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**PURPOSE:**

This manual is to provide installation and removal procedures for the North Slope Borough Accessory Shelf on Bell 212/412/412EP helicopters, P/N 2570-01-01. Ensure that this manual is to be used ONLY for North Slope Borough equipment.

**INSTALLATION INSTRUCTIONS**

**For**

**Accessory Shelf Installation**  
**on Bell 212/412/412EP Rotorcraft**

**WARNING: A *printed copy* of this document may not be the latest revision. It is the responsibility of the user to ensure that the latest revision is used.**

APPROVALS	SIGNATURE	DATE	<b>NORTH SLOPE BOROUGH ACCESSORY SHELF INSTALLATION MANUAL</b>			
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**REVISION STATUS AND CONTROL LOG**

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**CHAPTER 1 - INTRODUCTION**

**1.1 General Product Information**

The Accessory Shelf installation installs a shelf assembly in the avionics compartment of the aircraft that allows for the installation of equipment outside the cabin area.

The shelf assembly is constructed of 6061-T6 aluminum sheet with two stiffening angles attached to the bottom. The assembly is attached to the aircraft using new and existing aluminum angle.

This modification for the installation of the shelf only. Installation of equipment on the shelf must be performed in accordance with FAA approved data.

**1.2 Scope of Manual**

The purpose of this Installation Instruction Manual is to provide necessary information regarding installation and removal of the equipment. Maintenance personnel should be thoroughly familiar with standard abbreviation contained herein, any specific abbreviation or acronym contained can be found in the document text with the full meaning.

**1.3 Precautions**

The following precautions are used throughout this manual and are defined as follows:

**WARNING** IS USED WHEN UNQUALIFIED PERFORMANCE OR NEGLECT OF INSTRUCTIONS MAY LEAD TO INJURIES OR DEADLY ACCIDENTS.

**CAUTION** IS USED WHEN UNQUALIFIED PERFORMANCE OR NEGLECT OF INSTRUCTIONS MAY LEAD TO EQUIPMENT DAMAGE

**NOTE** IS USED WHEN A PARTICULAR ITEM NEEDS TO BE EMPHASIZED

**1.4 Abbreviations**

NSB	North Slope Borough
MIL	US Military Specification
N/P	Not Provided

**1.5 Scope of the Installation manual.**

A The installation manual HF-412-I-2570 describes the required procedures for installation and removal of the North Slope Borough Accessory Shelf.

This manual only includes installation and removal within the scope of an appropriately rated mechanic or repair station.

Instructions for continued Airworthiness are contained in separate document, HF-412-ICA-2570.

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B. Changes to the Installation Manual:

- (1) Revisions are supplied to all registered owners of aircraft incorporating equipment covered by this manual. It is the responsibility of the owner/ operator that only the current issue of the Installation Manual be used.
- (2) Changes to the equipment maintenance manuals are to be incorporated.
- (3) Changes are identified as follows:
  - (a) Revised or extended text, inserted pages with new text contents or figures are identified with black marginal bars or referenced symbols.
  - (b) When text is relocated, resulting possibly in a renumbering of pages or task, or in case of printing error corrections, no markings are provided.
  - (c) Changed pages are provided with the issue date of the change.
- (4) Equipment manufacturer's manuals;

Upon initial installation of the Accessory Shelf, North Slope Borough will provide any installation or operators manuals that are included with the purchase of the new equipment.

**1.6 General**

- A. Any special tools required are defined in the text.
- B. Torque Values. Unless specified otherwise, the following torques will be used.

<u>Size</u>	<u>Type</u>	<u>Torque</u>
<b>8 - 32</b>	<b>Screw</b>	<b>12-15 in-lbs</b>
<b>10 - 32</b>	<b>Screw</b>	<b>20-25 in-lbs</b>
- C. Fastener installation shall be in accordance with FAA Advisory Circular No. AC 43.13-1B Chapter 7, Sections 1-5, Pages 7-1 to 7-15.
- D. Alodine Process - Apply chemical film treatment as per MIL-C-5541.
- E. Apply primer as per Mil-P-23377.
- H. Break All Sharp Edges. Debur all holes prior to final assembly.
- I. Dimensions Are In Inches Unless Otherwise Specified
- J. All Fractions  $\pm 1/16"$

**1.7 Tools and Materials**

- A. The accessory shelf can be installed using standard aircraft sheetmetal tools

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**1.8 Consumable Materials**

A. Explanation

Only Consumable materials noted throughout this manual and on referenced drawings are to be used. North Slope Borough can be contacted to approve alternate or equivalent materials.

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**CHAPTER 2– GENERAL DESCRIPTION**

**2.1 Description:**

The Bell 212/412 Accessory Shelf Installation kit consists of the shelf assembly, new attachment angles and related hardware ( Table 1). The function of the shelf is to provide a stable platform outside of the cabin area onto which a variety of accessories can be secured.

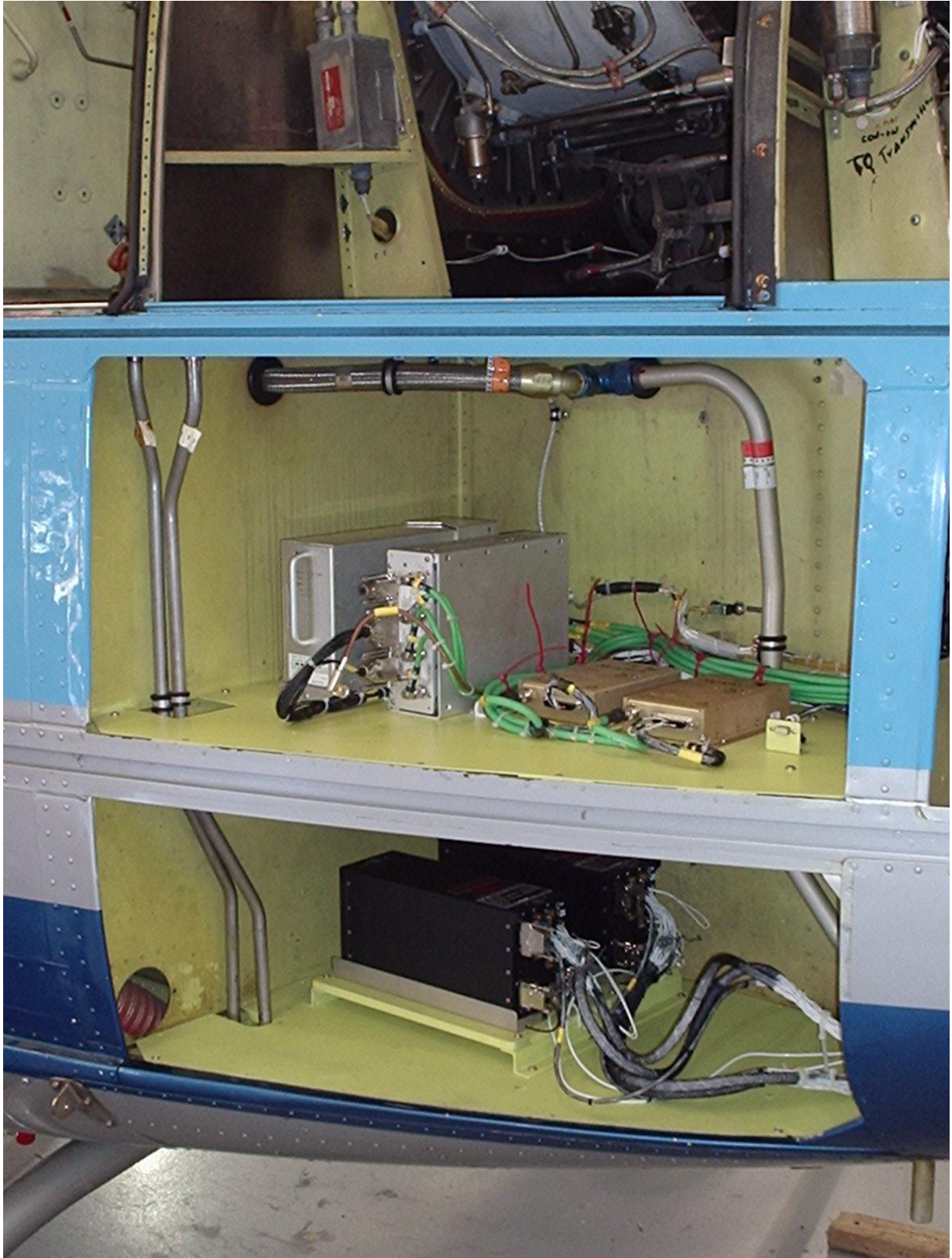
The modification installs the accessory shelf in the avionics compartment on the left hand side of the aircraft to new and existing aluminum angles. The location of the shelf in the aircraft can be seen in Figure 1.

Accessory Shelf installation includes the following components:

**Table 1**

<b>Accessory Shelf Installation Components</b>		
Item #	P/N	Description
1	2570-01-0001	Accessory Shelf Panel
2	2570-02-0002	Structural Angle
3	2570-03-0003	Support Angle
4	MS24693S50	Screw
5	MS21042L08	Nut
6	AN960PD8L	Washer
7	MS27039-1-06	Screw
8	MS27039-1-08	Screw
9	MS21042L3	Nut
10	AN960PD10L	Washer
11	MS20426AD-4-X	Rivet

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*Figure 1*



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CHAPTER 3 – INSTALLATION INSTRUCTIONS

3.1 Installation

Accessory Shelf

References:	Table 1 and Figures 1 through 3, Installation Drawing HF-412-I-2570-01
Special Tools	None
Consumables Materials:	None

- **Note:** Prior to installation, disconnect engine deck drain lines to facilitate installation
- Install Shelf panel ( Item 1) on top of the existing attachment angles, positioning the shelf so that there is even gap between the panel and the compartment walls

**Note:** Slight trimming of the shelf panel may be necessary along the inboard bulkhead and/or along outboard door track for proper fit.

- Using the pre-drilled holes in the shelf panel as a template, mark the holes on the existing support angles along the forward, aft and inboard bulkheads. Also locate the two holes on the step support on the center door track. (see Figure 2)

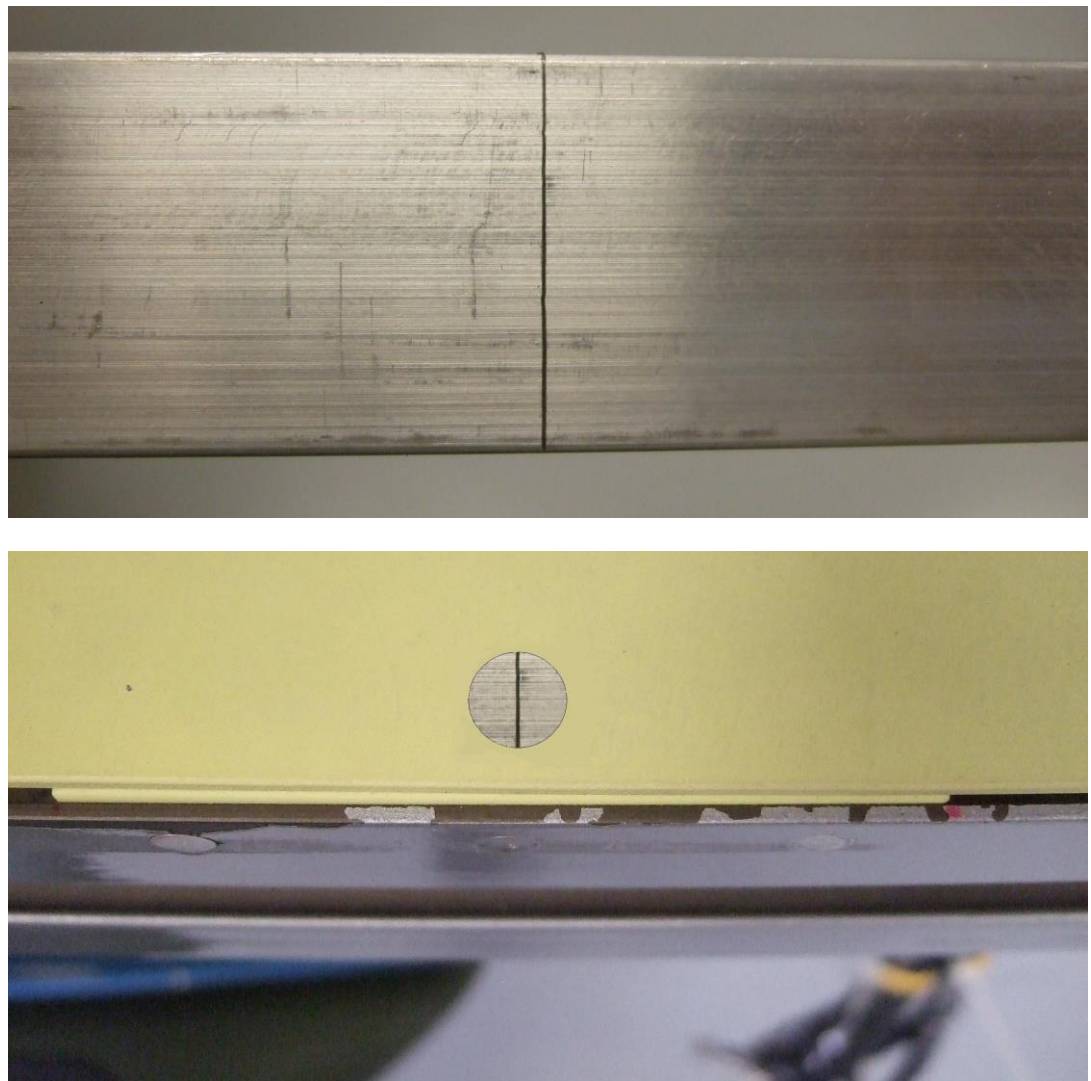


Figure 2

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**Note:** Once the holes are marked remove the shelf panel to prevent damage while drilling

- Reinstall the shelf panel and install hardware (Items 7, 8, 9, 10) in the drilled holes to keep the shelf in position during the next installation step.
- Mark the center of the new attachment angles (Item 4) as shown in Figure 3, so as to facilitate proper installation.
- Position the support angle underneath the predrilled hole in the shelf panel, making sure that the previously marked centerline on the angle is in the middle of the hole. (see Figure 3)



**Figure 3**

## INSTALLATION INSTRUCTIONS MANUAL FOR Bell 212/412/412EP ACCESSORY SHELF

- Mark the rivet locations for the support angle on the door track using the predrilled pilot holes in the support angle as a template. The procedure for installing the two additional support angles will be the same.
- Remove the shelf panel and drill the marked holes in the door track for the rivets (Item 11).
- Install the new attachment angles using rivets (Item 11)
- Install Shelf Panel back in the aircraft, and mark the location of the attachment holes to be drilled in the recently installed support angles, existing step angle on the door track, and existing inboard attachment angle.( see Installation Drawing HF-412-I-2570)

**Note:** To ensure proper fit, it is necessary to secure the shelf panel to existing angles using provided hardware before marking new holes to be drilled.

- Remove shelf panel and drill marked holes in the support angles.
- Reinstall the shelf panel and secure the panel structural angles (Item 2) to the shelf using items 7,8,9,and 10. Tighten to torques specified in Section 1.6 (See Installation Instructions HF-412-I-2570 for proper orientation)
- Install all attachment hardware around the perimeter of the shelf and tighten to torques specified in Section 1.6
- Reconnect engine deck drain lines

**Warning:** Failure to reconnect engine deck drain lines may lead to injuries or deadly accidents

### 3.2 Removal

#### Accessory Shelf

- Prior to removal, disconnect the engine deck drain lines to facilitate the operation
- Remove all screws and structural angles(Item 2) from shelf panel (Item 1)
- Remove the shelf panel
- Reconnect engine deck drain lines

**Warning:** Failure to reconnect engine deck drain lines may lead to injuries or deadly accidents

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**CHAPTER 6 – WEIGHT AND BALANCE**

**4.1 Weight and Balance**

The new empty weight and corresponding C.G. location must be determined and entered in the aircraft permanent records.

Installation of the Accessory Shelf has the following effect on weight and balance:

<i>WEIGHT</i>	<i>LONGITUDINAL ARM</i>	<i>MOMENT</i>	<i>LATERAL</i>	<i>MOMENT</i>
+ <b>6.0</b>	193.0	1158.0	- 25.0	- 150