AIRCRAFT SERVICE CHANGE

NUMBER 079

SUBJECT

NAVIGATION (ATA 34)

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) OUT INSTALLATION

APRIL 12, 2013
PILOTS INFORMATION SHEET

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) OUT INSTALLATION

This service change provides hardware, software and wiring modifications necessary to equip the aircraft with Automatic Dependent Surveillance-Broadcast (ADS-B) Out functionality.

There will be no cockpit procedural changes as a result of this ASC.

PLEASE DETACH AND GIVE TO FLIGHT DEPARTMENT PERSONNEL
PILOTS INFORMATION SHEET

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PLEASE RETAIN THIS COPY WITH THE ASC BOOKLET
The design change effected by this Aircraft Service Change (ASC) has been classified as Major by the United States Federal Aviation Administration (FAA) and Level 1 Major by the European Aviation Safety Agency (EASA). The design change data contained in this document is approved and accepted by the FAA and EASA under Gulfstream Organization Delegation Authorization (ODA) project number:

- FAA – Project Number TD-01-2011-0039
- EASA – Project Number TD-01-2011-0042

The design of this ASC is approved by aircraft type design data for installation on aircraft registered for operation in accordance with applicable regulations of the FAA and EASA.

The design of an ASC is configured to a standard ("green") production aircraft. If spare wires, pin connections or locations called out have been used for another modification, the installing agency must ensure the development, documentation and approval of any required deviations.

The following instructions, in step-by-step form, are written as a guide to perform this ASC. Compliance with safe maintenance practices, as defined in the Aircraft Maintenance Manual and FAA or EASA regulations, is required. It is the responsibility of the installing facility to read all instructions contained in this service change and refer to all associated documents, drawings and manuals for applicable actions.

Gulfstream considers this ASC a means to enhance aircraft capabilities to meet individual operator requirements. The modification is not related to any safety or airworthiness condition.

Subject: Navigation (ATA 34) – Automatic Dependent Surveillance-Broadcast (ADS-B) Out Installation

Purpose / Discussion: This service change equips the aircraft with ADS-B Out functionality. ADS-B is a next generation surveillance technology incorporating air and ground aspects that provide Air Traffic Control (ATC) with a more accurate picture of the aircraft’s three-dimensional position in the en route, terminal, approach and surface environments. This new capability improves aircraft separation assurance by improving surveillance in remote regions that are beyond the range of existing ATC radar systems. This technology provides the avenue for aircraft to continuously broadcast a message containing aircraft position, heading, velocity, and intent.

Following are some advantages of this system grouped by mode:

Air-to-Ground

- Surveillance Coverage in Non-Radar Airspace
- Affordable Reduction of Controlled Flight into Terrain (CFIT) in Non-Radar Airspace
Purpose / Discussion Continued: Ground-to-Ground

- Improved Navigation on Taxiways
- Enhanced Controller Management of Surface Traffic

This installation includes DO-260B compliant transponders allowing the aircraft to meet upcoming mandates requiring the use of ADS-B Out.

Description / Labor-Hours Required Per Aircraft:

This service change installs new transponders, loads new software and incorporates wiring modifications to the aircraft.

- Approximately 37 labor-hours will be required for aircraft installing a -1 kit.
- Approximately 19 labor-hours will be required for aircraft installing a -2 or -3 kit.

Approved Engineering Data:

The source data for this aircraft service change is:
1159ASC47079 Rev. “-” Top Level Drawing for ADS-B Out (ASC 079)

Prerequisites:

ASC 909B – PlaneView Master Operating System (MOS) Software Update or later, or production equivalent.

ASC 059 – Enhanced Navigation

Prior to, or at the time this ASC is ordered, operators will be required to supply a configuration report of the Central Maintenance Computer (CMC). The CMC configuration report can be stored on the aircraft PC laptop then electronically submitted to Gulfstream at asc.software@gulfstream.com. Allow 3-5 days for the CMC report review and up to 21 days for the creation of a new Options Data disk.

Concurrent Requirements: None

Associated Documents:

- Aircraft Maintenance Manual (AMM), Chapters 20, 31 and 34
- GIVX-GER-9934 – PlaneView Software Loading, Verification and Return To Service Procedures. Includes appropriate Data Load Guide based on aircraft Cert level and is located in Maintenance Applications on the aircraft laptop.
- SGER-906 – Electrostatic Discharge Sensitive Device (ESDS) Handling Procedure For PlaneView Aircraft
- GIVX-GER-0019 – Return To Service Procedures for PlaneView Specific ASCs
- MEPS 2600-95 – Raychem Hexashield Adaptors
Flight Manual Revision / Supplement Required: None

Publications Data: Data concerning this service change will be published in a future revision of the affected manual(s). This booklet will provide technical data until the revision(s) is published.

Effectivity This service change is applicable to aircraft serial numbers 4002 – subsequent.

Effect on Spares: Transponder module, PN 7517402-970, should be used for spares following incorporation of this modification.

Special Equipment / Tools Required: Aircraft PC Laptop with Remote Terminal Tool version 26.0 or later. Refer to Gulfstream PlaneView Maintenance Applications disk version 8.4, or later PN 1159LAP59000.

Skill Type Required: Knowledge of the navigation, indicating / recording systems; electrical standard practices; and software loading procedures will be required for this installation.

Price: Prices are subject to change without notice.

  Installed Price: Installation labor is included in kit cost.**
  Kit Price only: Domestic: $ 75,000.00
                  International: $ 76,500.00

**NOTE: This ASC is managed by Product Support Program Management (PSPM). Incorporation MUST be coordinated through PSPM via email at pspm@gulfstream.com or through Gulfstream Aircraft Scheduling at 800-810-GULF (4853) or 912-965-4178. If not scheduled, aircraft downtime could increase significantly.

This ASC may only be accomplished at a Gulfstream facility or a facility that has been approved by Gulfstream in writing to perform this specific modification.
MODIFICATION INSTRUCTIONS:

CAUTION: PROTECT WIRE BUNDLES, CONNECTORS AND SURROUNDING STRUCTURE DURING ANY MAINTENANCE PROCEDURE FROM SHAVINGS, DEBRIS AND CONTAMINATION. MAINTAIN A PROPERLY CLEANED WORK AREA THROUGHOUT THE PROCEDURE TO ENSURE THE INTEGRITY OF THE AFFECTED COMPONENT / SYSTEM. VISUALLY INSPECT WORK AREA USING ADDITIONAL LIGHT AS NECESSARY TO VERIFY ABSENCE OF ANY DEBRIS PRIOR TO COMPLETION OF PROCEDURE. FAILURE TO COMPLY MAY RESULT IN DAMAGE TO COMPONENTS AND / OR SYSTEMS.

NOTE: Prior to, or at the time this ASC is ordered, operators are required to supply a configuration report of the Central Maintenance Computer (CMC). The CMC will be reviewed for current configuration. The CMC report may be stored on the aircraft PC laptop then electronically submitted to Gulfstream Technical Operations at asc.software@gulfstream.com.

A. Software preparation for modifications:
   1. Verify a CMC configuration report has been submitted.

B. Prepare aircraft for safe maintenance / modification as follows:
   1. Remove all electrical power, turn all cockpit switches off and disconnect battery quick disconnects. Refer to AMM, Chapter 20.
   2. Pull, tag and install safety clips on all circuit breakers (CBs) as noted in AMM, Chapters 31-44-01, and / or 34-42-01 and 34-52-01 and others as required to support equipment removed for maintenance access.
   3. Gain access to the left and right electronic equipment racks (LEER/REER).

NOTE: Prior to removing Honeywell components, coordinate the shipment with Gulfstream PSPM via email at pspm@gulfstream.com for availability of components. If not scheduled, aircraft downtime could increase significantly. Components are not included with the ASC kit.

   4. Disconnect the left and right Network Interface Module (NIM) and remove #1 and #2 transponder modules. Return transponders for upgrade or exchange.
   5. Using appropriate AMM procedures, remove MAU #3 to permit access to the modification area in the LEER on aircraft 4002 - 4207.
   6. Using appropriate AMM procedures, remove the following components as required to permit access to the modification area in the REER on aircraft 4002 - 4207:
      MAU #2
      MRC #2
      NAV/COM
      CABIN PRESSURE CONTROLLER
      APU GCU
NOTE: For information regarding hexashield type terminations conducted at the NIM connectors, refer to GIVX-GER-9934 Appendix D or MEPS 2600-95 – Raychem Hexashield Adaptors.

C. Modify aircraft 4002 - 4207 as follows. Refer to Figures 1, 2, 5 and 6 as applicable.
   1. In the LEER, remove existing wires from 331TJ3M as shown.

   NOTE: Approximately 10 ft of wire will be required for the left side and 15 ft for the right side installation. Identify wire segments as noted for each side.

   2. Install new TJ module SB052TJ3R or SB052TJ3P as applicable and terminate new and existing wires as shown.
   3. Route new wire 1RG1E24/1RG2E24 from new TJ module to NIM located at MRC #1. Follow established routing path. Refer to Figure 5.
   4. Terminate new wire 1RG1E24/1RG2E24 at NIM connector 026A1A6P1 as shown.
   5. In the REER, remove existing wires from 332TJ6N as shown.
   6. Install new TJ module SB052TJ6V and terminate new and existing wires as shown.
   7. Route new wire 2RG1E24/2RG2E24 from new TJ module to NIM located at MRC #2. Follow established routing path. Refer to Figure 6.
   8. Terminate new wire 2RG1E24/2RG2E24 at NIM connector 026A2A6P1 as shown.
   9. Ensure all wiring and terminations are secure.

D. Modify aircraft 4208 and 4284 as follows. Refer to Figure 3.
   1. In the LEER, at 331TJ3P locate capped wire 1RG1E24/1RG2E24 and terminate as shown.
   2. At the NIM, depin wire 2RG1H24/2RG2H24 from connector 026A1A6P1. Cap and stow as shown.
   3. At NIM connector 026A1A6P1, reposition wire 1RG1E24/1RG2E24 terminations as shown.
   4. In the REER, at 332TJ6V locate capped wire 2RG1E24/2RG2E24 and terminate as shown.
   5. At the NIM, depin wire 1RG1H24/1RG2H24 from connector 026A2A6P1. Cap and stow as shown.
   6. At NIM connector 026A2A6P1, reposition wire 2RG1E24/2RG2E24 terminations as shown.
   7. Ensure all wiring and terminations are secure.
E. Modify aircraft **4285 and subsequent** as follows. Refer to Figure 4.
   1. In the LEER, at 331TJ3P locate capped wire 1RG1E24/1RG2E24 and terminate as shown.
   2. In the REER, at 332TJ6V locate capped wire 2RG1E24/2RG2E24 and terminate as shown.

F. Verify continuity and accuracy of wiring and terminations.

G. Install new or upgraded transponders. Refer to AMM Chapter 34.

H. Install all equipment removed in Steps B. 5. – 6.

I. Software modifications:
   1. Prepare aircraft for safe maintenance and application of electrical power. Refer to AMM, Chapter 20.

   **NOTE:**
   When multiple ASCs containing software are complied with simultaneously, only the Loadable Avionics Software Configurations (Options) disk containing the final configuration will be provided. Upon completion of software installation, a verification of the new configuration as stated on the AR will be conducted in accordance with GIVX-GER-0020 - APM Options Configuration Checkout. Additionally, the appropriate sections of GIVX-GER-0019 – Return to Service Procedures for PlaneView Specific ASCs, as stated on the AR must be completed at the time of initial installation.

   **NOTE:**
   Correct setup of the aircraft laptop with the CMC Remote Terminal Tool is **critical** to the successful loading and operation of all software. Follow Data Load Guide procedures **CAREFULLY**. **Ensure any firewalls, anti-virus programs or wireless LAN connections are disabled and the laptop is connected to 60 Hz aircraft power.**

   **NOTE:**
   Refer to the appropriate Data Load Guide for aircraft Cert level for software procedures when loading and verifying software. The Data Load Guide, included in GIVX-GER-9934 – PlaneView Software Loading, Verification and Return To Service Procedures, is located in Maintenance Applications on the aircraft laptop.

   **NOTE:**
   Options CDs are security enabled. Note the security code on the disk label before loading into aircraft laptop. Enter security code when prompted.

   2. Install Loadable Avionics Software Configurations (Options) software using Data Load Guide Procedures.

   3. Verify software loads in accordance with Data Load Guide procedures.

   **NOTE:**
   All new software is issued with an Authorization Report. The information contained on the report will match the information on the disk including aircraft specific information. Individual return-to-service procedures for new software, as stated on the Authorization Report, must be completed.

5. Perform applicable operational checks for removed, replaced or updated components in accordance with AMM.

J. A CMC configuration report **MUST** be submitted to reflect completion of software installation and verify aircraft configuration. Attach the report to an email and send to asc.software@gulfstream.com noting the aircraft serial number in the subject line.

K. If any firewalls, anti-virus programs or wireless LAN connections were disabled as part of this installation, re-enable these applications.

L. Remove electrical power from aircraft. Refer to AMM, Chapter 20.

M. Remove disk from laptop and store on board the aircraft. Discard previous version of Options disk.

N. Ensure work area is clean and clear of foreign objects and debris (FOD).

O. Close all areas accessed for modification.

P. Record compliance with this aircraft service change in the aircraft permanent maintenance records and return aircraft to flight status.

Q. Report compliance with this aircraft service change to Gulfstream CMP via electronic transmittal or fill out and fax the attached service reply card.

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### WEIGHT AND BALANCE DATA:

The effect of this service change, when performed in a stand alone configuration, is negligible with regards to aircraft basic weight and balance.

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### ELECTRICAL LOAD ANALYSIS DATA:

The effect of this change on the aircraft electrical loading is 0.
### Kit Effectivity:

- **Kit 1** – Aircraft serial numbers 4002 – 4207
- **Kit 2** – Aircraft serial numbers 4208 – 4284
- **Kit 3** – Aircraft serial numbers 4285 and subsequent

### PARTS REQUIRED PER AIRCRAFT:

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<th>Nomenclature</th>
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<td>-2 Kit</td>
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<td>4.</td>
<td>SGER-906</td>
<td>ESDS Handling</td>
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| 5.   | 1159ASC47079-SW | Software Package                          | 1    | 1                      | 1      | Item 6 included ✓
| 6.   | 1159SB51000   | Loadable Avionics Software Configurations  | ✓    | ✓                      | ✓      | Options disk
| 7.   | 7517402-970   | Transponder module                         | 2    | 2                      | 2      | Not part of the ASC kit. New or upgraded parts must be arranged through PSPM.
| 8.   | GAC860K-1     | End cap                                    | -    | 4                      | -      |
| 9.   | GAC875AD224S  | Cable Shield                               | 25’  | -                      | -      |
| 10.  | GAM820DB04F   | TJ module                                  | 2    | -                      | -      | CTJ122E04F-513 (alternate)
| 11.  | GAS24A2       | Splice                                     | 2    | -                      | -      |
| 12.  | GAS830AH2     | Shield sleeve                              | 2    | -                      | -      |
| 13.  | HET-A-02C     | Hexashield ferrule                         | 2    | -                      | -      |
| 14.  | M39029/57-354 | Contacts, socket                           | 6    | 6                      | -      |

**NOTE:** All software media required for this ASC will be issued as a separate package by PN 1159ASC47079-SW. Prior to ordering this ASC kit a CMC configuration report must be submitted. All drawings will be issued to the latest revision level.
FIGURE 5

VIEW LOOKING DOWN, AFT, AND OUTBD
LEFT HAND SIDE (FRONT VIEW)

VIEW LOOKING DOWN, FWD, AND INBD
LEFT HAND SIDE (REAR VIEW)
### SERVICE REPLY CARD

PLEASE FAX THIS PAGE TO GULFSTREAM AEROSPACE CMP AT 800-944-1775 OR 912-963-0265.

THE FOLLOWING AIRCRAFT SERVICE CHANGE HAS BEEN COMPLIED WITH:

<table>
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**AIRCRAFT HOURS:**

**AIRCRAFT LANDINGS:**

**PREVIOUSLY C/W DATE:**

**NOT APPLICABLE DATE:**

**NOMENCLATURE**

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**TRANSPONDER MODULE #1**

| OFF: | ON: 7517402-970 | 345302 |

**DISC INFORMATION**

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**SIGNATURE**

**TITLE / CERTIFICATE NUMBER**

**COMPANY**

**COMMENTS / SUGGESTIONS / ACTIONS TAKEN:**

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