

Sydney Office:
512 Miles Street
Bankstown Airport, NSW, 2200

Telephone: 02 9793 9900
Fax: 02 9793 9099
Email: sydney@aeroengaus.com.au



Report: AV13697.003/59


Title: Installation Plan - Indigo One Tracking System –
Bell 407

Aircraft: Bell 407

Issue: Issue 1

Date: 4 August 2009

Prepared: N. Levchenko Date: 4/8/09

Checked by: 
L. Ramirez Date: 4/8/09

PREPARED: N. Levchenko CHECKED: L. Ramirez ISSUE No.: One	AERONAUTICAL ENGINEERS AUSTRALIA	PAGE No.: Page 2 of 9 REPORT No.: AV13697.003/59 FILE: Installation Plan Bell 407.doc
Installation Plan - Indigo One Tracking System – Bell 407		

LOG OF REVISIONS

<u>Issue</u>	<u>Date</u>	<u>Pages</u>	<u>Description</u>
1	4 August 2009	Pages 1 to 9	Original Issue

CONTENTS:

1.	INTRODUCTION	4
2.	INSTALLATION PLANNING	4
2.1.	Select Antenna Position.....	4
2.2.	Select a Panel Position for the Panel Control Unit	5
3.	INSTALLATION DETAILS	6
3.1.	Install the Antenna	6
3.2.	Antenna Cable Routing.....	7
3.3.	Wiring Harness Installation Procedure.....	7
3.4.	Install the Panel Control Unit	7
4.	FUNCTIONAL TESTING	7
5.	EMI / EMC TESTING.....	8
6.	POST INSTALLATION.....	9
7.	USER MANUAL	9
8.	ONGOING AIRWORTHINESS.....	9
9.	STANDARD NOTES	9

Installation Plan - Indigo One Tracking System – Bell 407

1. INTRODUCTION

This installation plan outlines the basic elements to be considered for the Indigo One Tracking and Communication System Installation in Bell 407 rotorcraft.

This plan should be read in conjunction with the IndigoSat Installation Manual, Document Number IS-IM-2008-002, Revision A (or later revision) which provides further details pertinent to the installation of the Indigo One system.

2. INSTALLATION PLANNING

2.1. Select Antenna Position

Select an appropriate antenna location based on the area suggested in Figure 1 below. The antenna should occupy a vacant panel on the cabin roof / cowling, or OEM antenna mount location and be separated from existing antennas by the distances specified in the IndigoSat Installation Manual (IS-IM-2008-002).

Note that aircraft fitted with a WAAS GPS system (eg. GNS430W or GNS530W) have been found to be sensitive to Indigo One antenna placement. A distance of approximately 3.0m (10ft) may be required between a WAAS antenna and the Indigo One antenna to prevent interference, requiring a position outside of the region indicated below.

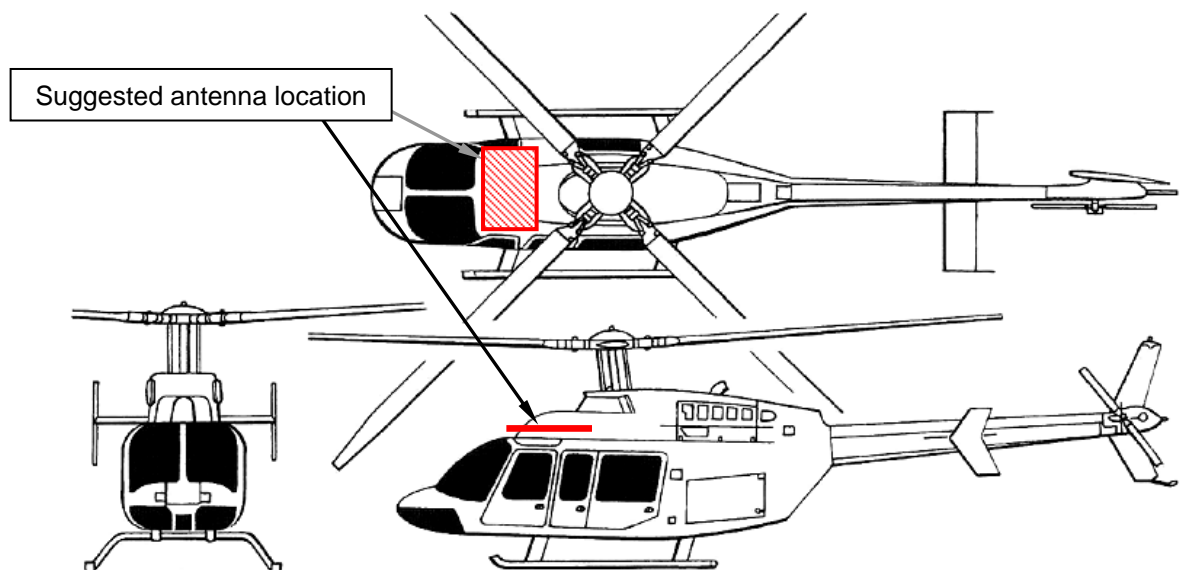


Figure 1. Suggested location of Indigo antenna

Installation Plan - Indigo One Tracking System – Bell 407

2.2. Select a Panel Position for the Panel Control Unit

Select an appropriate vacant space in the cockpit for the installation of the Indigo display unit. The Indigo One cradle supplied with the kit fits in a standard 6.25” avionics rack. Figure 2 provides possible installation locations.



Figure 2. Suggested locations of display unit

There are several possible positions for location of the Indigo One control unit on the Bell 407. The operator or installer is in the best position to specify where they wish it located based on available space, operational considerations and ease of access for installation. Depending on position chosen and availability of existing avionic rack structure, additional support structure to hold the cradle may be necessary.

If no suitable position is achievable in the instrument panel, then the unit may be installed to the side panels / roof of the cabin or behind the pilot's seat. No pilot access to the unit is required for proper operation of the tracking system.

3. INSTALLATION DETAILS

3.1. Install the Antenna

Manufacture an antenna doubler to dimensions shown in Figure 3 from .040" 2024-T3 aluminium alloy sheet. Treat with Alodine 1200S and prime with BMS 10-79 primer.

Install the doubler and Antenna / Transceiver, P/N AS2217D-00-00 in accordance with the layout in Figure 3. The antenna doubler would typically be attached under the skin with eight MS20426-AD4 rivets one in each corner and one mid-side on each side of the doubler. Four MS27039-1 (10-32) screws attach the antenna to the doubler. Seal the perimeter of the antenna with a bead of PR1422 or a MIL-A-56106A silicone sealant.

Refer to the IndigoSat Installation Manual (IS-IM-2008-002) for further information.

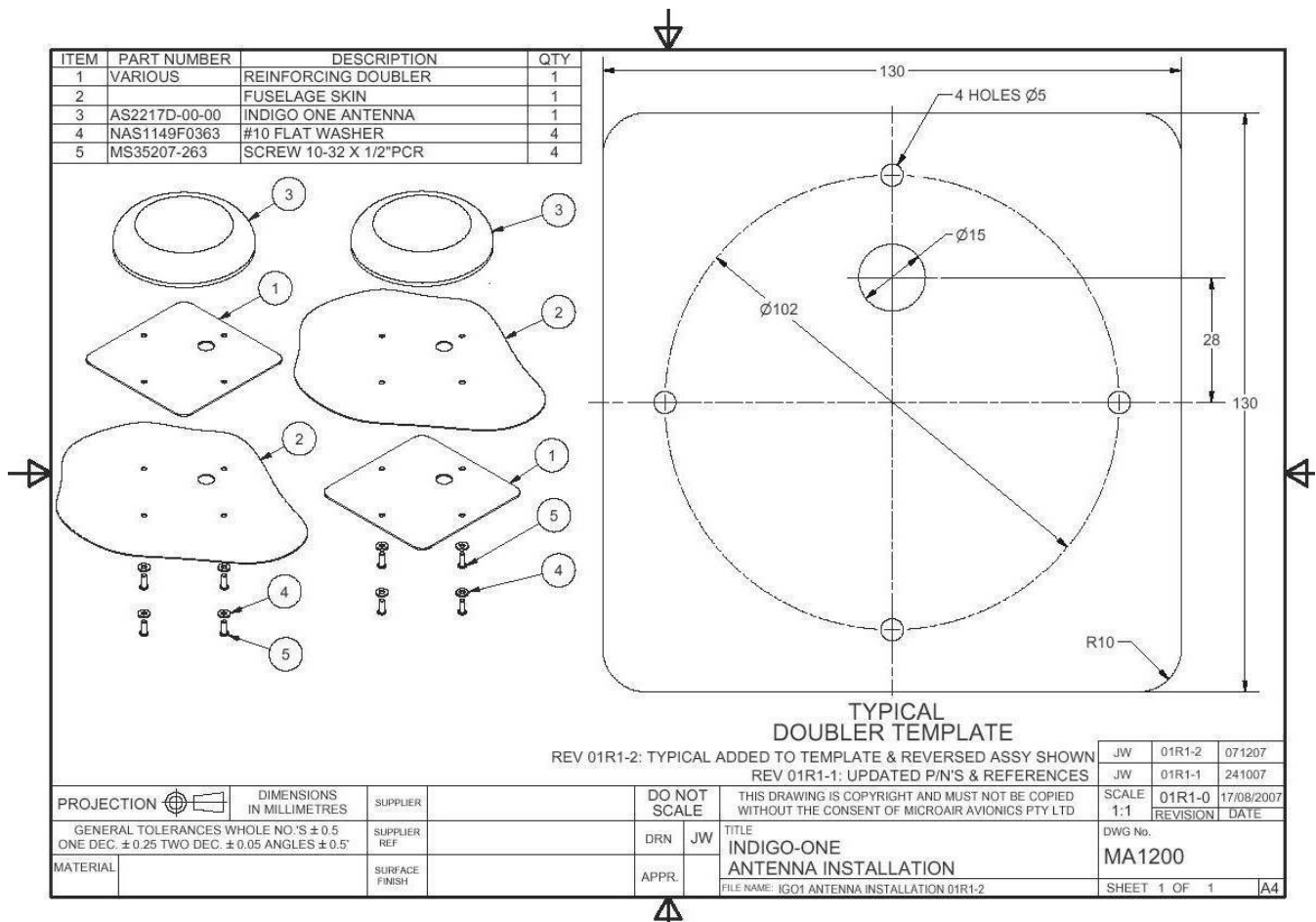


Figure 3. Doubler details.

PREPARED: N. Levchenko CHECKED: L. Ramirez ISSUE No.: One	AERONAUTICAL ENGINEERS AUSTRALIA	PAGE No.: Page 7 of 9 REPORT No.: AV13697.003/59 FILE: Installation Plan Bell 407.doc
Installation Plan - Indigo One Tracking System – Bell 407		

3.2. Antenna Cable Routing

The IndigoSat Installation Manual (IS-IM-2008-002) provides the general requirements for cable routing.

The coaxial cable should be run ensuring adequate fixing where possible to existing wiring looms. Attach to these existing wiring bundles by double tie-wrapping. Sufficient securing should be used to prevent any chaffing of the cable. Follow the normal wiring loom routing path of existing cable runs to run the coaxial cable to the selected control unit position determined in Section 2.2.

If the cable needs to pass through frames or bulkheads grommets should be used to prevent chafing or wear of the cable.

3.3. Wiring Harness Installation Procedure

The IndigoSat Installation Manual (IS-IM-2008-002) provides the wiring harness installation procedure, including wiring diagram for the system installation.

If used, placard circuit breakers with function and rating. Text to be similar size and font to others on the panel.

Note that detailed connection of digital inputs should be determined by the installer in conjunction with the organisation approving the installation.

3.4. Install the Panel Control Unit

Install the display unit to the location pre-selected in Section 2.2 in accordance with the details in the IndigoSat Installation Manual (IS-IM-2008-002).

4. FUNCTIONAL TESTING

Carry out the Operation Configuration setup and Communications Testing in accordance with the IndigoSat Installation Manual (IS-IM-2008-002) to ensure correct function of the Indigo One system.

5. EMI / EMC TESTING

Conduct electrical interference checks of all aircraft systems with the Indigo One system operating to ensure that all systems are fully operational after installation. Force transmissions by sending a test message / alert message. Conduct testing of each system in accordance with the manufacturer's guidelines for that system. If required, testing may be done as part of a maintenance flight, and ongoing normal operation of the aircraft is dependant on successful completion of the testing. **Any observed interference is to be reported to the IndigoSat Operations Center.**

Indicate in the following table, whether any significant interference is observed:

Item	New System Incorporated	
	ON	OFF
NAV #1		
NAV #2		
ADF		
Autopilot		
HF		
VHF Com #1		
VHF Com #2		
DME		
Audio/Marker		
Transponder		
Weather Radar		
Rad Alt		
GPS		
Intercom System		
Engine instruments		
Magnetic compass		

When the aircraft system being evaluated is operated, there must be no standoff conditions displayed on any instruments. Generally, transient or flicker indications are not acceptable either. All observed interference is to be reported and all aural interference on avionics systems and intercom systems are to be reported.

VHF equipment will be operated and evaluated for interference to/from the new equipment by selecting VHF frequencies at 2MHz spacing between 118 and 136 MHz and verifying no objectionable interference is heard in the audio signals at any of the selected frequencies. All other systems are to be tested over their individual operating range.

Testing of aircraft with WAAS-based GPS systems require careful attention, as these are known to be highly sensitive to interference. Ensure that transmissions from the IndigoSat system do not interfere with GPS signal reception.

PREPARED: N. Levchenko CHECKED: L. Ramirez ISSUE No.: One	AERONAUTICAL ENGINEERS AUSTRALIA	PAGE No.: Page 9 of 9 REPORT No.: AV13697.003/59 FILE: Installation Plan Bell 407.doc
Installation Plan - Indigo One Tracking System – Bell 407		

6. POST INSTALLATION

Carry out the post installation requirements detailed in the IndigoSat Installation Manual (IS-IM-2008-002).

7. USER MANUAL

A user manual is supplied with the kit which provides instructions on the functions available and how to operate the unit.

8. ONGOING AIRWORTHINESS

Refer to IndigoSat Installation Manual (IS-IM-2008-002) for ongoing airworthiness instructions.

9. STANDARD NOTES

- (1) All work to be conducted by an approved workshop using standard aircraft practices.
- (2) Fasteners used in avionics installations must be metal or nylon thread locked fasteners unless noted otherwise. Alternatively, Loctite 222 or 242 may be used on threads.
- (3) Unless otherwise noted, observe standard sheetmetal practices in accordance with AC43.13-1B Chapter 4, Section 4. Maintain a minimum fastener edge distance of 3d and a minimum fastener pitch of 4d. Material specifications as detailed below:

2024-T3 Alclad Sheet
QQ-A-250/5
- (4) All new unshielded wire to meet M22759/16 specifications. All new shielded wiring to meet MIL-C-27500. Wire gauge as indicated in the wiring diagram. All wiring to be in accordance with AC21.99.