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NMD-34-4
REVISION 1
21st March, 1984

SUBJECT: NOMAD SERVICE BULLETIN NMD-34-4 - REVISION 1

Ladies and Gentlemen,

Service Bulletin NMD-34-4 (Reference No. 144) is now issued at Revision 1 and incorporates the following changes :

(1) Page 2, Para 1.G
Reference to procurement of parts added.

(2) Page 2, Para 1.K
Reference to King KR85 ADF Installation and Maintenance Manual added.

(3) Page 4, Para 2.A
Para 2.A divided into Para 2.A and 2.B (Installation of Cables).
Para 2.B changed to Para 2.C (Installation of Loop/Sense Antenna).

(4) Page 5, Para 3.A (1), (2) and (3) deleted and new Para 3.A (1) substituted.

(5) Page 5, Para 3.A (1)
Equivalent metric length of items P/N RG58C/U and RG58A/U changed to 6350mm.

(6) Page 6, Para 3.A (5) deleted and new Para 3.A (2) substituted.

(7) Page 7, Para 3.D (1)
Recommended Disposition column deleted and text advising disposition of removed parts added.

(8) Page 8, Para 3.D (2)
Recommended Disposition column deleted and text advising disposition of removed parts added.

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(9) Page 8, Para 3.F
Revision 1 inserted after NMD-34-4.

(10) Reference No. changed to 148.

(11) Date of issue changed to 21st March, 1984 and Revision 1 added to pagination.

p.p. W HENDERSON
PRODUCT SUPPORT MANAGER

GOVERNMENT AIRCRAFT FACTORIES
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SERVICE BULLETIN

SUBJECT: INTRODUCTION OF KA42B LOOP/SENSE ANTENNA FOR KING ADF SYSTEMS (MOD N422)

1. Planning Information

A. Effectivity

(1) Aircraft Affected

(a) All Nomad N22-Series aircraft fitted with Option G74 (ADF 1) and G77 (ADF 2) whose log books do not already record the embodiment of Mod N422 or compliance with Service Bulletin NMD 34-4.

(b) All Nomad N24-Series aircraft fitted with Option G74-24 (ADF 1) and G77-24 (ADF 2) whose log books do not already record the embodiment of Mod N422 or compliance with Service Bulletin NMD-34-4.

Pre-certification implementation of the intent of this Service Bulletin is recorded in the airframe log book as Mod N422.

(2) Spares Affected

Nil

B. Reason

To improve the range and performance of the ADF 1 and ADF 2 systems.

C. Description

The KA42 or KA42A loop antenna(s) and the sense antenna(s) are replaced by a KA42B combined loop/sense antenna which is installed on the underside of the fuselage.

D. Compliance

At the operator's discretion.

E. Approval

The modification detailed herein has been approved pursuant to Air Navigation Regulation 40 and conforms with the type certification requirements.

F. Manpower

Twelve manhours

G. Material - Price and Availability

Parts required for the embodiment of this modification are to be obtained from the operator's stock or local sources.

H. Tooling - Price and Availability

None required.

J. Weight and Balance

OPTION	WEIGHT lb (Kg)	INDEX UNITS $\frac{\text{lb in}}{1000}$	INDEX UNITS $(\frac{\text{Kg mm}}{1000})$
G74	.18 lb (.08 Kg)	$\frac{-.25 \text{ lb in}}{1000}$	$(\frac{-2.92 \text{ Kg mm}}{1000})$
G74-24	.18 lb (.08 Kg)	$\frac{-.32 \text{ lb in}}{1000}$	$(\frac{-3.71 \text{ Kg mm}}{1000})$
G77	.21 lb (.10 Kg)	$\frac{-.06 \text{ lb in}}{1000}$	$(\frac{-6.70 \text{ Kg mm}}{1000})$
G77-24	.21 lb (.10 Kg)	$\frac{-.02 \text{ lb in}}{1000}$	$(\frac{-.22 \text{ Kg mm}}{1000})$

K. References

Maintenance Manual, Illustrated Parts Catalogue and Wiring Diagram Manual Sections of the following Customer Options Supplements: G74, G74-24, G77 and G77-24.

King KR85 ADF Installation and Maintenance Manual.

L. Publications Affected

As for Sub-para K.

2. Accomplishment Instructions

A. Remove the KA42 or KA42A Type Loop Antenna(s) and Cables

(1) Remove the loop antenna(s) (Ref. Maintenance Manual and Illustrated Parts Catalogue sections of Option Supplements G74, G74-24, G77 & G77-24 as appropriate).

(2) Remove the sense antenna(s) attachment fittings on the fin and the feed-through insulators from the aircraft (Ref. Maintenance Manual and Illustrated Parts Catalogue Sections of Option Supplements G74, G74-24, G77 and G77-24 as appropriate). Discard the sense antenna(s), attachment fittings and the feed-through insulators.

(3) Locally manufacture patch plates and place over redundant holes in the fuselage and drill off the twenty No. 30 (3.3 mm) dia holes in the large patch and four No. 30 (3.3 mm) dia holes in the small patch. Remove and deburr the patches and deburr the aircraft skin. Wet assemble the patches to the aircraft skin using pigmented jointing compound and rivet up using rivets P/N MS20600AD4W1 (Ref Figure 1).

(4) Disconnect the loop antenna cable assembly(s) from the KI 225-01 indicator(s) and remove the cable assembly(s) from the aircraft. It may be necessary to remove the aircraft interior roof lining panels for access (Ref MM 25-00-00).

(5) Disconnect the sense antenna cable assemblies RD8B22 and RD8A (G74/G74-24) or RD32B22 and RD32A (G77/G77-24) from the connector bracket attached internally to the rear fuselage structure and adjacent to the feed-through insulator positions. Remove and discard the connector bracket(s) and the cable assemblies RD8B22 and RD32B22 as appropriate.

(6) Remove the KR85 ADF receiver (Ref. Maintenance Manual Section of Option Supplements G74, G74-24, G77 and G77-24 as appropriate). Slacken the two screws which secure the cable assembly connector mounting bracket to the ADF receiver mounting tray, then raise the bracket and cable assembly until the screws can be disengaged from the keyhole slots in the mounting tray. Free the cable assembly from the main avionics loom as necessary to provide better access to the capacitor box mounted on the cover of the mounting bracket and the cable connector.

(7) Disconnect the sense antenna cable assembly(s) RD8A and RD7 (G74 or G74-24) or RD32A and RD31 (G77 or G77-24) from the capacitor box mounted on the cover of the cable assembly connector mounting bracket. Remove cables RD8A and RD32 from the aircraft and discard.

(8) Remove and discard the capacitor box(s) and attaching parts (Ref. Illustrated Parts Catalogue Section, Figure 1, Sheet 2, Items 28, 29, 30 and 31 of Option Supplements G74 and G74-24, or Figure 1, Sheet 2, Items 29, 30, 31 and 32 of Option Supplements G77 and G77-24 as appropriate).

(9) Unsolder the braiding and conductor of cable RD7 (G74 or G74-24) and cable RD31 (G77 or G77-24) from pins 15 and 16 respectively of the cable assembly connector which connects to the KR85 ADF receiver(s). Discard cable(s) RD7 and RD31.

B. Installation of Cables

(1) Attach the matching network assembly King P/N 200-2104-00 to the cable assembly connector mounting bracket as shown in Figure 2.

(2) Obtain a 250 inch (635 mm) length of RG58C/U (Alt. RG58A/U) radio frequency cable for each ADF system and identify the cable RD7 (G74 or G74-24) or RD31 (G77 or G77-24). Fit a co-axial connector P/N UG88BNC to one end of each cable. Prepare the other end for soldering to pins 15 and 16 of the cable assembly connector which connects to the KR85 ADF receiver(s).

(3) Connect the braid and conductor of the radio frequency cables to the terminals of the matching assembly(s) as detailed in Figure 2. Connect the red, blue and black leads of the matching network assembly(s) to the pins of the network connector(s) as detailed in Figure 2.

(4) Ensure that the quadrantal error correction inductance .47 μH King P/N 019-2084-13, is connected between pins E9 and E10 on the new loop antenna cable connector to the antenna, then connect the cable to the indicator.

(5) Route the loop antenna cable assembly and the new sense antenna cable assembly RD7 or RD31 through the aircraft as shown in Figures 3 and 4 as appropriate. Grommets should be used to protect the cable where it passes through the frame cut outs (Ref Figure 3 (N22-Series) and Figure 4 (N24-Series) and where cable passes between the U/C chains it must be supported and secure.

C. Installation of Loop/Sense Antenna(s) (Ref Figure 5).

(1) Locate the backing plate P/N 047-3793-02 so that its centrepoint is intersected exactly by Sta 167.0 and BL0 on the bottom skin of the aircraft fuselage. Drill through the 10 rivet holes using a No. 40 (2.5 mm) dia. drill. Mark the position of the three holes in the backing plate onto the aircraft bottom skin and mark out the hole for the sense antenna connection.

(2) Cut out the four holes marked on the bottom skin to the dimensions shown in Figure 5. Remove the paint from the bottom skin in the area around the elongated holes shown as the shaded area in Figure 5. Remove the paint around the elongated holes in the backing plate in the same manner. Deburr the bottom skin and the backing plate. Trim the backing plate to suit the sense antenna connector hole.

(3) Coat the areas the paint was removed from, on the backing plate and bottom skin, with 'Brisal Bonding Paste' or equivalent. Relocate the backing plate onto the bottom skin and rivet up using rivets P/N MS20470 AD3-4.

NOTE: The rivets must be installed with their heads on the outside of the fuselage skin.

(4) Clean the base of the antenna and the skin in the area the antenna is to be mounted on with a suitable degreasant, drying the cleaned areas with a clean lint free cloth. Apply a thin layer of synthetic rubber sealant P/N PR1222B around the periphery of the antenna base and to the periphery of both sides of the antenna base gasket.

(5) Place the antenna base gasket on the fuselage skin in the antenna mounting location ensuring that the gasket is correctly aligned with the antenna mounting holes. Position the antenna base onto the base gasket ensuring all the holes are aligned and secure the antenna with the two screws P/N 089-5666-36. Torque tighten the screws to between 10 and 15 lb in.

(6) Seal the heads of the two screws in the antenna with synthetic rubber sealant P/N PR1222B.

(7) Fit the loop lead connector to the antenna and secure with the securing screw.

(8) Connect the loop antenna cable assembly and the sense antenna cable assembly to their respective connectors on the antenna.

(9) Repeat steps (1) to (8) at the intersect of Sta 273.5 and BL0 for the A.D.F. 2 antenna installation (Option G77 or G77-24 if fitted).

3. Materials Information

A. Parts Required per Aircraft

(1) Aircraft fitted with Option G74 or G74-24 require the embodiment of the following parts, which are to be obtained from the operator's stock or local sources.

	Item P/N	Title	Qty
	King 200-2104-00	Matching Network Assembly	1
	King 019-2084-13	Inductance .47 H (Quadrantal Error Correction)	1
	King 071-1133-00	Loop and Sense Antenna (KA42B)	1
	King 047-3793-02	Backing Plate	1
	RG58C/U	Cable, Radio Frequency	250 inch (6350mm)
Alt	RG58A/U	Cable, Radio Frequency	250 inch (6350mm)
	UG88/U	Connector BNC	1
Alt	UG88A/U BNC	Connector BNC	1
Alt	UG88C/U	Connector BNC	1
	089-5666-36	Screw	2

Item P/N	Title	Qty
MS20600AD4W1	Rivet	24
MS20470AD3-4	Rivet	10
PR1222B	Sealing Compound	A/R
RNF100 Type 1	Heat Shrink Sleeve .25 inch internal dia x .625 inch long	2
CRN Type 1	Heat Shrink Sleeve .375 in internal dia x 2.0 in. long	4
Commercial	PVC Sleeving, White, 12mm internal dia x 1.5 inches long	1
Commercial	PVC Sleeving, White, 5mm internal dia x 30 inches long	1
MS3367-5-9	Tie Strap	30
MS21042-4	Nut	2
AN960-416L	Washer	2
	Gromex Edging	A/R
	Brisal Paste	A/R

(2) Aircraft fitted with Option G74 or G74-24 and G77 or G77-24 require the embodiment of the following parts which are to be obtained from the operator's stock or from local sources.

Item P/N	Title	Qty
King 200-2104-00	Matching Network Assembly	2
King 019-2084-13	Inductance .47 H (Quadrantal Error Correction)	2
King 089-5666-36	Screw	4
King 047-3793-02	Backing Plate	2
RG58C/U	Cable, Radio Frequency	504 inches(12802mm)
5975-66-027-6814	Sleeving	36 inches(915mm)
5975-66-017-6863	Sleeving	4 inches (102mm)
MS20600AD4W-1	Rivet	48
MS20470AD3-4	Rivet	20
PR1222B	Sealing Compound	A/R
MS3367-5-9	Tie Strap	55
MS21042-4	Nut	4
AN960-416L	Washer	4
RNF100 Type 1	Heat Shrink Sleeve, .25 inch internal dia x .625 in long	4
CRN Type 1	Heat Shrink Sleeve, .375 inch internal dia x 2.0 inches long	4
CRN Type 1	Heat Shrink Sleeve, .375 inch internal dia x 4.0 inches long	1
Commercial	PVC Sleeving, White, 12mm internal dia x 1.5 inches long	2
Commercial	Clear Sleeving 17mm internal dia x 10 feet long	1
	Gromex Edging	A/R
	Brisal Paste	A/R

B. Parts Modified and Re-identified by Operator

None

C. Parts Required to Modify Spares

None

D. Parts Removed

(1) Option G74 or G74-24 Installation

Item P/N	Title	Qty
5/N-82-238	Sense Antenna	1
1/N-82-40	Connector Link, Sense Antenna	1
5ARM300-2C	Insulated Tension Unit	1
1/N-82-237	Antenna Mounting Structure, Fin	1
10ARM300-16C	Insulator Unit	1
WS5/U	Insulated Antenna Wire	146 inches
25ARM-300-20-20°	Insulator, Feed-Through	1
4/N-82-242	Cable Assembly	1
1A/N-82-233	Cable Assembly	1
UG27D-U	Adaptor, Right Angled	2
1/N-82-235	Capacitor Box	1
3/N-82-242	Cable Assembly (Pre-Mod N20)	1
5/N-82-242	Cable Assembly (Post Mod N20)	1
071-1006-11	Loop Antenna, KA42 (Pre-Mod N202 (Post Mod N357)	1
071-1098-00	Loop Anenna, KA42A (Post Mod N202)	1
019-2082-13	Inductor, QE Correction, 1.0 µH (Pre-Mod N202)	1
019-2084-21	Inductor, QE Correction, 1.0 µH (Post Mod N202)	1
155-2008-00	Cable Assembly, Loop Antenna (Pre-Mod N202)	1
155-2057-00	Cable Assembly, Loop Antenna (Post Mod N202)	1
S0239	Connector, Coaxial	1

The above parts are to be scrapped or returned to the operator's stock as appropriate.

(2) Option G77 or G77-24 and G74 or G74-24 Installation. Remove all the items listed in Para 3.D(1) plus the following:-

Item P/N	Title	Qty
1/N-82-236	Spacer	2
2/N-82-236	Spacer	1
WS5/U	Antenna Wire, Insulated	146 inches
071-1006-11	Loop Antenna, KA42 (Pre-Mod N202, Post Mod N357)	1
071-1098-00	Loop Antenna, KA42A (Post Mod N202)	1
25ARM-300-20-20°	Insulator, Feed-Through RH	1
UG27D-U	Adaptor, Right Angled	1
019-2082-13	Inductor, QE Correction, 1.0 µH (Option G77)	1
019-2082-06	Inductor, QE Correction, 4.7 µH (Option G77-24) (Pre-Mod N22)	1
019-2084-13	Inductor, QE Correction, 4.7 µH (Option G77-24) (Post Mod N22)	1
1/N-82-243	Cable Assembly (Pre-Mod N22)	1
3/N-82-243	Cable Assembly (Post Mod N22)	1
2/N-82-243	Cable Assembly	1
1A/N-82-234	Cable Assembly	1
155-2008-00/01	Cable Assembly, Loop Antenna (G77)	1
155-2008-00	Cable Assembly, Loop Antenna (G77-24)	1
155-2057-00	Cable Assembly, Loop Antenna (G77-24) (Post Mod N201)	1
UG58/U	Connector, Coaxial	1

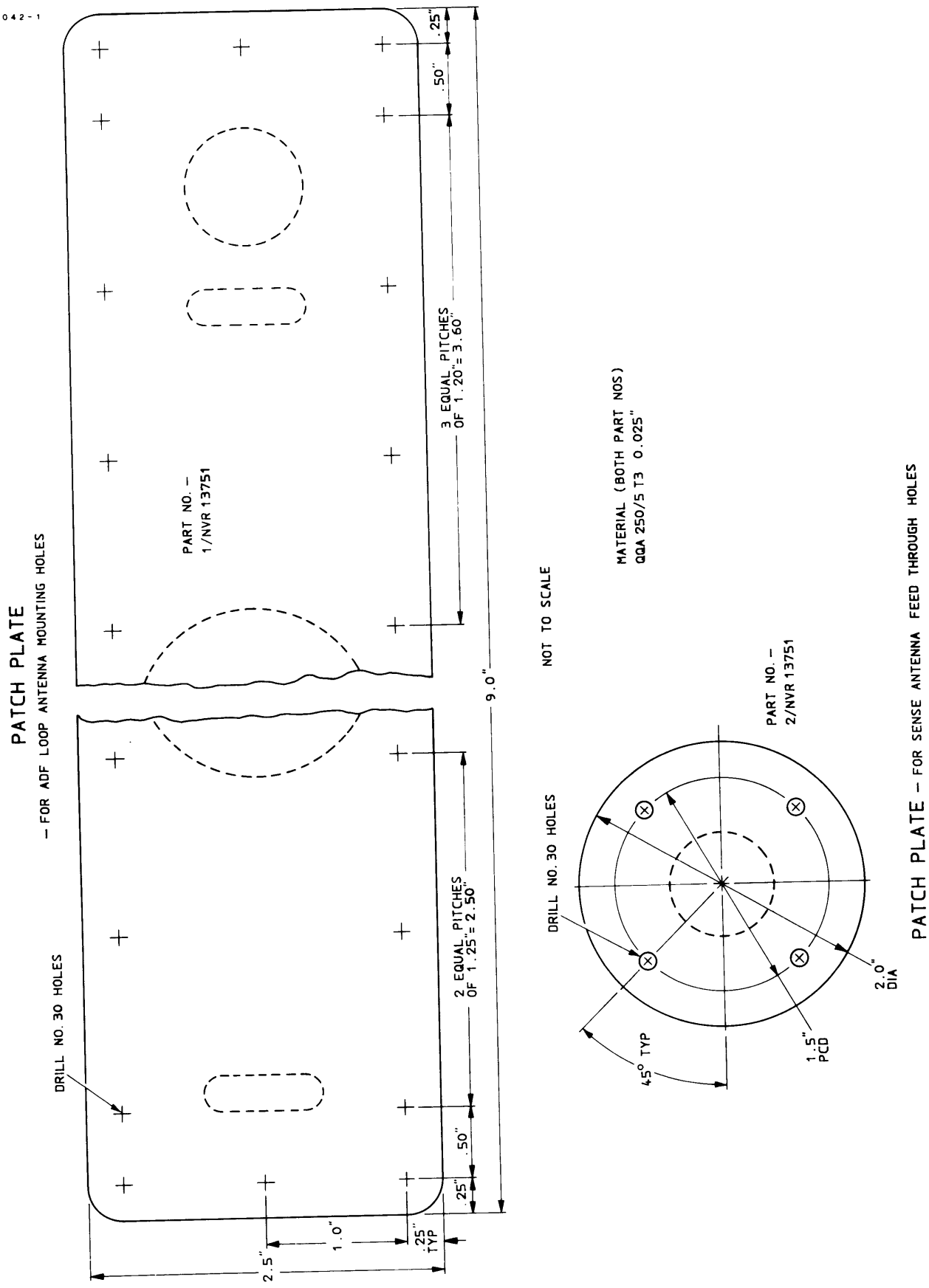
The above parts are to be scrapped or returned to the operator's stock as appropriate.

E. Special Tools and Equipment

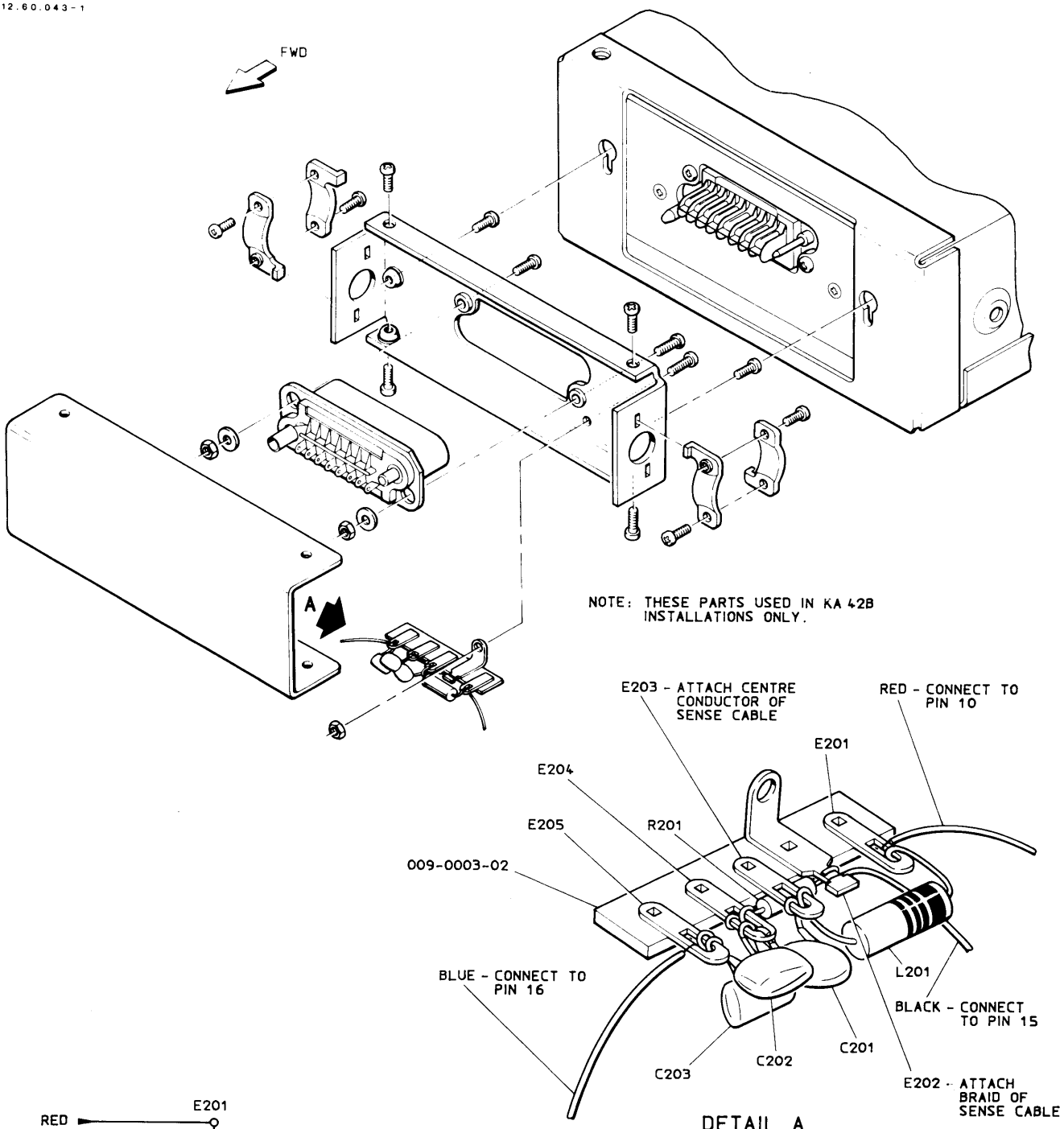
None required

F. Recording Action

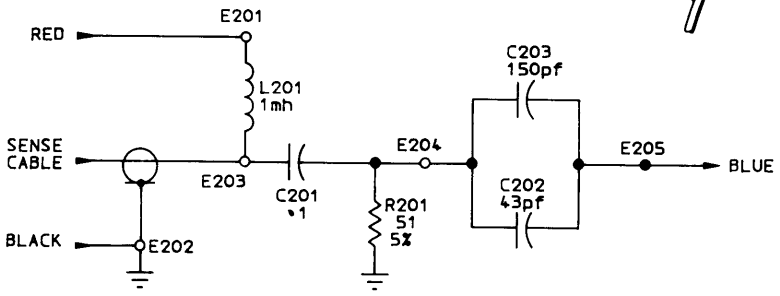
Record compliance with Service Bulletin NMD-34-4 Revision 1 in the airframe log book.



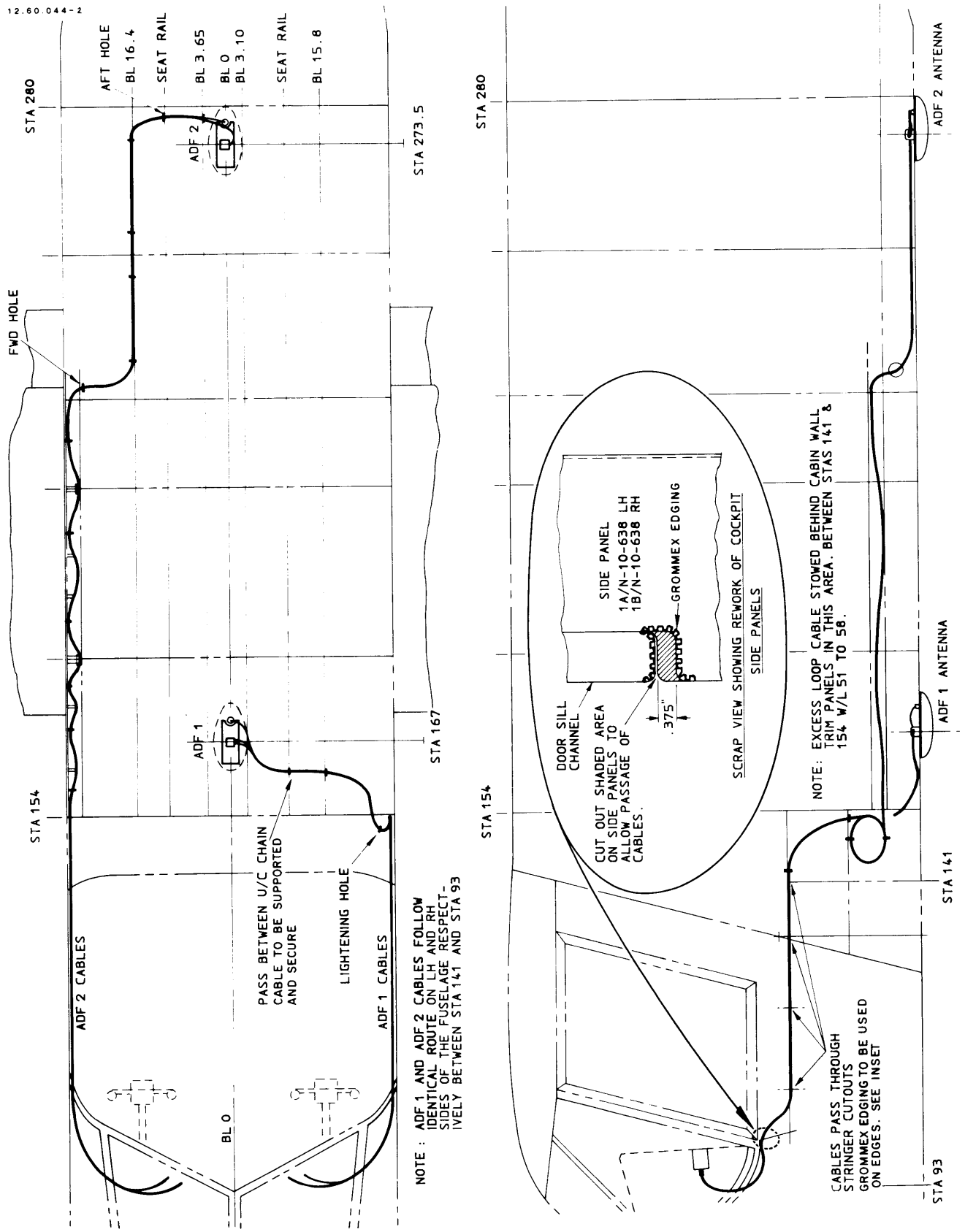
Patch Plates
Figure 1



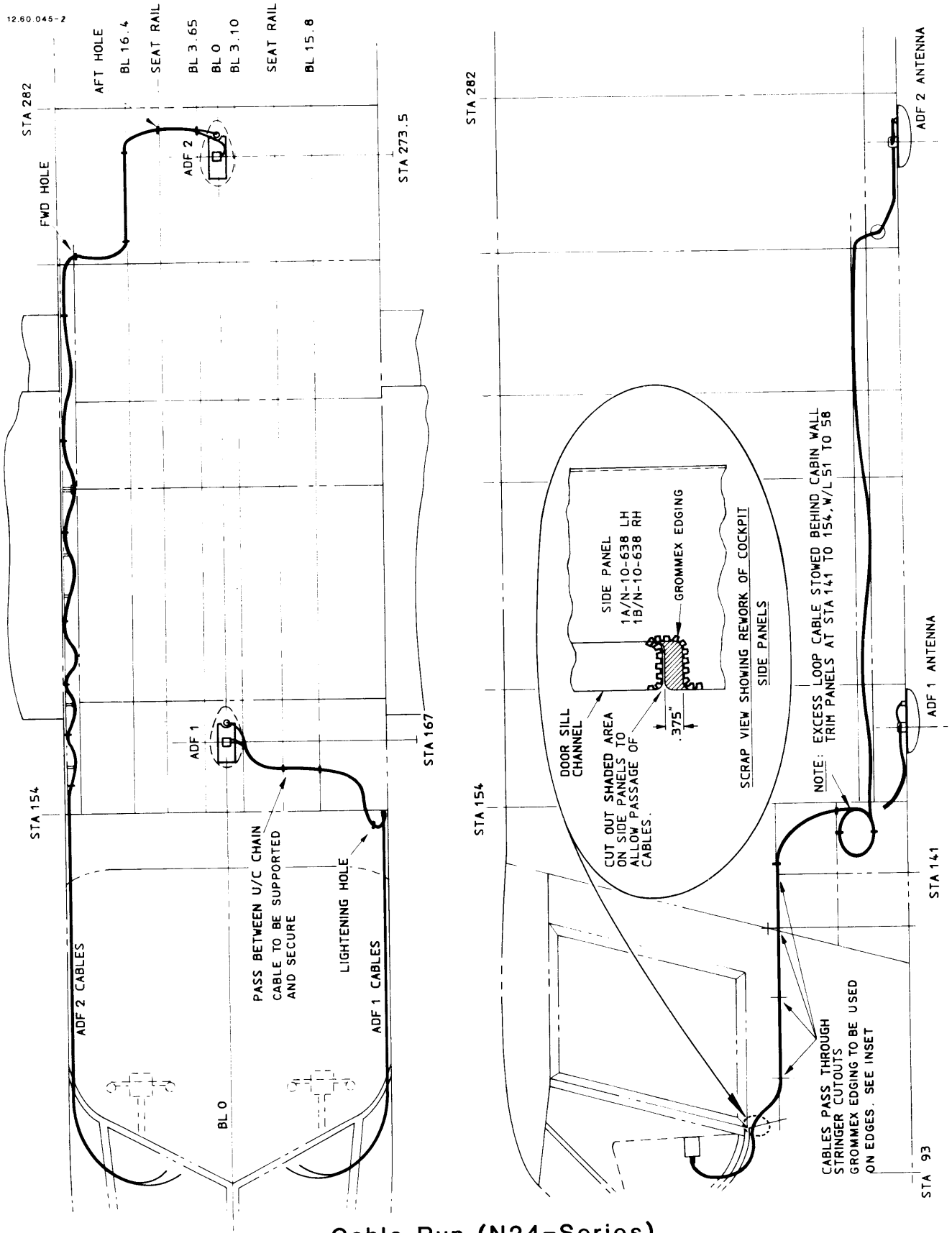
DETAIL A



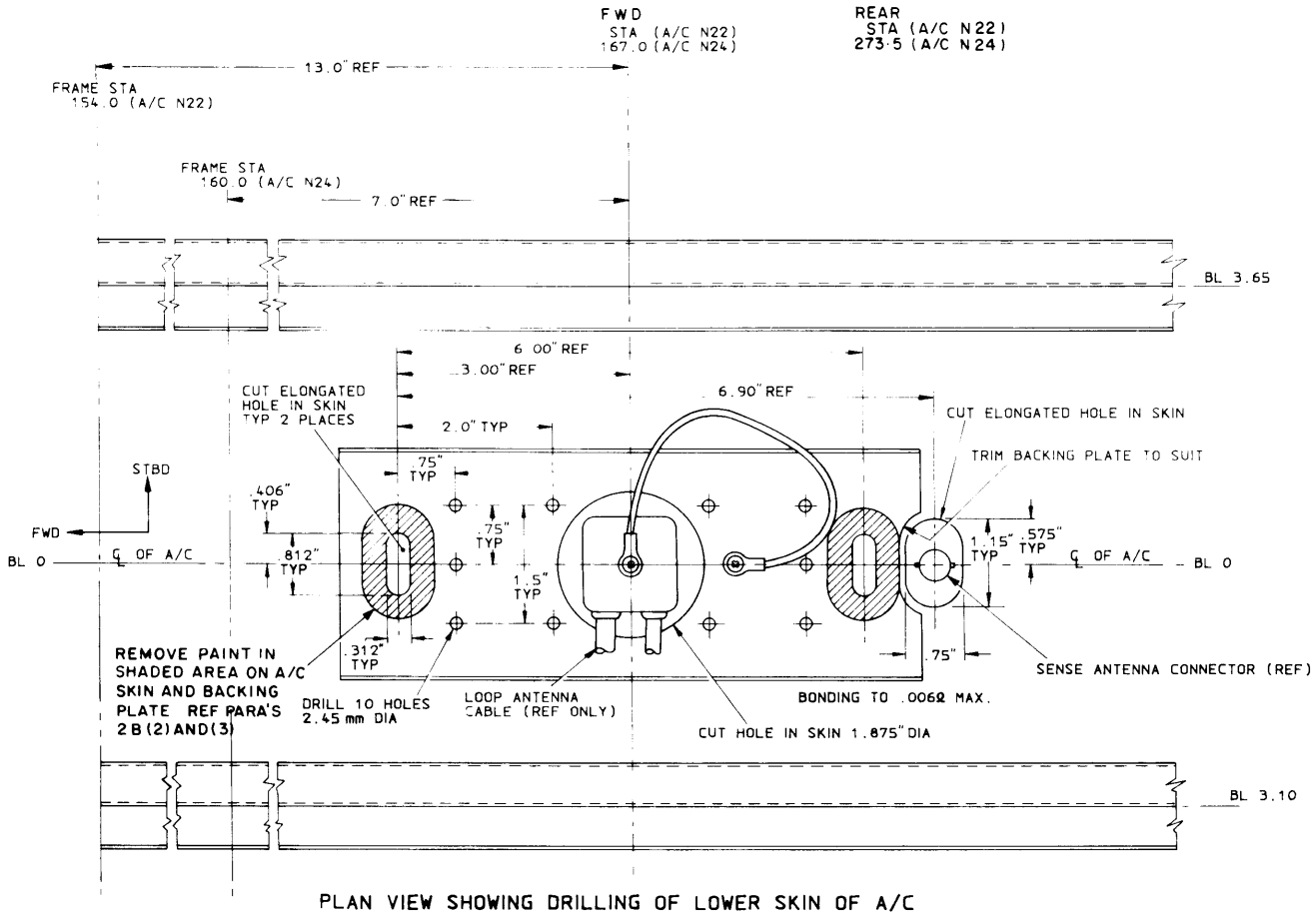
Installation ADF 1
(ADF 2 Similar)
Figure 2



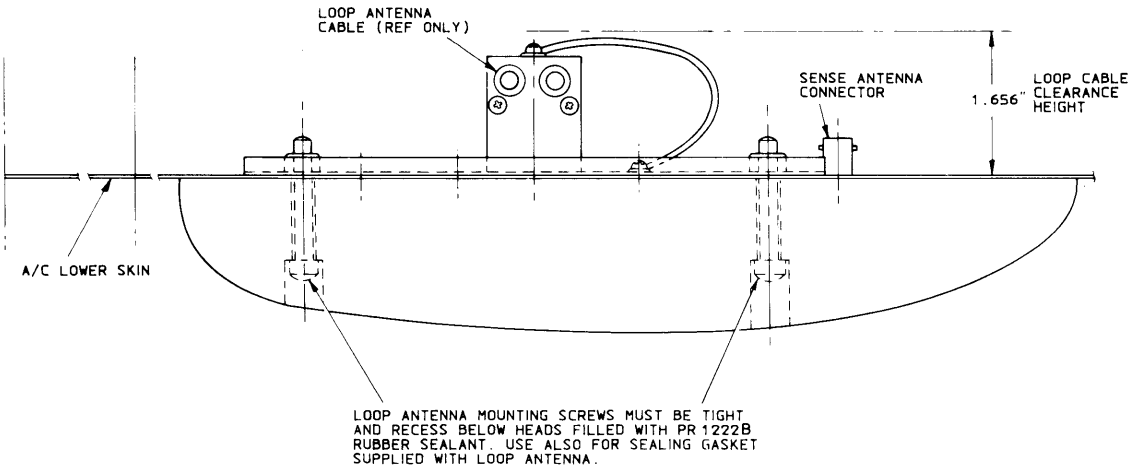
Cable Run (N22-Series)
Figure 3



Cable Run (N24-Series)
Figure 4



PLAN VIEW SHOWING DRILLING OF LOWER SKIN OF A/C
(TYPICAL FRONT AND REAR POSITIONS)



Location & Mounting of Backplate
Figure 5