering the longeron (3, View B) on either side of the frame (4) at STA. 217.84 as indicated in Area 1 and Area 2. Clean sealant using a plastic scraper.

4. Make sure the area is clean and visually inspect all visible sections of the upper left longeron (3) between aft fuselage frame (7) at STA 231.472 and frame (6) at STA 204.92 for general condition, corrosion and crack. Pay particular attention to Area 1 and Area 2.

5. If corrosion is found, submit details to Product Support Engineering for evaluation and possible repair.

6. If the longeron (3) is found cracked, it may be replaced using 206-031-314-237B, 407-030-067-105, or repaired in accordance with PART IV of this bulletin. Installation of a new longeron assembly 206-031-314-237B or 407-030-067-105 done in conjunction with accomplishment of PART III of this bulletin (installation of three external strap doublers) is considered by Bell as a terminating action to this bulletin.

-NOTE-

Installation of the strap doublers (5, 6 and 7, Figure 3, Detail B) is optional when longeron (3, Figure 2) with top skin (5, Figure 1) is free of defects and do not carry any type of repair. This option will extend the recurring 50 flight hour inspection intervals to 150 flight hour inspection intervals.

-NOTE-

Installation of strap doublers (24, 25, and 26, Figure 4, View M) is mandatory as part of the airworthiness limited repair of a cracked longeron (13) as described in PART IV of this bulletin and/or as part of the installation of the new longeron assembly 206-031-314-237B or 407-030-067-105 as described in PART V of this bulletin.

7. If the external strap doublers (5, 6 and 7, Figure 3, Detail B) are installed, clean each strap doubler (5, 6 and 7) and inspect using a 10X power magnifying glass as shown in Figure 4, View M.

8. If the longeron (3, Figure 4, View L) has been repaired in accordance with PART IV of this bulletin, expand the inspection as follows:

   a. Visually inspect the complete longeron (3), the repair angle (17), and the clips (14, 18).

   b. If damage is found in any of the parts listed above, contact Product Support Engineering with details.

9. If no defects are found, reinstall a new upper skin (5, Figure 1) if applicable, the splice (8, Figure 2, View C) and the air dam cover (2) (407-MM, Chapter 53). Apply sealant where needed except in Area 1 and Area 2 as shown where further recurring inspection will have to be performed.

10. Install the tailboom access panel (1) and the oil cooler blower fairing (7, Figure 1).

11. Make an entry in helicopter logbook and historical service records indicating compliance with PART II of this bulletin.

-NOTE-

To benefit the replacement of the 50 flight hour inspection intervals by 150 flight hour inspection intervals, the longeron (3, Figure 2) and the top skin (5, Figure 1) must be free of defects and shall not carry any type of repair.

12. Perform the inspection described above every 50 flight hours or every 150 flight hours thereafter, as applicable.

PART III: Installation of the External Strap Doublers

-NOTE-

Installation of the strap doublers (5, 6 and 7, Figure 3, Detail B) is optional when longeron (3, Figure 2) with top skin (5, Figure 1) is free of defects and do not carry any type of repair. This option will extend the recurring 50 flight hour inspection intervals to 150 flight hour inspection intervals.

Installation of strap doublers (24, 25, and 26, Figure 4, View M) is mandatory as part of the airworthiness limited repair of a cracked longeron (13) as described in PART IV of this bulletin and/or as part of the installation of the new longeron assembly 206-031-314-237B or 407-030-067-105 as described in PART V of this bulletin.

1. Remove the oil cooler blower fairing (7, Figure 1), the tailboom access panel (1, Figure 2) and the air dam cover (2) (407-MM, Chapter 53).

2. Perform the inspection on the aft fuselage upper skin (5, Figure 1) and the longeron (3, Figure 2) as per PART II of this bulletin.

3. If no defect is found in the upper skin (5, Figure 1) or in the longeron (3, Figure 2), identify and remove existing rivets (8, 10, and 11, Figure 3, View A and Detail B) where the new external strap doublers (5, 6 and 7) will be installed.

4. Remove and clean any sealant on the lower side of upper flange of longeron (13) at the area where rivets (8, 10, and 11) were removed in step 3, using a plastic scraper.

-NOTE-

Strap doublers (5, 6 and 7) can be locally fabricated (Figure 3).

5. Locate the strap doublers (5, 6 and 7, View A and Detail B) on top of fuselage skin (2) as shown with respect to FS 217.84. If the longest strap (5) interferes with cowl retainer filler (14, Detail C), trim affected parts as follows:

   a. If the strap (5) requires trimming, remove the strap (5) and trim as shown Detail C and Section D-D, ensuring a minimum edge distance of 2D is maintained.

   b. If the cowling retainer filler (14) requires additional trimming, remove existing rivets securing the cowling rail (4) and the filler (14) on top of the aft fuselage skin (3) and skin panel (2). Trim filler (14) as shown.

c. Coat faying surfaces of rail (4) and filler (14) with sealant (C-308) before reinstallation of the rail (4) back on the aft fuselage using fasteners wet with sealant (C-308).

d. Coat all visible portions of the new rivets you have just installed inside of aft fuselage structure with sealant (C-308), ensuring not to apply sealant on surfaces between affected rivets. Do not apply sealant (C-308) in the Area 1 and Area 2 (Figure 2, View B) to be inspected later.

6. With the strap doublers (5, 6 and 7, Figure 3) in their proper position, backdrill all existing rivet holes from the longeron (13) through all the strap doublers (5, 6 and 7). Ensure a minimum of 2D edge distance is maintained.

7. Remove the strap doublers (5, 6 and 7) from their location and deburr all holes. Clean all surfaces with Isopropyl Alcohol (C-385).

8. Apply sealant (C-308) to faying surfaces of doublers (5, 6 and 7, View A) and reinstall on fuselage using applicable rivets wet with sealant (C-308).

9. Touch up all bare aluminum alloy metal surfaces using chemical film (C-100).

10. Coat all visible portions of the new rivets (Detail C, Section D-D) inside aft fuselage structure with sealant (C-308), ensuring not to apply sealant on surfaces between affected rivets. Do not apply sealant (C-308) in the Area 1 and Area 2 (Figure 2, View B) to be inspected later.

11. Install air dam cover (2, Figure 2) (407-MM, Chapter 53). Apply sealant where needed except in Area 1 and Area 2 where further recurring inspection will have to be performed. Install the tailboom access panel (1) and the oil cooler blower fairing (7, Figure 1).

12. Refinish exterior surfaces of the helicopter as required with primer (C-204) and final paint coatings (BHT-ALL-SPM, Chapter 4).

13. Make an entry in helicopter logbook and historical service records indicating compliance with PART III of this bulletin. Indicate also that the recurring inspection described in PART II at every 50 flight hour intervals is extended to 150 flight hour intervals if this installation is not to coincide with PART IV.

14. Repeat the inspection of the aft fuselage area as described under PART II at every 150 flight hour intervals.

PART IV: Airworthiness Limited Repair of a Cracked Longeron

-NOTE-

Installation of the three external strap doublers (5, 6 and 7, Figure 3) as defined under PART III is mandatory during the repair of a cracked longeron.

1. Remove the tailboom assembly (21, Figure 4) from the aft fuselage section (407-MM, Chapter 53) and install on appropriate support device.

2. Draw two parallel extension lines (see Section C-C) from the shear clip (10) forward flange onto the aft face of frame (4) located at STA 217.84 using a felt pen.

3. Drill the four existing solid rivets (11) securing the inboard clip (10) to the bulkhead frame (4) and the longeron (3) at FS 217. 84. Remove inboard clip (10) and retain for use later as a workaid.

4. Clean any remaining sealant residue between edge of frame (4) and longeron (3) and verify that enough space exists to slide the repair angle (17) in place. If additional space is needed, proceed as follows:

   a. Use a piece of emery cloth inserted between the edge of the frame (4) and the inner face of longeron (3). Work emery strip back and forth until 0.050 inch (1.27 mm) gap clearance is obtained. Do not exceed 0.050 inch (1.27 mm) maximum material removal.

   b. Treat bare aluminum alloy metal surfaces with chemical film (C-100) and primer (C-204).

5. If the crack in the longeron (3) (View D and View E) has migrated through the complete unit (complete failure), omit step 6 and go to step 7.

6. If the crack has not migrated through the complete longeron (3) (not a complete failure), stop drill the crack (BHT-ALL-SRM, procedure 3-2-1.c.).

-NOTE-

Stop-drilling is not required if the crack stops at any of the rivet holes in Zone “B” or Zone “C”.
Omit stop-drilling the crack if located under the footprint of the clip (14).

   a. Stop-drilling must be done only when the crack is in any part of Zone “A” away from the footprint of outboard clip (14).

b. Deburr both sides of the stop-drilled hole.

7. Sand the crack seen on inboard face of the longeron (3) in a fore and aft direction to remove any possible ridges along the crack that may interfere with the repair angle (17). Use aluminum oxide sandpaper (C-406), 320 grit or finer.

-NOTE-

Repair angle (17) with radius blocks (19 and 22) can be purchased from Bell or locally fabricated. Refer to Figure 4 for details if parts are to be fabricated locally.

8. Prepare the repair angle (17) as follows:

   a. Mark the rivets layout (View F) and drill pilot holes in repair angle (17), using # 40 drill bit.

   b. Fit the repair angle (17) in place against inner face of longeron (3) and its lower flange.

   c. The longeron (3) and repair angle (17) lower flanges have different contours; therefore, make sure the point of contact (pivot point) of the repair angle (17) is in line with the bulkhead at STA 217. 84 as indicated in View F, Note 9.

   d. Maintain at each extremity of the repair angle (17), equal gaps between the lower flange of the repair angle (17) and the lower flange of the longeron (3).

9. Secure the angle (17) tight against the longeron (3) with clamps.

10. Position the clip (10) retained in step 3 against aft face of frame (4). Clip (10) should be located exactly between extension lines made earlier (see section C-C) before being secured to the aft face of frame (4).

    a. Mark the contour of the aft vertical flange of clip (10), onto vertical face of repair angle (17).

    b. Using the existing two rivet holes in aft vertical flange of clip (10), drill two new 5/32 holes in the repair angle using #20 drill bit. These two new holes in repair angle (17) should be in line with existing holes in longeron (3) and outboard clip (14).

    c. Remove clip (10) and discard.

11. Place the new undrilled clip (18) in place between the markings made in step 10.a. above on vertical face of repair angle (17).

a. Secure clip (18) to repair angle (17) then mark onto the clip (18) the two holes made in repair angle (17) in step 10.b.

b. Transfer the two new 5/32 holes to the undrilled flange of clip (18) from the frame (4).

c. Remove clip (18) and drill two remaining new 5/32 diameter holes in flange of clip using marks made in step above.

12. Determine the exact location and orientation of the crack (see View E). If the crack is in Zone “A” only, go directly to step 14.

13. If the crack is passing through Zone “A” and also through Zone “B” and/or Zone “C”, proceed as follows:

a. Position and secure the radius block (22) against outboard face of clip (14, View J and Section K-K).

b. Transfer existing 5/32 diameter rivet holes common to repair angle (17), longeron (3) and flange of clip (14) to the radius block (22), using a #20 drill bit.

c. Remove the radius block (22) and the repair angle (17).

d. Prepare the mating surfaces of clip (14) and radius block (22) for bonding by removing the surface finish, using aluminum oxide sanding paper (C-406), 320 grit or higher.

e. Increase size of both rivet holes in the existing longeron (3) and the clip (14) to 0.250 inch (6.35 mm) diameter.

f. Install in position the repair angle (17) and the radius block (22).

CAUTION

Protect the inner skin of side skin panel (by inserting a piece of flat CRES material between the inboard face of the skin panel (core) and the outboard face of the longeron).

-NOTE-

There are no rivets installed or holes drilled in the lower flange of either the repair angle (17) or the longeron (3).

14. Transfer remaining pilot holes from the repair angle (17) to the longeron (3) using #40 drill bit. Install Clecos as you progress.

15. When finished, enlarge diameter of each hole in angle (17) and longeron using #20 drill bit.

16. Drill oversize hole using a #16 drill bit through the hole common to the new clip (18), the longeron (3), the clip (14) and the radius block (22) (if being used).

17. Remove the clip (18), the repair angle (17) and the radius block (22) (if used) and deburr all holes. Deburr all new holes in longeron (3) and all other parts affixed on the airframe.

18. Inspect holes in clip (18). If installation of rivets interferes with clip bend radius, prepare radius block (19) as follows:

    a. Match radius block (19) with applicable flange where it will be needed and transfer rivets holes in radius block (19) to match holes in clip (18).

    b. Deburr all holes in radius block (19).

19. Coat faying surfaces of the repair angle (17) with sealant (C-308) before securing in place against longeron (3) with Clecos.

    a. Make sure there is enough quantity of sealant (C-308) on the lower flange of the repair angle (17) to fill the gaps at each extremity (View F).

    b. Clean excess sealant (C-308) squeeze out.

20. Coat faying surfaces of clip (18) and applicable radius block (19) (if used) with sealant (C-308) and secure to frame (4) using Clecos. Do not secure other flange of clip (18) to repair angle (17) at this time.

21. If the radius block (22) is to be installed, coat the mating surfaces of radius block (22, section K-K) and outboard clip (14) with adhesive (C-317) before securing the radius block (22) in place using Clecos through inner clip (18), repair angle (17), longeron (3), the outer clip (14) and finally the radius block (22).

22. Install all applicable rivets (View F) wet with sealant (C-308).

23. Make sure no sealant (C-308) is re-applied to longeron and frame (3 and 4, Section H-H and K-K) as shown.

24. Mark identification plate (23, View F) with the following information:

    a. If mating holes in longeron (3) and clip (14) were drilled to 0.176/0.180 inch (4.47/4.57 mm) (using #16 drill bit), meaning that the crack is in Zone “A” only, mark plate (23) using part number 407-530-020-103 to re-identify longeron.

b. If mating holes in longeron (3) and clip (14) were drilled to 0.250 inch (6.35 mm) diameter, meaning that the crack affected Zone “A” and Zone “B” and/or “C”, mark plate (23) with part number 407-530-020-105 to re-identify longeron.

c. Mark the serial number of the helicopter on the lower window of the identification plate (23).

d. Clean area of the longeron (3) where the plate (23) will be installed using isopropyl alcohol (C-385) and let dry.

e. Coat faying surface of identification plate (23) with adhesive (C-317) and install in area as shown on the inner face of the longeron (3).

25. If not already done, install the three external strap doublers (5, 6, and 7, Figure 3) in accordance with PART III of this bulletin.

26. Install air dam cover (2, Figure 2) (407-MM, Chapter 53). Apply sealant where needed except in Area 1 and Area 2 where further recurring inspections will have to be performed. Install the tailboom access panel (1) and the oil cooler blower fairing (7, Figure 1).

27. Install the tailboom assembly (21, Figure 4).

28. Make an entry in helicopter logbook and historical service records indicating compliance with PART IV of this bulletin. Where applicable, indicate that the recurring 150 flight hour inspection intervals of PART II are now being reduced to 50 flight hour intervals.

29. Repeat the inspection of the aft fuselage area, as described in PART II of this bulletin, every 50 flight hours.

PART V: Terminating Action to Recurring Inspections Defined in this Bulletin

-NOTE-

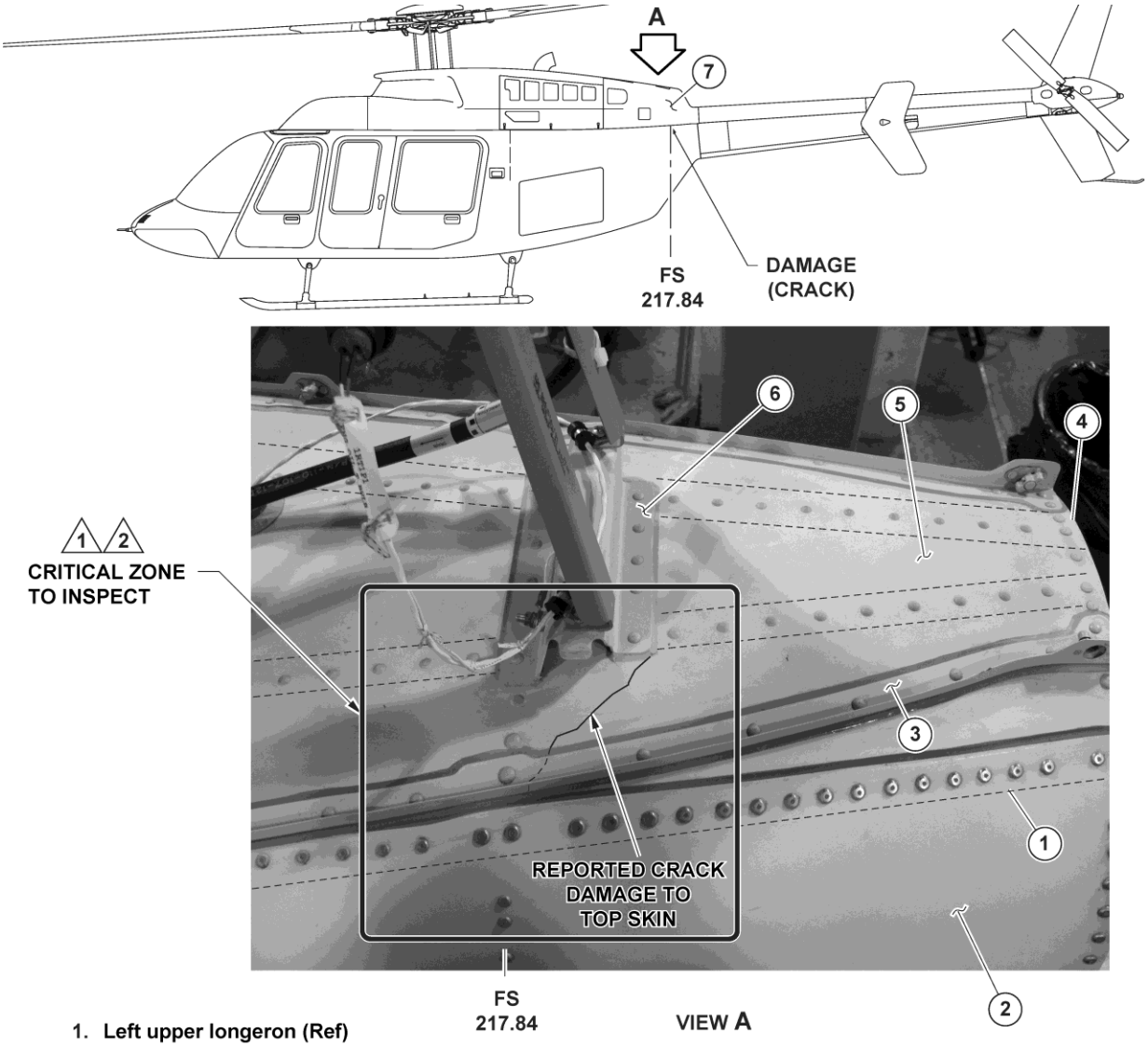
Terminating action to the present Alert Service Bulletin will occur with the installation of a new longeron assembly 206-031-314-237B or 407-030-067-105 combined with the installation of the three external CRES strap doublers defined in PART III of this bulletin. The airworthiness inspection limitations defined in this bulletin will no longer apply. The new longeron will be subjected to the scheduled inspections defined in the 407-MPI Maintenance Planning Information, Chapter 5.

1. Gain access to the existing upper left longeron assembly and replace using instructions found in Technical Bulletin (TB) 407-12-96 or TB 407-17-125, as applicable.

2. Install concurrently the three external CRES strap doublers using instructions in PART III of this bulletin.

3. Inspect the longeron assembly and the three external strap doublers under the scheduled inspections defined in 407-MPI Maintenance Planning Information, Chapter 5.

4. Make an entry in the helicopter logbook and historical service records indicating compliance with this Alert Service Bulletin.



1. Left upper longeron (Ref)
2. Left side skin panel (Ref)
3. Aft cowl retainer (Ref)
4. Aft fuselage bulkhead (Ref)
5. Aft fuselage upper skin (Ref)
6. Oil reservoir support bracket (Ref)
7. Oil cooler blower fairing (Ref)

NOTES

1. Clean upper skin surface and visual inspect all visible sections of the upper skin from the edge of the left side carbon fiber skin panel to the oil reservoir aft support bracket for a possible crack. Use a 10X magnifying glass and inspect the upper skin at edge of the aft cowl retainer and at the edge of the left side skin panel for cracks in the area defined.

2. Crack may be hidden by cowl retainer. Clean and visual inspect lower side of skin in the same area from the tailboom hardware access aperture.

09597_001

Figure 1 - Inspection of Aft Fuselage Upper Skin

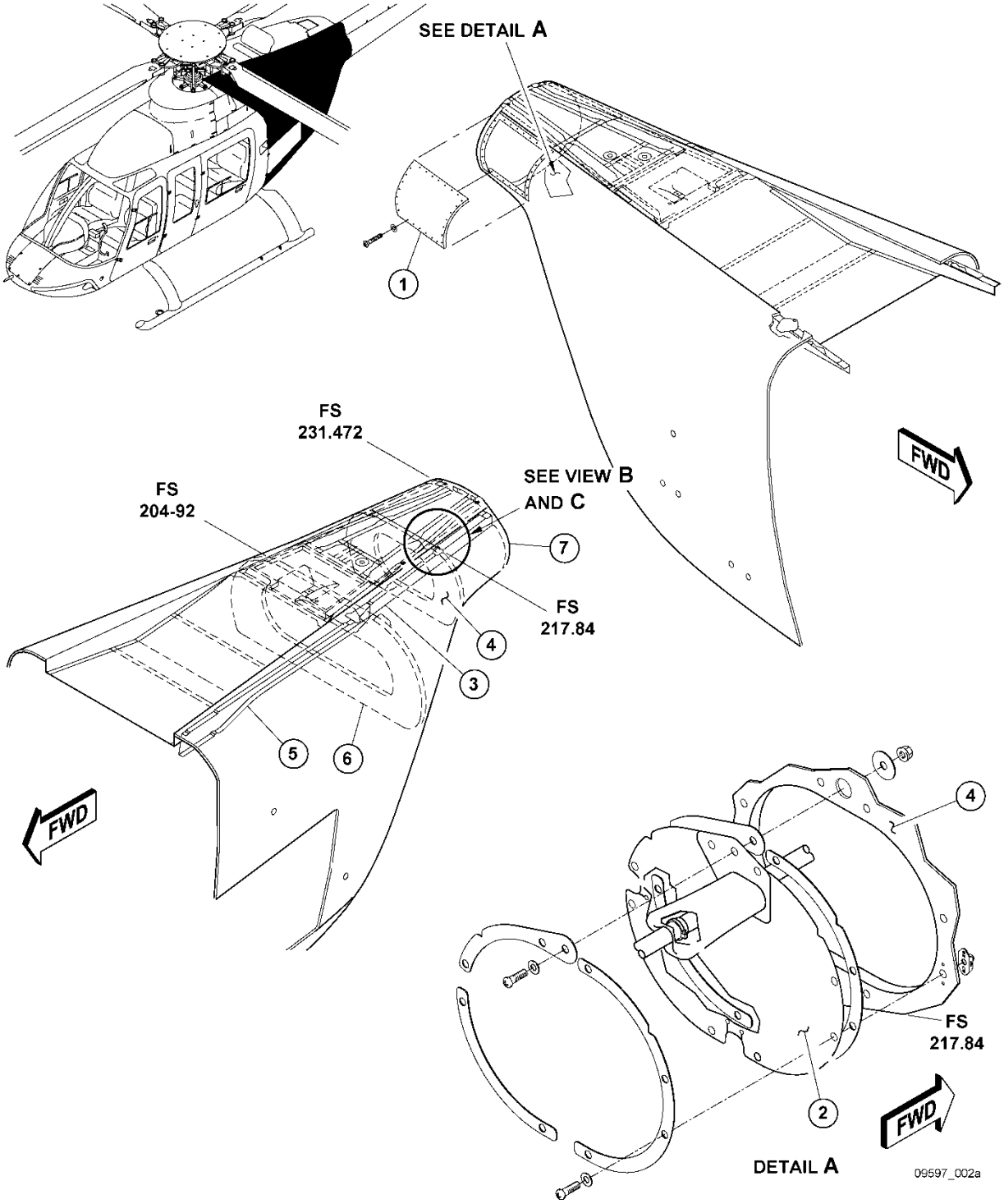
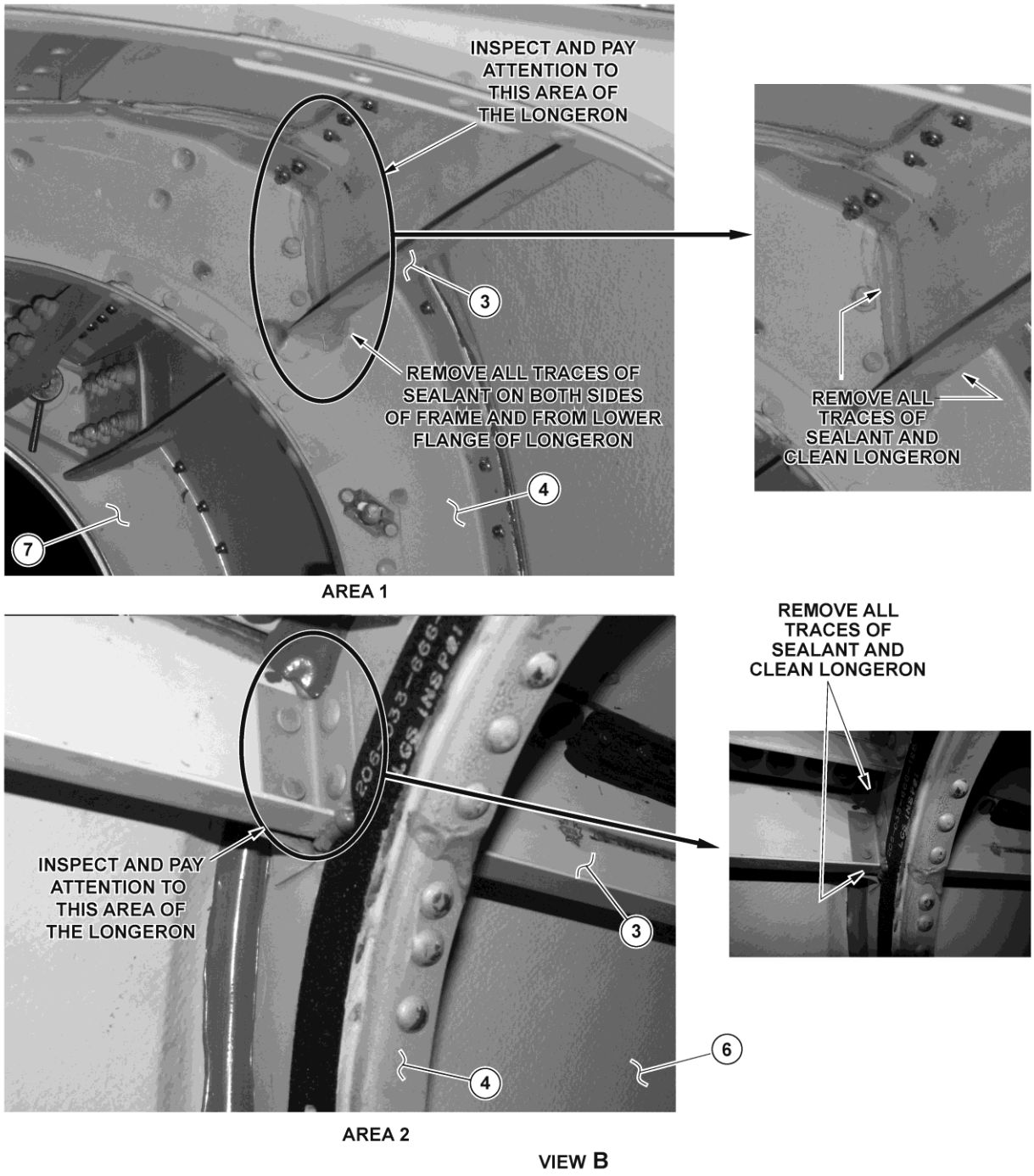


Figure 2 - Inspection of Upper Left Longeron Channel (sheet 1 of 3)

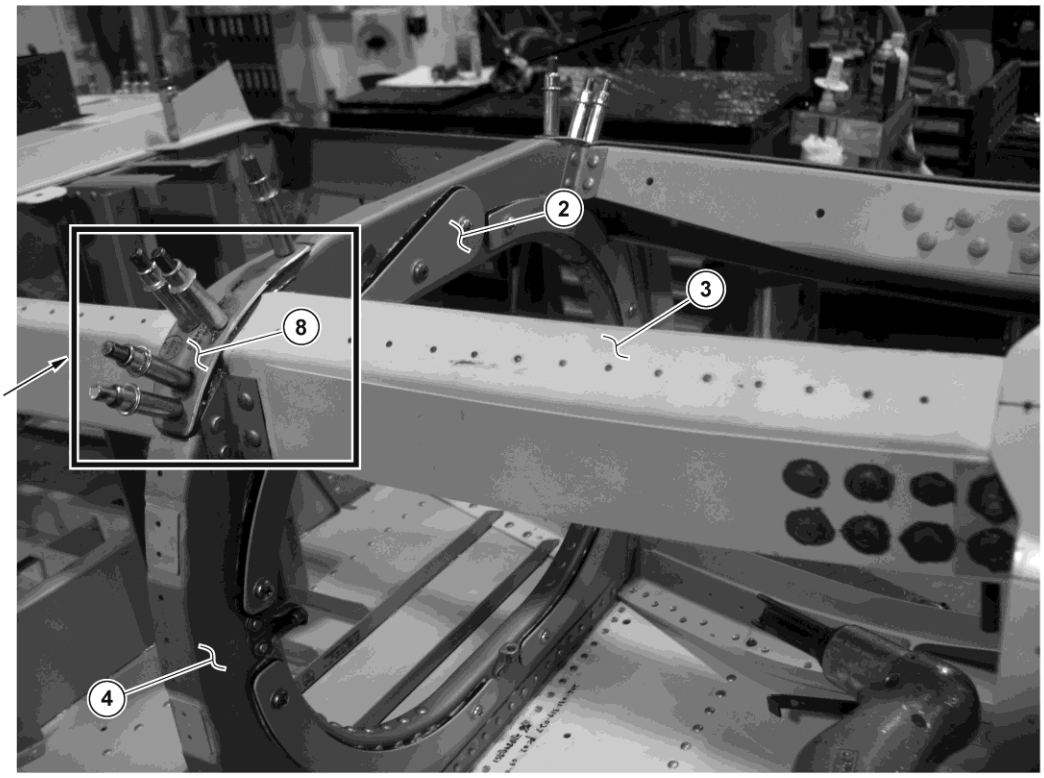


NOTE

Pay particular attention to these areas shown. Make sure you remove and clean all traces of sealant.

09597_002b

Figure 2 – Inspection of Upper Left Longeron Channel (sheet 2 of 3)



VIEW C
AFT FUSELAGE SKINS NOT SHOWN FOR CLARITY

1. Tailboom access panel (Ref)
2. Air dam cover (Ref)
3. Longeron upper left (aft) (Ref)
4. Frame FS 217.84 (Ref)
5. Longeron upper left (forward) (Ref)
6. Frame FS 204.92 (Ref)
7. Aft fuselage bulkhead FS 231.472 (Ref)
8. Splice (Ref)

NOTE

If upper skin was found to be cracked, remove skin and splice. Clean sealant residue and inspect top flange of longeron for a crack close to frame (FS 217.84).

09597_002c

Figure 2 – Inspection of Upper Left Longeron Channel (sheet 3 of 3)

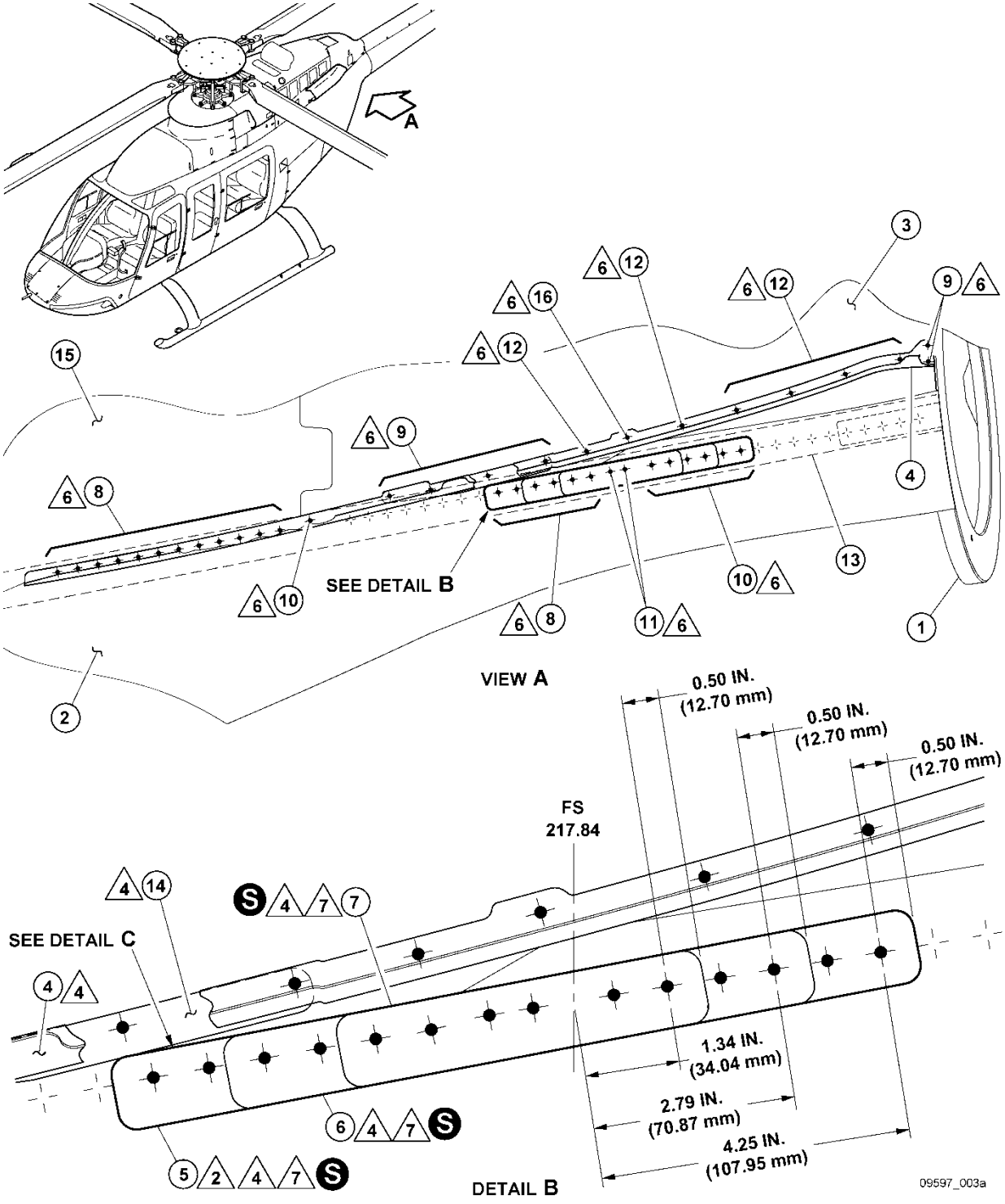


Figure 3 – Installation of Strap Doublers (sheet 1 of 3)

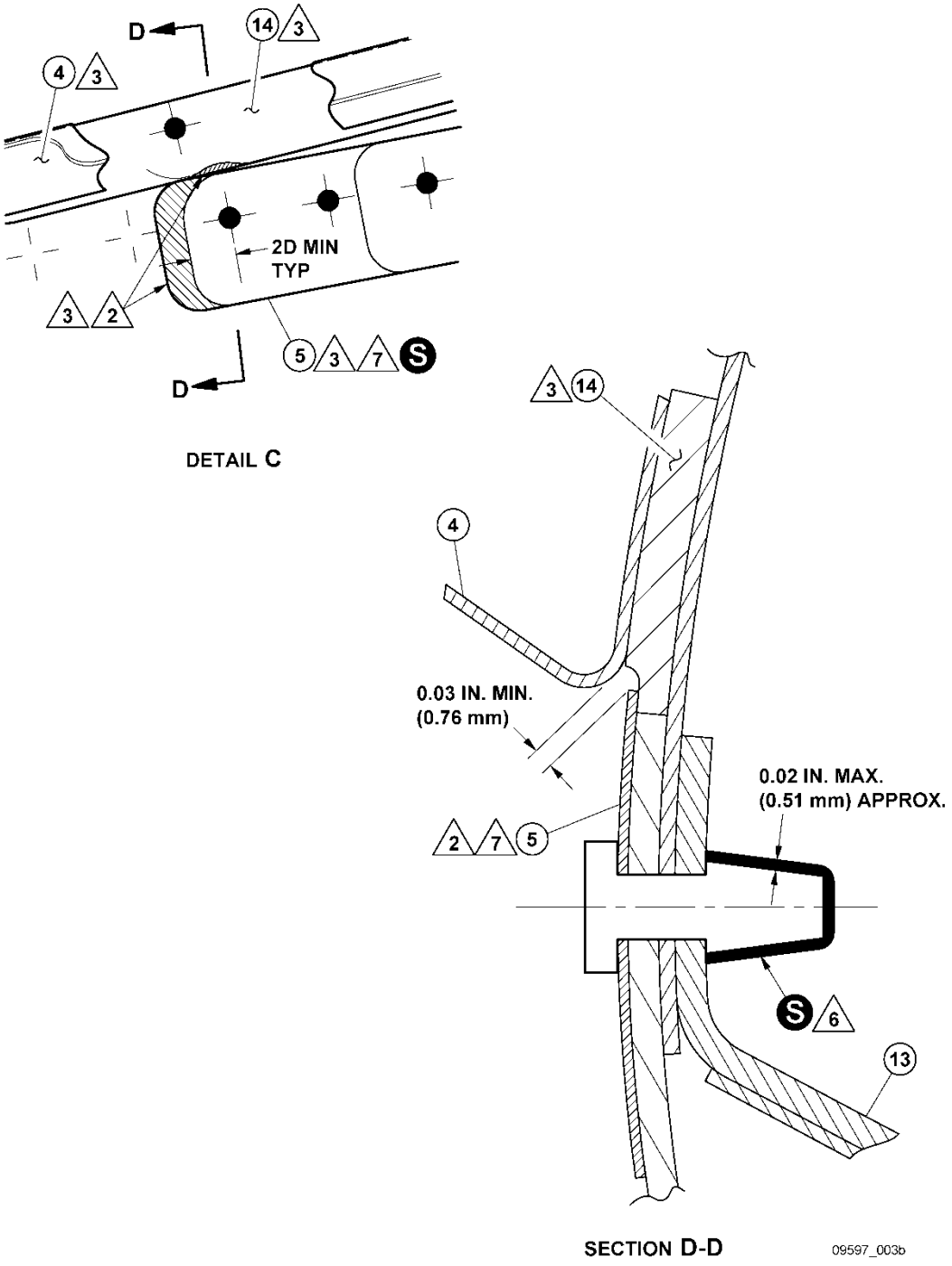
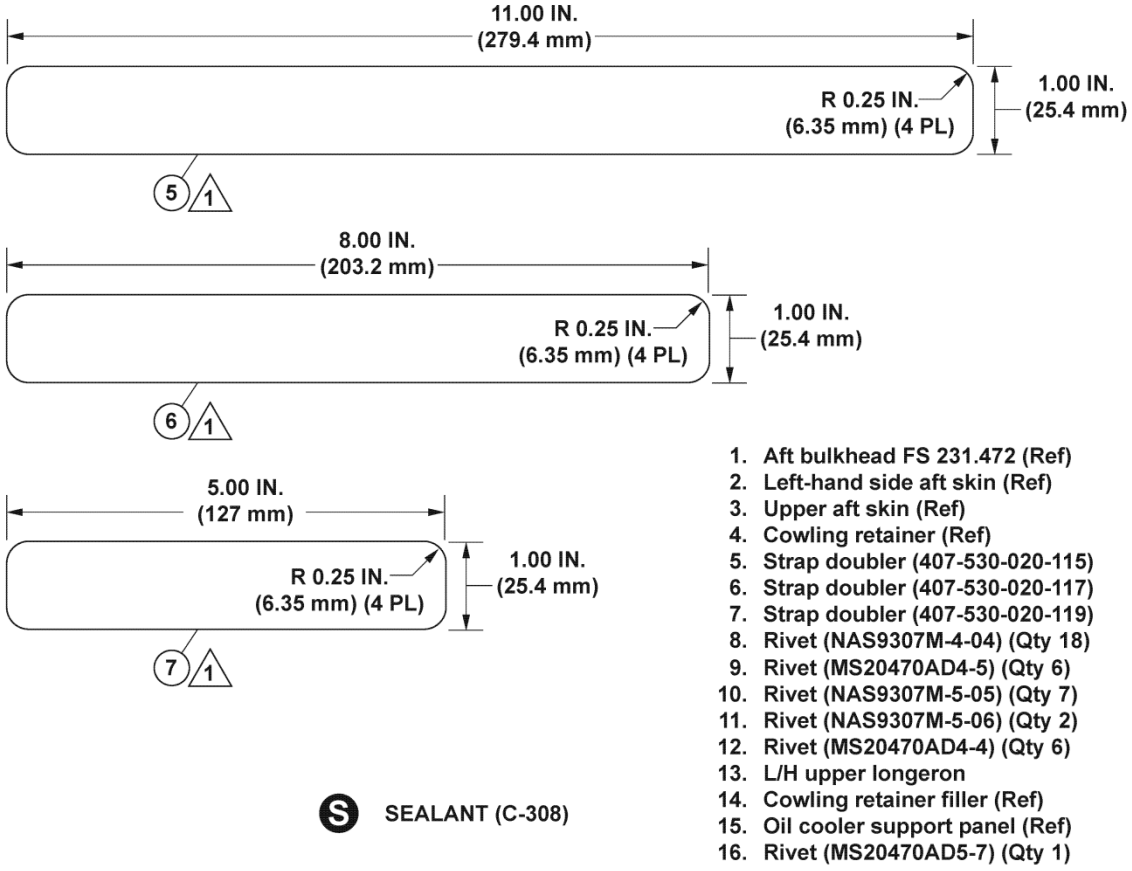


Figure 3 – Installation of Strap Doublers (sheet 2 of 3)



1. Aft bulkhead FS 231.472 (Ref)
2. Left-hand side aft skin (Ref)
3. Upper aft skin (Ref)
4. Cowling retainer (Ref)
5. Strap doubler (407-530-020-115)
6. Strap doubler (407-530-020-117)
7. Strap doubler (407-530-020-119)
8. Rivet (NAS9307M-4-04) (Qty 18)
9. Rivet (MS20470AD4-5) (Qty 6)
10. Rivet (NAS9307M-5-05) (Qty 7)
11. Rivet (NAS9307M-5-06) (Qty 2)
12. Rivet (MS20470AD4-4) (Qty 6)
13. L/H upper longeron
14. Cowling retainer filler (Ref)
15. Oil cooler support panel (Ref)
16. Rivet (MS20470AD5-7) (Qty 1)

NOTES

1. Strap may be locally fabricated from CRES 301 1/2 hard, per AMS5518, 0.020 inch (0.508 mm) thick.
2. If the strap doubler requires trimming, remove the strap and trim as shown before breaking all sharp edges on strap doubler 0.015 (0.38 mm) inch x 45° or using 0.015 (0.38 mm) radius.
3. If additional trimming is needed, remove the cowling rail and the filler. Trim filler as shown before breaking all sharp edges on filler 0.015 inch (0.38 mm) X 45° or using 0.015 (0.38 mm) radius. Re-install the proper rivets for cowling rail and filler wet with sealant (C-308). Coat all visible portions of the new rivets inside fuselage structure with sealant (C-308). Do not apply sealant (C-308) in the area to be inspected as shown in Figure 2, View B, Area 1 and Area 2.
4. Apply sealant (C-308) on faying surfaces before installing temporarily with Clecos. Clean excess squeeze out.
5. Install all rivets wet with sealant (C-308).
6. Coat all visible portions of the new rivets inside fuselage structure with sealant (C-308), not exceeding 0.020 inch (0.50 mm) thick. Do not apply sealant (C-308) in the area to be inspected.
7. Inspect strap doublers every 150 hours of flight using a 10x magnifying glass. If installed as per part III or every 50 hours if installed as part of repair done under part IV.

09597_003c

Figure 3 – Installation of Strap Doublers (sheet 3 of 3)

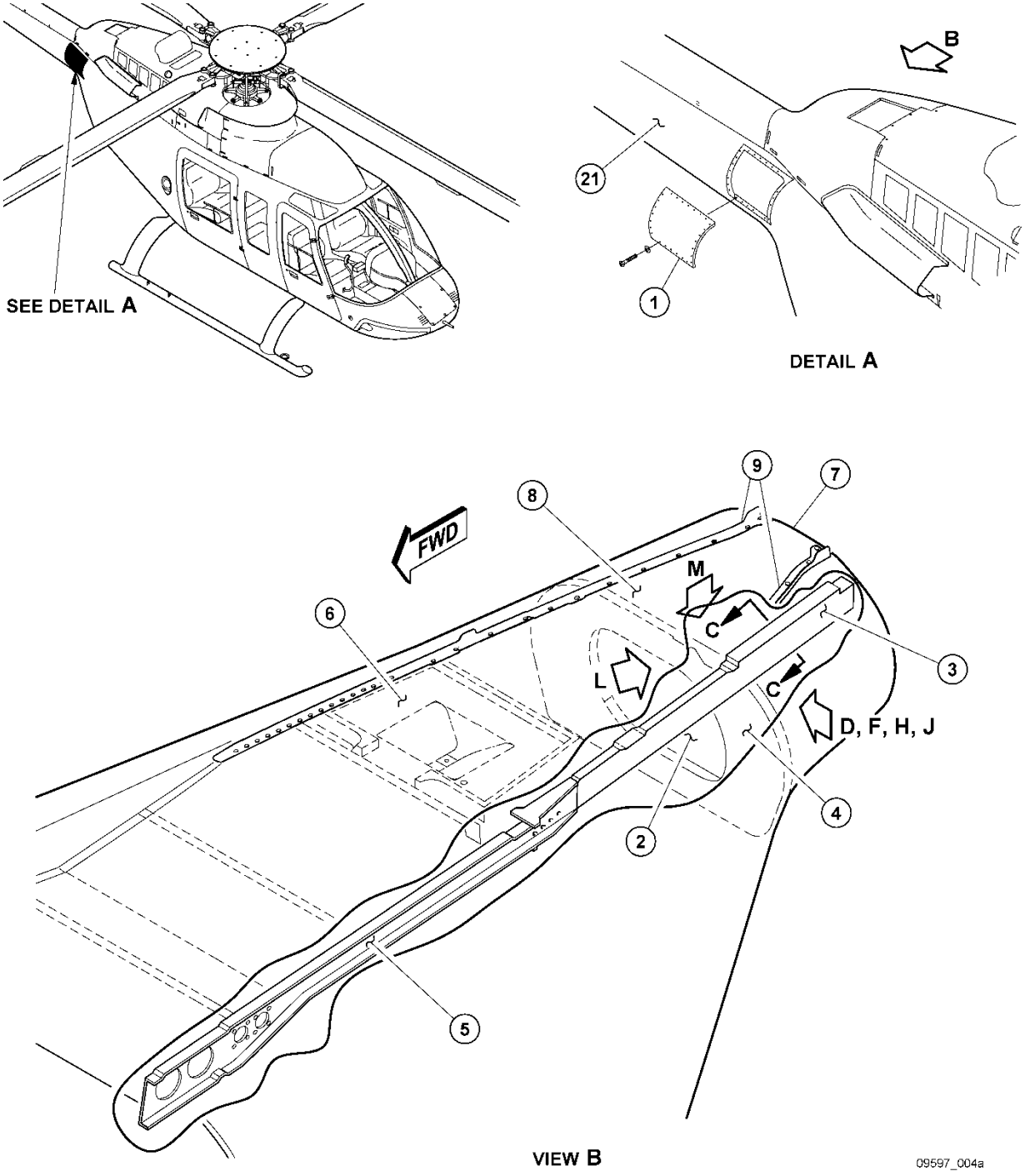
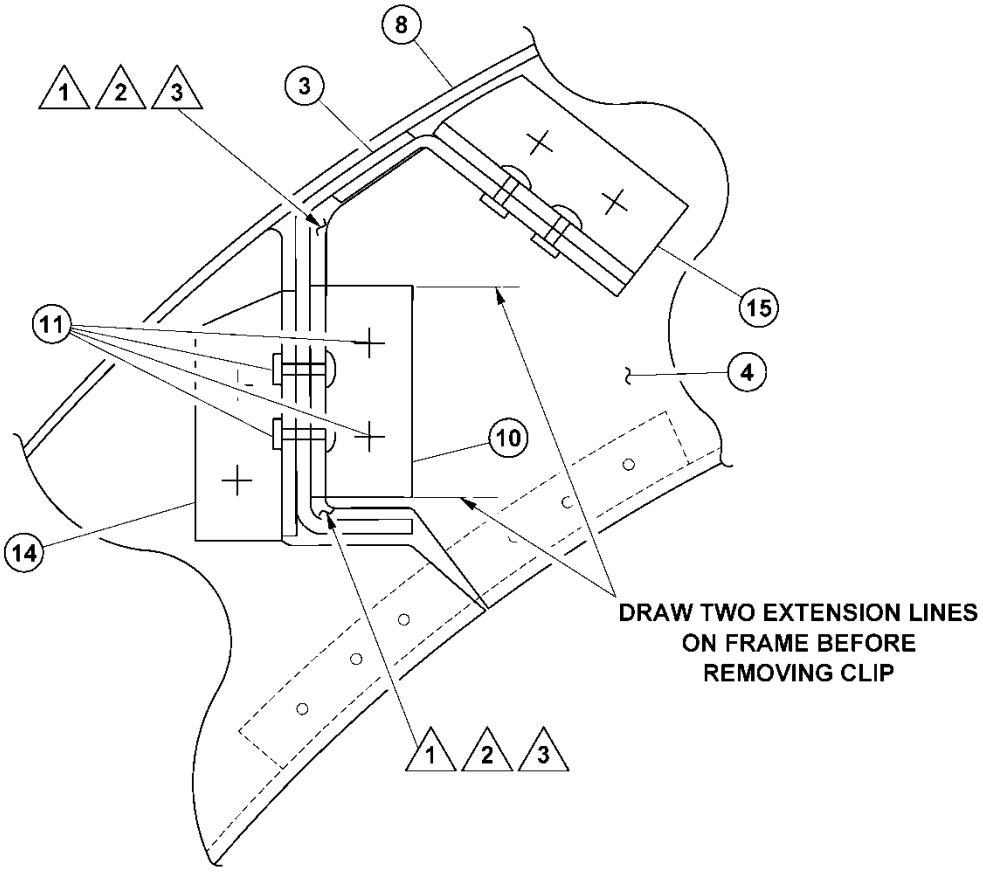


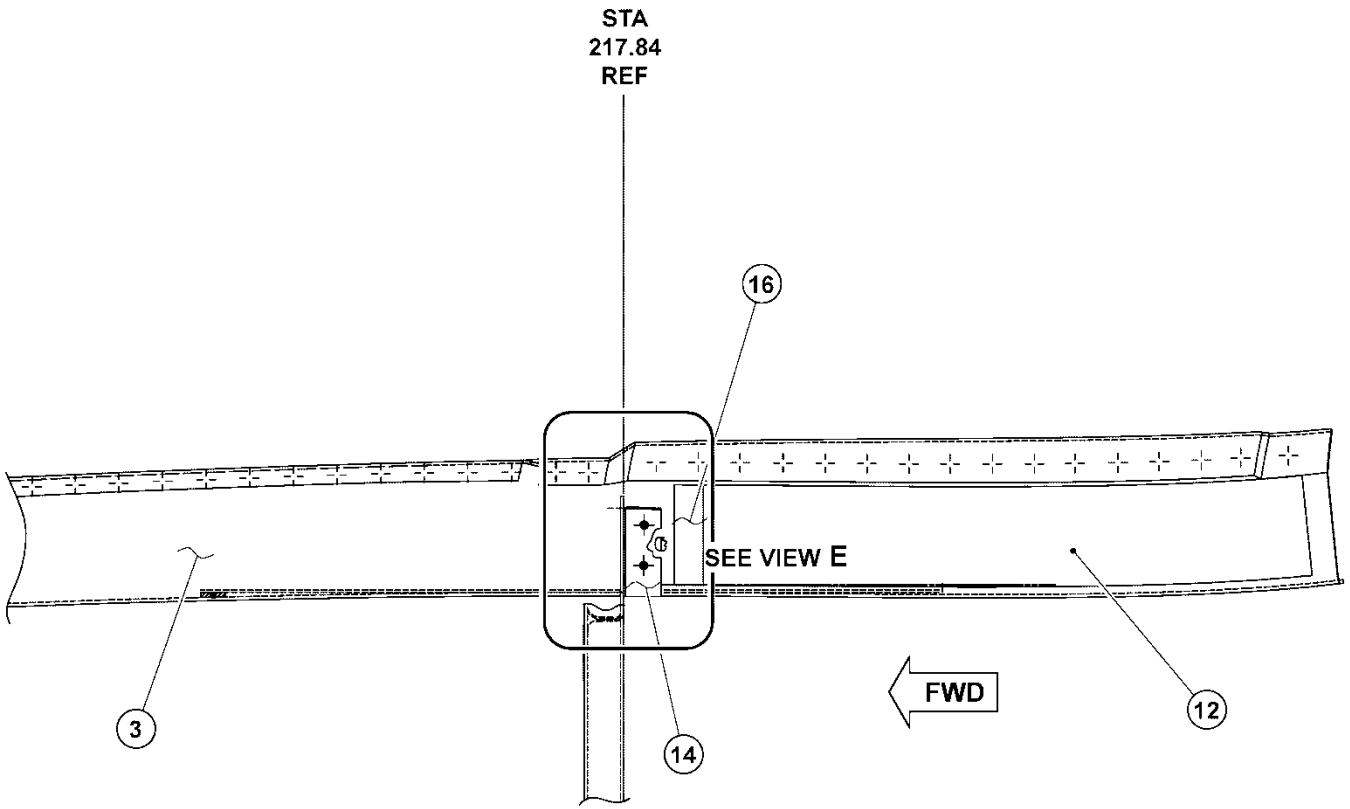
Figure 4 - Repair of Cracked Longeron (sheet 1 of 14)



SECTION C-C
LOOKING FORWARD
PRE-INSTALLATION OF REPAIR ANGLE

09597_004b

Figure 4 - Repair of Cracked Longeron (sheet 2 of 14)



VIEW D
LOOKING INBOARD
SKINS REMOVED FOR CLARITY

Figure 4 - Repair of Cracked Longeron (sheet 3 of 14)

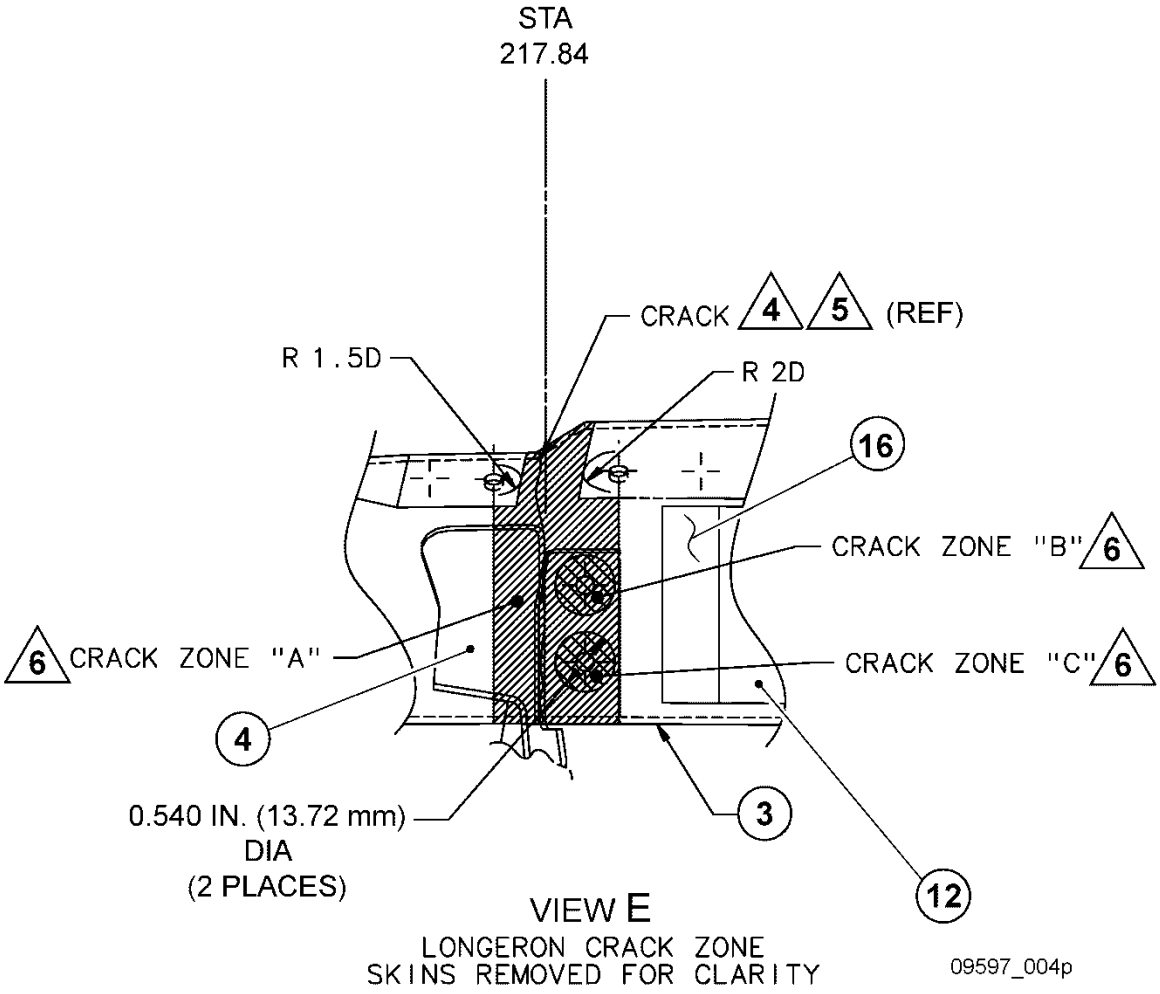
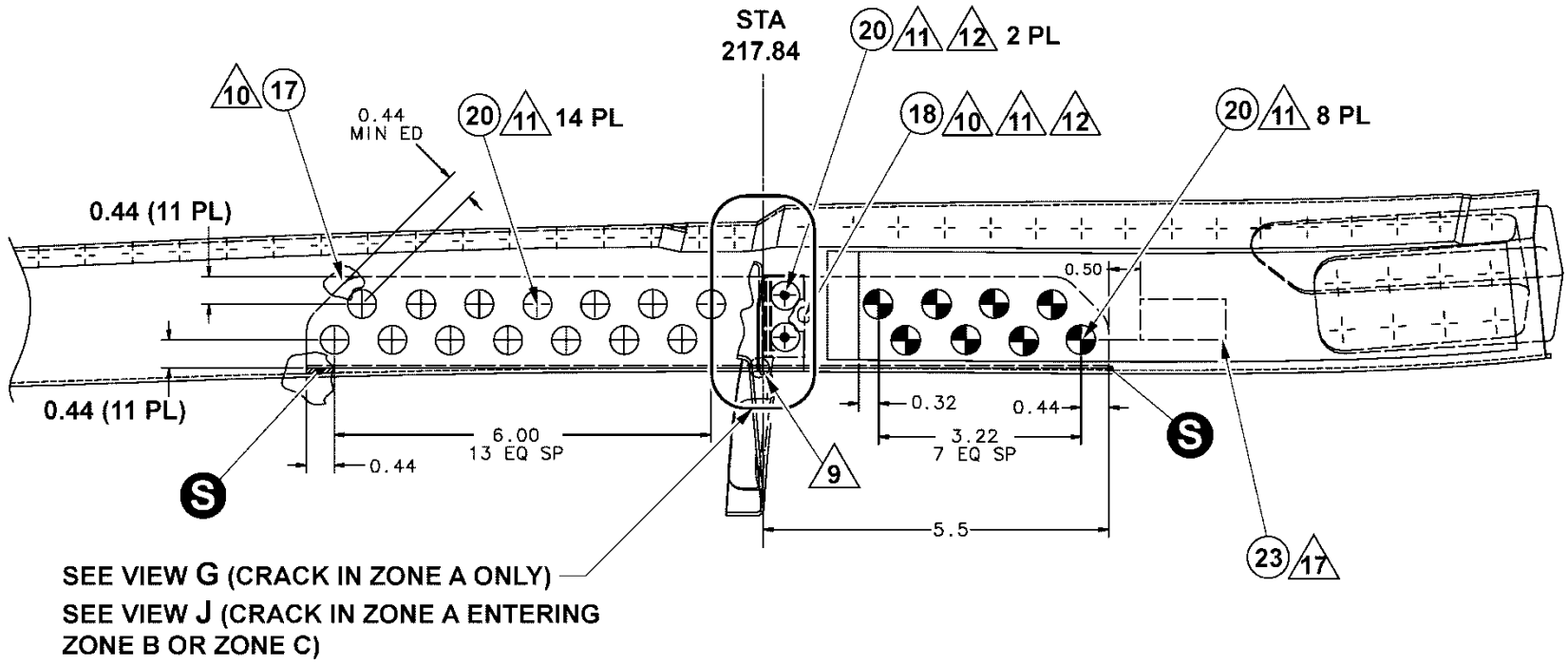


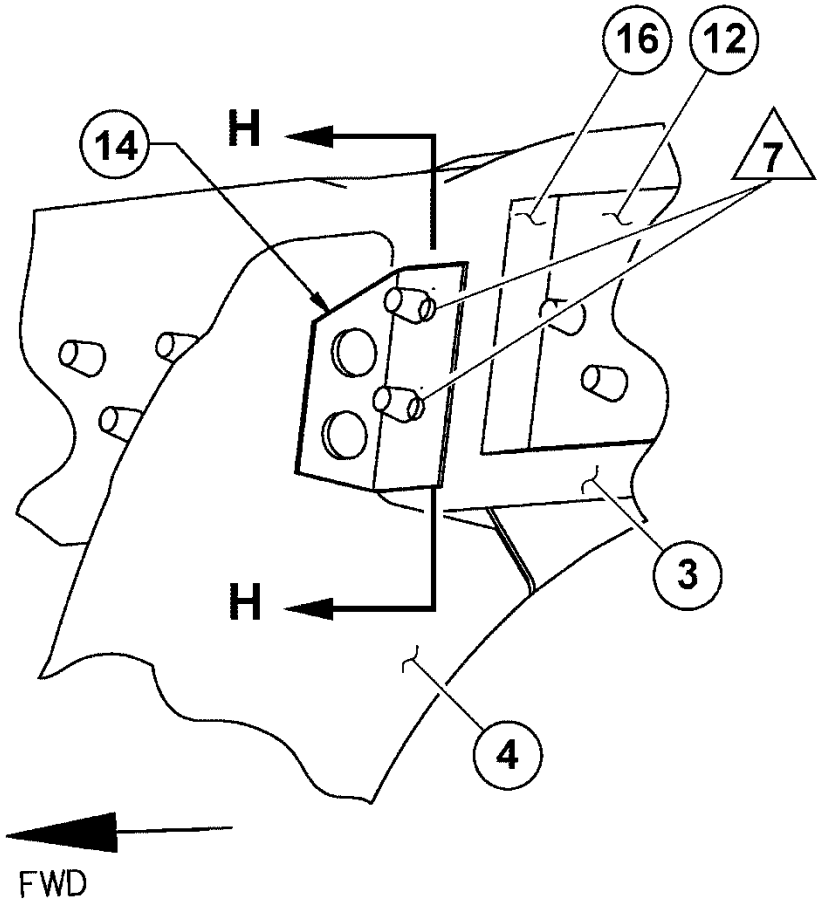
Figure 4 - Repair of Cracked Longeron (sheet 4 of 14)



VIEW F
LOOKING INBOARD
SKINS REMOVED FOR CLARITY

09597_004q

Figure 4 - Repair of Cracked Longeron (sheet 5 of 14)

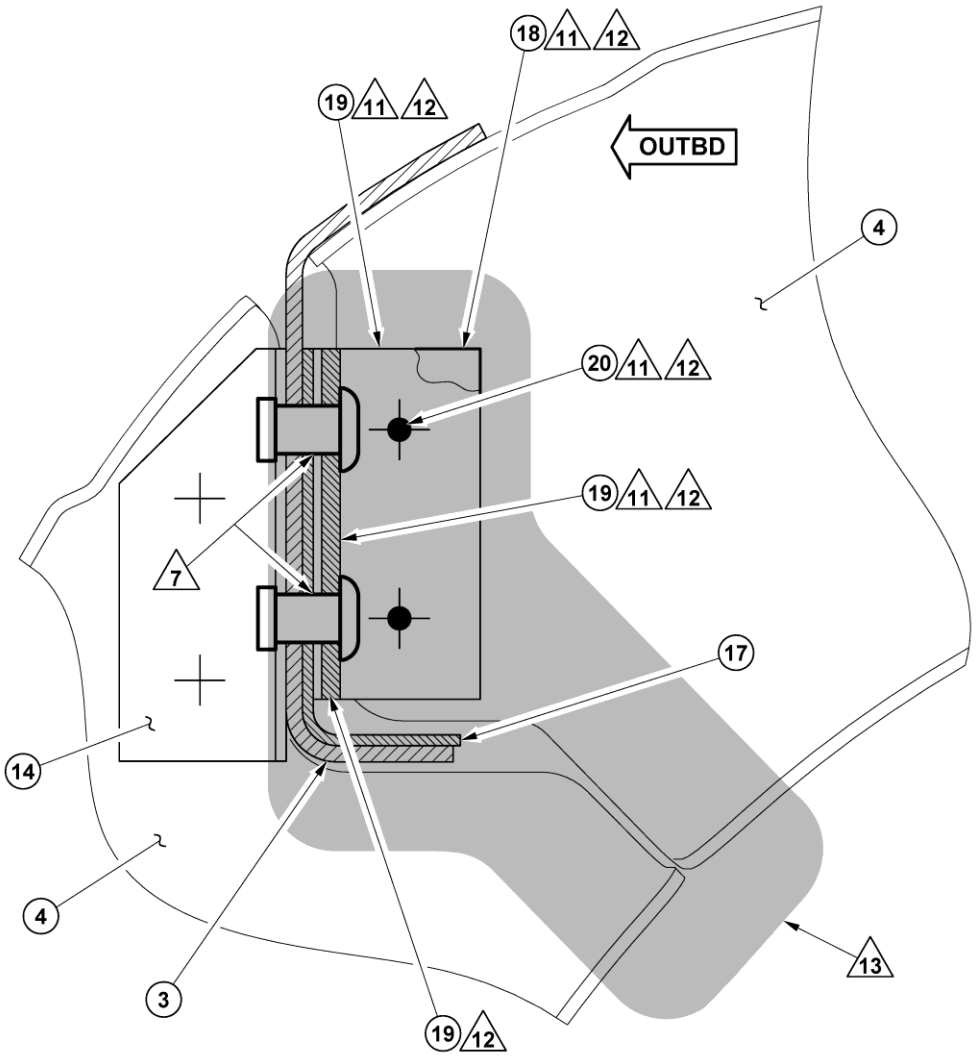


VIEW G

FOR LONGERON WITH CRACK
CONTAINED WITHIN CRACK ZONE "A" ONLY
LOOKING INBOARD
SKINS REMOVED FOR CLARITY

09597_004r

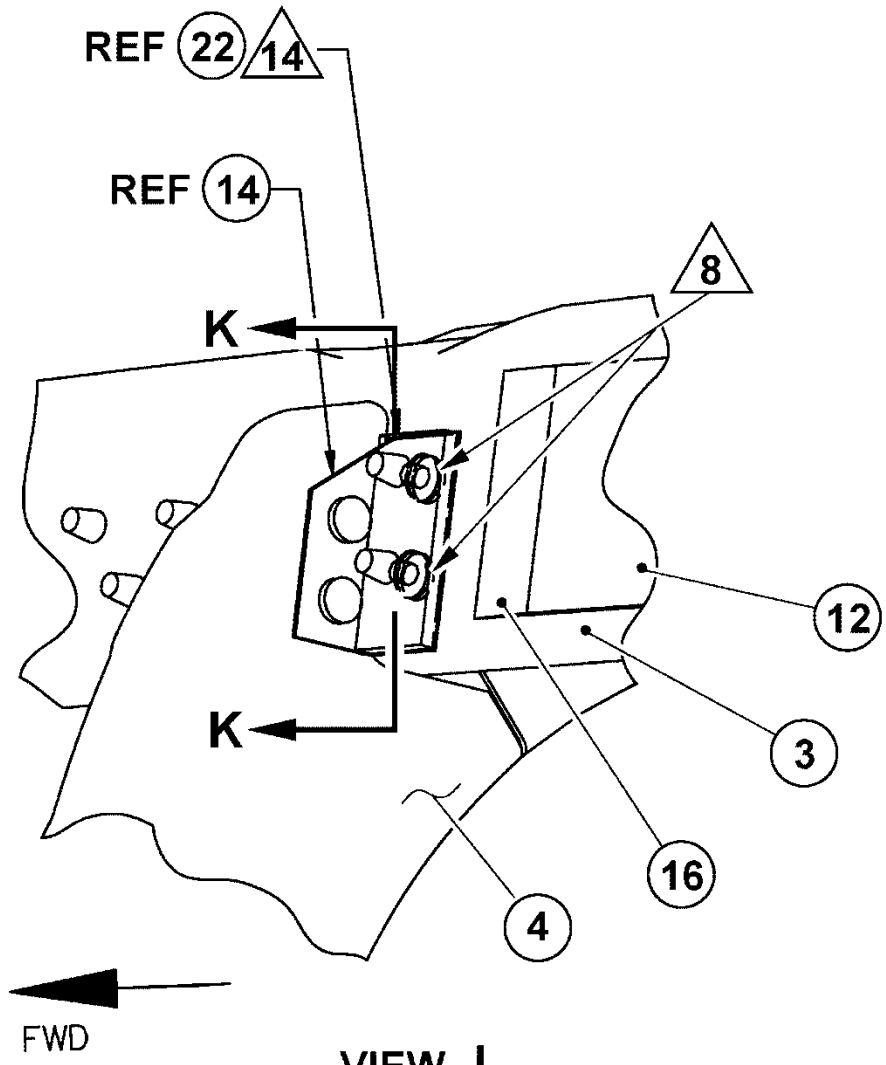
Figure 4 - Repair of Cracked Longeron (sheet 6 of 14)



SECTION H-H
(LOOKING FORWARD)
(WITH CRACK IN ZONE "A" ONLY)

09597_004k

Figure 4 - Repair of Cracked Longeron (sheet 7 of 14)



VIEW J

ISOMETRIC VIEW
FOR LONGERON WITH CRACK
CONTAINED WITHIN CRACK ZONE "A"
AND ENTERING CRACK ZONES "B" OR "C".
LOOKING INBOARD
SKINS REMOVED FOR CLARITY

09597_004s

Figure 4 - Repair of Cracked Longeron (sheet 8 of 14)

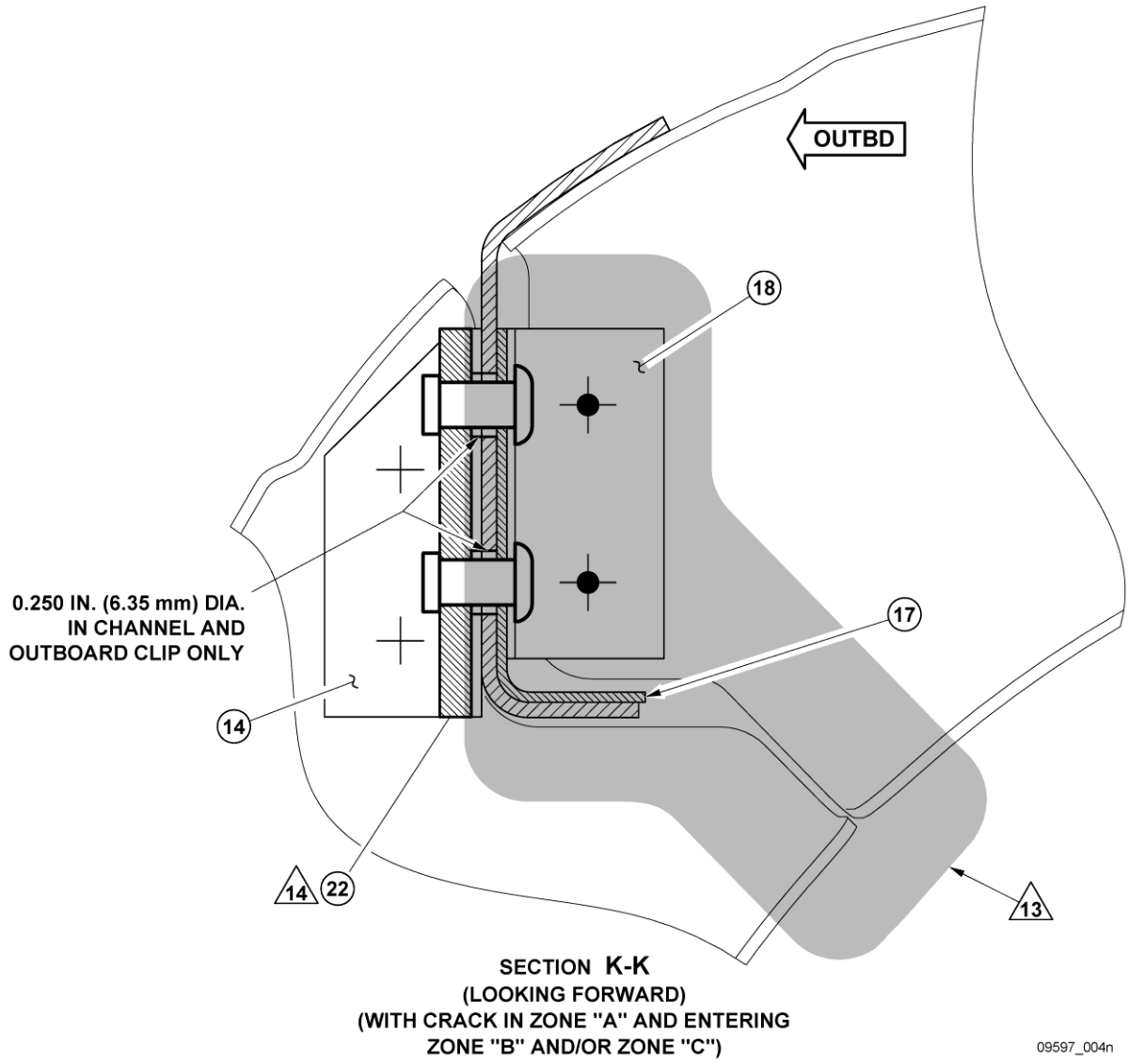
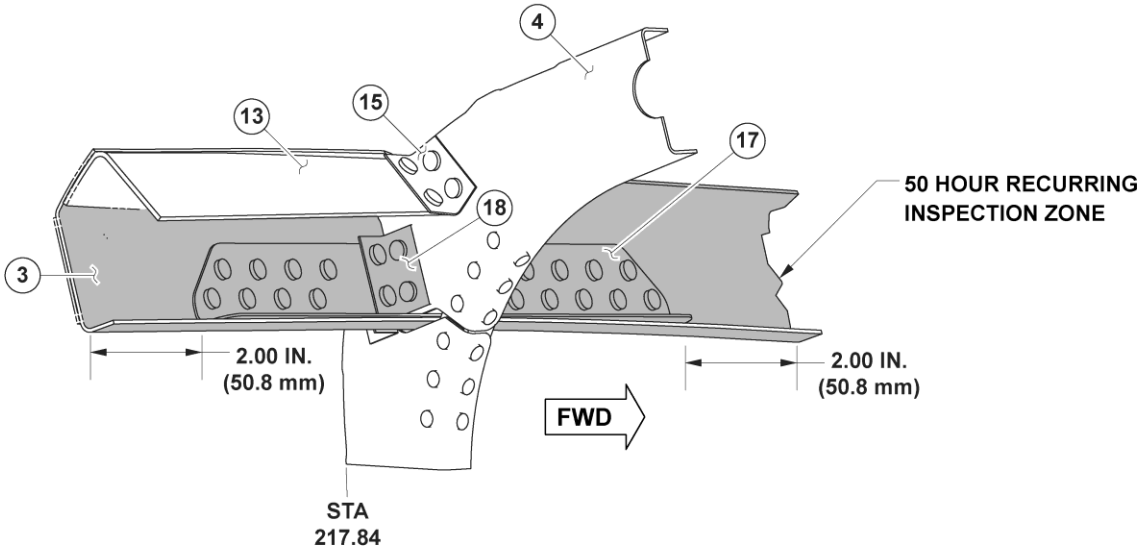
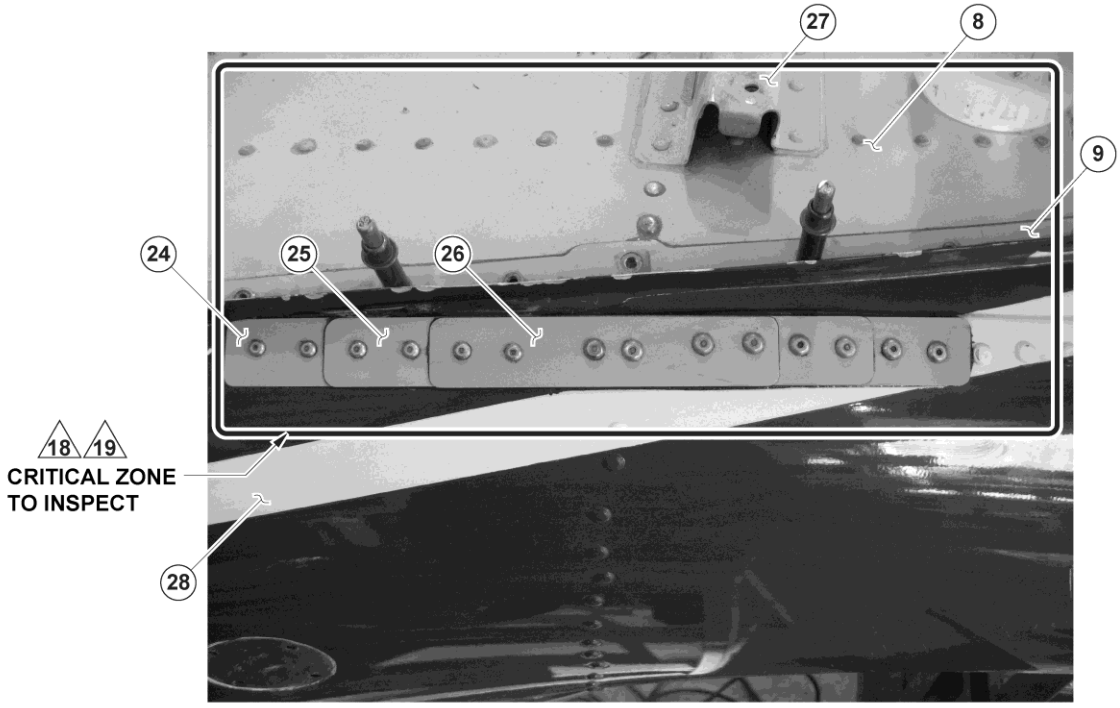


Figure 4 - Repair of Cracked Longeron (sheet 9 of 14)



VIEW L
LOOKING FORWARD AND OUTBOARD



VIEW M
50-HOUR RECURRING INSPECTION, FINAL REPAIR

09597_004t

Figure 4 - Repair of Cracked Longeron (sheet 10 of 14)

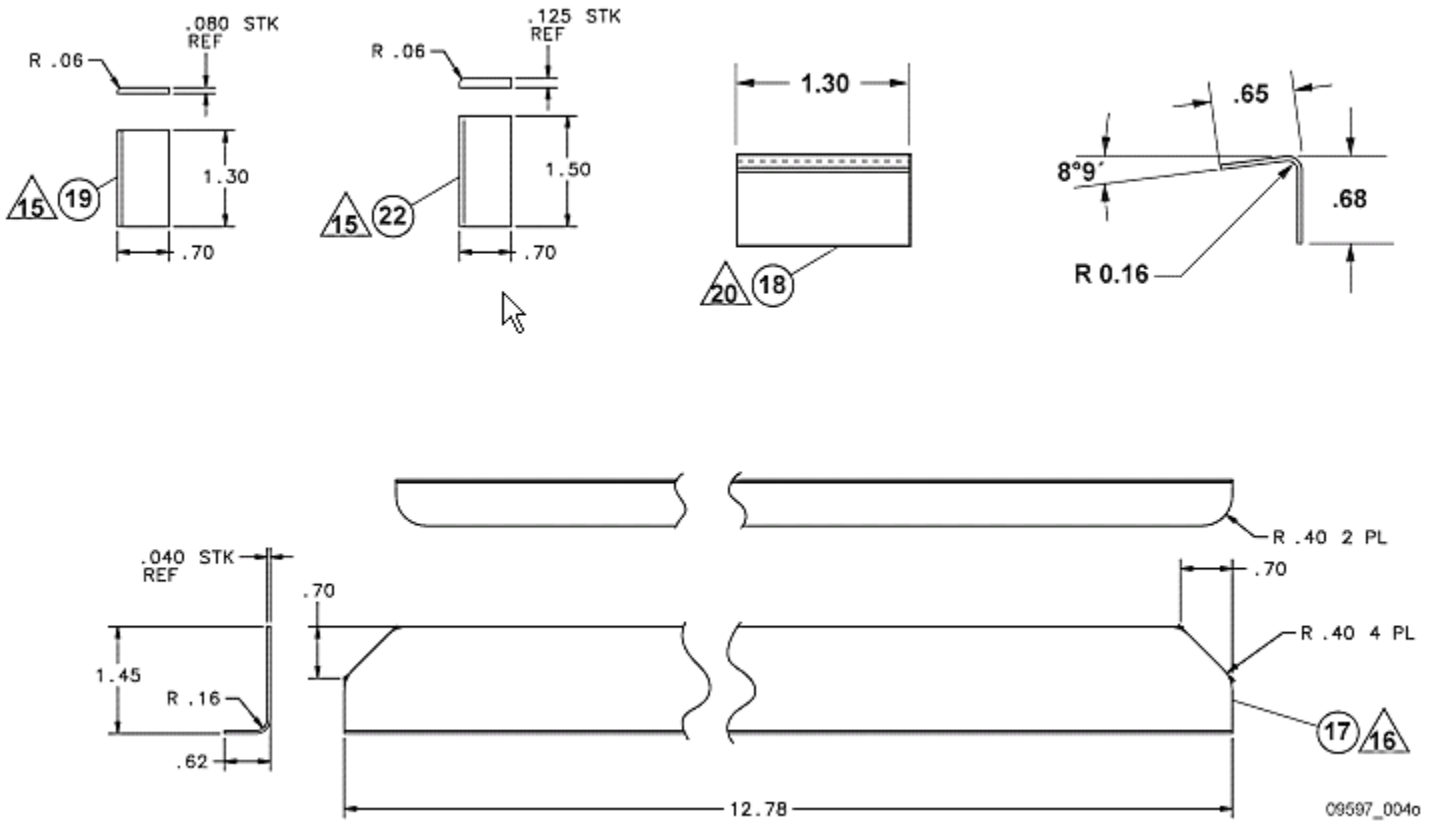


Figure 4 - Repair of Cracked Longeron (sheet 11 of 14)

Legend

1. Tailboom access cover (Ref)
2. Air dam location (Ref)
3. Upper left longeron, aft (Ref)
4. Frame FS 217.84 (Ref)
5. Upper left longeron, forward (Ref)
6. Oil cooler support panel (Ref)
7. Aft bulkhead FS 231.472 (Ref)
8. Aft fuselage top skin (206-033-003-161, -167)
9. Cowl retainer (Ref)
10. Channel inboard shear clip (206-032-307-023) FS 217.84
11. Rivets MS20470AD5 (Ref)
12. Channel outboard Cres doubler (hot-bonded) (Ref)
13. Longeron assembly inboard angle (Ref)
14. Channel outboard shear clip FS 217.84 (Ref)
15. Angle inboard shear clip FS 217.84 (Ref)
16. Channel outboard Cres doubler tapered area (Ref)
17. Repair doubler (407-530-020-121)
18. Channel new inboard shear clip (206-032-307-023S)
19. Radius block (407-530-020-123)
20. New rivet (Ref)
21. Tailboom assembly (Ref)
22. Radius block (407-530-020-125)
23. Indent plate (100-140-2)
24. Strap doubler (407-530-020-115)
25. Strap doubler (407-530-020-117)
26. Strap doubler (407-530-020-119)
27. Oil reservoir aft bracket
28. Left side carbon fiber skin panel

S SEALANT PER MIL-PRF-81733 (C-392)

Existing rivets

NAS9307M-5-02

NAS9307M-5-03

NAS9310M-5-03 (without radius block)
or NAS9310M-5-04 (with one radius block)
or NAS9310M-5-05 (with two radius blocks)

NAS9307M-5-02 (without radius block)
or NAS9307M-5-03 (with radius block)

09597_004L

Figure 4 - Repair of Cracked Longeron (sheet 12 of 14)

NOTES

1. Remove inboard clip and verify that a minimum gap of 0.050 inch (1.27 mm) exists between inner face of channel and outboard edge of frame at FS 217.84.

2. Clean all sealant residue.

3. If additional space is needed, use a piece of Emery cloth and insert between the edge of the frame and the channel. Work Emery strip back and forth until 0.050 inch (1.27 mm) gap clearance is obtained. Do not exceed 0.050 inch (1.27 mm) maximum material removal. Treat bare surfaces with alodine (C-100) and primer(C-204).

4. Inspect the crack to determine in which zone it has migrated. Crack is not allowed closer than 1.5D to first rivet hole, forward of STA 217.84 or closer than 2D to first rivet aft of STA 217.84.

5. If the crack has not migrated through the complete longeron (3) (not a complete failure), stop drill the crack in accordance with Procedure 3-2-1C described in the Structural Repair Manual;

-NOTE-

Stop-drilling is not required if the crack stops at any of the rivet holes in Zone "B" or Zone "C".

Omit stop-drilling the crack if located under the footprint of the clip (14).

a) Stop-drilling must be done only when the crack is in any part of Zone "A" away from the footprint of outboard clip (14).

b) Deburr both sides of the stop-drilled hole.

6. No repair allowed to channel if crack is outside of zone "A", "B", and or "C". Replace longeron assembly 206-031-314-237B.

7. Rivet holes in all parts are the same diameter.

8. Increase diameter of holein channel and outboard clip only to 0.250 inch (6.35 mm) diameter.

9. Make sure the point of contact (pivot point) of the repair angle is inline with the bulkhead at STA 217.84 as shown. Maintain at each extremity of the repair angle, equal gaps between the lower flange of the angle and the lower flange of the channel. Secure the angle tight against the channel with clamps.

10. Apply sealant to faying surfaces before securing with rivets.

11. Wet install rivets with sealant (C-392).

12. Radius block may be used as required to provide clearance for rivet heads where indicated using increased grip length.

13. Omit any sealant in this area adjacent to frame, channel, repair angle and existing clips.

09597_004m

Figure 4 - Repair of Cracked Longeron (sheet 13 of 14)

NOTES

14. Prepare mating surfaces and bond using structural adhesive 299-947-100, Type 2, Class 2 (C-317).

15. Radius block may be locally fabricated from 6013-T4 or 2024-T3 aluminum alloy material.

16. Repair angle may be locally fabricated from Cres 301 material 1/2 hard per AMS5518.

17. Mark identification plate with applicable modification part number and bond to inboard face of channel using structural adhesive (C-317), 299-947-100, Type 2, Class 2.

18. Clean upper skin surface and visual inspect all visible sections of the upper skin from the edge of the left side carbon fiber skin panel to the oil reservoir aft support bracket for a possible crack. Use a 10X magnifying glass and inspect the upper skin at edge of the aft cowl retainer and at the edge of the left side skin panel for cracks in the area defined.

19. Inspect straps (qty 3) using 10X magnifying glass.

20. Clip may be locally fabricated from 7075T6 material, 0.032 inch thick. Use radius blocks (19 or 22), as needed, if rivet holes interfere with the 0.16 inch bend radius used for this locally manufactured clip.

09597_004m_2

Figure 4 - Repair of Cracked Longeron (sheet 14 of 14)