[ATC Facility]

Automatic Dependent Surveillance - Broadcast (ADS-B)

Flight Inspection Procedures - Commissioning

Start Date: date

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FLIGHT INSPECTION PLAN SUMMARY:

The [facility] ADS-B Service Volume(s) Commissioning Flight Inspection is scheduled to begin on [date]. The following procedures are derived from the Draft ADS-B Flight Inspection Order, 8200.ADS-B.

The flight inspection will be conducted and observed from [location]. One of the displays will be configured for a single source/ADSB display to view the flight check. Another display will be configured for a fusion display configuration.

ADS-B is a surveillance service used to support separation assurance and traffic flow management. The objective of the commissioning inspection is to evaluate system performance, determine and document whether the coverage meets Air Traffic requirements, and provide a baseline for the detection of a deterioration of performance. ADS-B OUT Critical Services enable Air Traffic Separation Services consisting of ADS-B broadcasts that have been received and processed for display on FAA automation systems for use by Air Traffic to separate aircraft.

The overall purpose of the flight inspection is for engineering to assess the coverage, functionality and accuracy of the ADS-B system. The coverage of the airways, approaches and airports will be documented in a post-flight inspection analysis report. The report will be used as a baseline report documenting the coverage of the system in the areas flown during the flight inspection.

The test team will coordinate with the flight inspection crew to conduct a functional check of the aircraft's ADS-B systems when it first arrives in the [facility] airspace. The 1090ES transponder will transmit the ATC assigned operational 3/A code. The UAT transmitter will broadcast an agreed upon mode 3/A code. The UAT transceiver ICAO address will be set to one of the provided test addresses, normally one of the +1000 offsets (FAAFC1 or FAAFC4). If the +1000 foot offset is required during the inspection, then use the corresponding flight ID (FLTCK1U or FLTCK4U respectively) to activate the altitude offset feature. The altitude offset allows for use of both ADS-B links at the same time utilizing different ICAO addresses without triggering a conflict alert in the automation. However, if air traffic is able to suppress conflict alerts, then the preferred method is not to activate the offset feature. In that case, use the flight ID "FLCKU##," where ## is the 2-digit N-number of the flight check aircraft (e.g., 55).

FLIGHT INSPECTION PARTICIPANTS:

- Name – Tech Center SBS System Test Engineer
- Name – MSY STARS Automation Support
- Name – MSY SSC Coordinator
- Name – MSY AT Support Manager
- Name – MSY NATCA Rep
- Name – MSY OM ATCT
- Name – MSY ATCT
- Name – MSYAir Traffic Support Specialist
- Name – Engineering Services CSA
- Name – MSY Tech Ops Manager
- Name – SBS System Engineering Lead
- Name – SBS System Test Lead
- Name – CSA Program Management
- Name – CSA Program Management
- Name – SBS Program Office – Air Traffic Specialist
- Name - SBS Program Office – SBS Systems Eng

- Name – FIS point of contact for aircraft scheduling
- Name – SBS System Testing

REFERENCE RESOURCES:

The following maps, coverage plots and other reference materials will be distributed using a Google Earth format. When using Google Earth it will be necessary to adjust the opacity of the various layers to view multiple layers at once. By overlaying the coverage plots, Minimum Vectoring Altitude (MVA) charts and Low En Route Altitude chart, the predicted coverage and MVA altitudes can be determined for the various fixes and airways that will be checked during the flight inspection. A compiled .kmz will be distributed via email with the following layers:

- Service Volume coverage plots: includes the radio station location (lat/long) and various elevation coverage plots; these plots are being generated by ITT during the design and siting of the Composite Traffic Volume (CTV)
- Minimum Vectoring Altitude charts: includes the MVA altitudes for the various terminal areas; the MVA charts should be acquired from the appropriate TRACON Air Traffic operations personnel; depending on the provided format of the MVA charts, the chart may need to be scaled within the Google Earth program; the center of the MVA chart is referenced to the terminal ASR location
- Low En route Altitude chart: depicts the various airways and other fixes which will be checked and referenced throughout the flight check plan and subsequent flight inspection; following is the Google Earth library URL for the map; map does claim to be current and is for reference only (http://www.gelib.com/maps/low-altitude-enroute-charts/low-altitude-enroute-charts.kml?)
- CTV outline: depicts the CTV outline along with the drop/acquire outline
- Terminal Area outline: typically a 60nm ring referenced to the terminal ASR location

The approach/departure plates will be provided but are not a layer in the Google Earth file.

SCHEDULE AND AIRCRAFT LOGISTICS:
The Flight Inspection will begin on [date and time]. The following table outlines the schedule for the flights:

Day	**Time**	**Purpose**
	[time] [times]	Contact pilot before takeoff. Wheels up Airways/Route Coverage; Modes/Codes Airport Arrival/Departure
		[list objectives for day like, MSAW, Fix/Map Accuracy, Coverage, etc.]
		Weather Maintenance Backup (if needed)

The following are general guidelines for the flight inspection aircraft and crew:
- FC will base out of [airport]
- FC pilots limited to 10 hour days; plan on 6 to 7 hrs of flight time each day
- Daily pre-flight briefings

SBS SERVICE VOLUMES:

A Composite Traffic Volume (CTV) is the aggregation of reports from multiple Service Volumes. The reports within a CTV are filtered spatially according to a specified polygon and to eliminate radio station duplicates. [Facility] has been designated CTV-####. The following service volumes are integrated into the [facility] SBS system:

[name(s)] Service Volumes:

- [name] = SV[#]
- [name] = SV[#]

Following are the ADS-B ground stations and ASR/ARSR locations feeding the [facility]. There is [#] terminal feed(s) from [location] to [location].

ADS-B Locations		
Radio Station	**Latitude (deg)**	**Longitude (deg)**
RS[#-#]		

Radar Locations				
Radar ID	**Type**	**Name**	**Latitude (deg)**	**Longitude (deg)**

RADIO FREQUENCY:

Depending on the situation, there may be dedicated frequencies, but more than likely, the flight check aircraft will operate on the normal operational frequencies. When possible, provide a secondary frequency the flight check aircraft can talk to the ADS-B position on, otherwise messages will be relayed over the operational frequency in use at the time.

REQUIRED EQUIPMENT AND DATA RECORDING:

Throughout the flight inspection the following data sources will be recorded:

- [STARS, CARTS, MEARTS, ERAM] automation data
- Service Delivery Point (SDP) ASTERIX Category 33 messages at the Tech Center
- GPS Truth Data onboard aircraft: Primary (ProFlex 500 Ash Tech GNSS Rx) and Secondary (Honeywell GPIRS Hybrid Inertial Reference System, Model YG1854GC)
- 1090ES (avionics)

- UAT EFB (avionics)

FIS AIRCRAFT EQUIPAGE:

Flight Inspection Services (FIS) will be utilizing one of 3 modified Lear Jets (aircraft type LJ60/L, tail numbers N55, N56 or N59) that are configured as follows:

1) **ADS-B 1090ES Equipment:**
   - ACSS XS-950 DO-260B compliant transponder
   - GPS source = MMR Receiver, Rockwell-Collins GNLU-955M
2) **ADS-B UAT Equipment:**
   - Garmin GDL90 receiver/transmitter w/ internal WAAS GPS receiver
   - Garmin GMX200 Multifunction Display

3) **GPS Truth Source:** ProFlex 500 Ash Tech GNSS Receiver, and Honeywell GPIRS Hybrid Inertial Reference System, Model YG1854GC

4) **Surveillance Processor:** Honeywell TPA-100B

5) **ICAO Codes and Flight IDs:**

Tail Number	Flight ID	ICAO Address (Hex)	Octal
N55	FLC55	A6FD11	51576421
N56	FLC56	A72490	51622220
N59	FLC59	A79B0D	51715415

6) **UAT Test Addresses and Flight IDs:**

ICAO Address HEX	ICAO Address Octal	Altitude Offset Feet	Flight ID
FAAFC1	76527701	+1000	FLTCK1U
FAAFC2	76527702	-1000	FLTCK2U
FAAFC3	76527703	-500	FLTCK3U
FAAFC4	76527704	+1000	FLTCK4U
FAAFC5	76527705	-1000	FLTCK5U
FAAFC6	76527706	-500	FLTCK6U

7) **Attenuator:** The flight inspection aircraft has a relay installed that can add 6dB of attenuation between the 1090 XS-950 transponder and the antenna. This reduces the 350 watt output power to approximately 88 watts, below the level of A1L equipage. The inserted 6dB attenuation also reduces the transponder receiver sensitivity by 6dB to approximately -69dBm. For the XS-950 there is no option to reduce sensitivity separate from the power output.

SURVEILLANCE AND BROADCAST SERVICES CHECKLIST:

The checks requiring a flight inspection aircraft are identified in the checklist and appropriate "detailed procedure" paragraphs. The checklist items identified by an "X" are mandatory and are further explained in the detailed procedures section. The flight inspector must consult with the system engineer prior to departing the area to ensure that all checklist requirements have been completed. The following checklist items must be completed as indicated.

ADSS / ADS-B Critical Services Flight Inspection Checklist

	Inspection Type		
	C	**RS Ant or Radio Change**	**Transponder Setting (1)**
Modes/ Codes	X		E
Hand-off with Radar-only	X (3)		E
General Coverage	X	X (2)	L
Airways/ Route Coverage	X	X (2)	L
MSAW	X		E
Fix/ Map Accuracy	X (2)		E

Footnotes:

(1) Settings for 1090 Transponder: E = Either Normal or Low Power; L = Low Power. In Low Power setting, the 1090 ADS-B transponder approximates power and sensitivity of A1 class 1090ES transponder. The UAT transponder is fixed at an A1H class power and sensitivity level.

(2) May be completed using targets-of-opportunity. Flight inspection aircraft at engineering request only.

(3) Only applicable when SV is adjacent to radar-only airspace.

DETAILED FLIGHT INSPECTION PROCEDURES:

General Coverage:

1) Purpose:

Verify ADS-B OUT coverage on both ADS-B links. When designing the plan, the following will be considered:

- Coverage prediction based on validated modeling tools
- Areas of predicted marginal coverage
- Data collected from targets-of-opportunity
- Ensure enough of the SV interior is sampled (the profile should allow contact with every RS)
- ATC requests to check areas with gaps in radar coverage
- ATC requests to check specific airports and specific arrival and departure procedures
- SV Perimeter checks if warranted (see the FI Order)

2) **Detailed Procedures (Airports, Arrivals, and Departures):**

Fly one Approach/Departure into each of the airports listed below. Check both links, (UAT and 1090ES), using the dual-link configuration if possible. This is a general check of coverage, and multiple approaches into any given airport is not required. For some of the following airports, a specific approach/departure is being specified, while for others a generic straight-in approach and shallow climb out can be flown. When a specific approach/departure is not specified, fly inbound on a 6nm final to runway surface (50' above R/W) and outbound on runway heading in a slow climb to 2000' AGL and 6nm. Modify this procedure as necessary for local airspace and obstacle conditions.

Table 1: Airports

AIRPORT	RUNWAY	ADS-B PREDICTED COVERAGE
[airport name and ident]	[if a specific approach, like the ILS to RWY 23, is desired, list that here. If there is only one runway, this block can be left blank. If there are multiple runways, list all the runways it would be acceptable to make the approach to.]	xxx' MSL
Will Rogers World (OKC)	17L/35R, 17R/35L	1400' MSL
Ponca City RGNL (PNC)		1300' MSL
Enid Woodring RGNL (WDG)	17/35, Fly ILS or LOC RWY 35 from PODDS IAF	1900' MSL
Tulsa Intl (TUL)	18L/36R, Fly missed approach for VOR/DME RWY 8 to INOLA fix	1000' MSL

*[note any special requirements for a particular airport.]

[Include this if required] Fly the following published Arrival/Departure procedure segments:

[Include this table if required] Table 2: Arrival /Departure Procedure Segments

Arrival/Departure Name	Start/End Points	Flight Altitude	ADS-B PREDICTED COVERAGE
[name / airport]	[fix name – fix name]	xxx' MSL	xxx' MSL
VINTA TWO / TUL	VINTA – BICEP	2300' MSL	2000' MSL

3) **Evaluation:**

The coverage into the above airports will be checked by using the various data analysis software. The altitudes where detection was lost or acquired will be identified in addition to the detailed analysis parameters outlined later in this document in the post flight inspection analysis section.

Airway/ Route Coverage:

1) **Purpose:**

Verify ADS-B OUT coverage on the airways and routes identified in the flight inspection plan on both ADS-B links. If there is a specific establishment of surveillance coverage below or beyond current radar coverage, ADS-B coverage must be checked with a flight inspection aircraft to ensure it supports the planned air traffic operations. This test requires the flight inspection aircraft to record both position truth data and ADS-B data for post-flight analysis. Operating in the "dual-link" configuration will allow the check to be accomplished without repeating the profile.

2) **Detailed Procedures:**

The altitudes at which satisfactory coverage exists will be determined by flying the minimum altitude (not lower than MOCA) on airway centerline. For a Terminal SV, fly 500' below the minimum en route altitude (MEA)/ minimum vectoring altitude (MVA), but no lower than MOCA. For an En Route SV, fly at the floor of radar coverage, but no lower than minimum obstruction clearance altitude (MOCA).

Reference the following Airways/Fixes table for a list of the Airways/Fixes which will be flown. Fly the following legs between the fixes at the specified altitudes. The airways/fixes will be flown at VFR altitudes as much as possible. If IFR is required due to weather, the pilot will adjust altitude accordingly. The airways/fixes routing is shown on the Low En route chart.

Table 3: AIRWAYS

	FROM	TO	AIRWAY	Requested Altitude to Fly (MSL)	Predicted Coverage (MSL)	Altitude (MSL) actually flown
1	MSY	NEW	VFR	1600	500	
2	NEW	SAFES	VFR	1900	500	
3	SAFES	GOING	V9-543	2000	500	
4	GOING	PEPSI	V9-543	2000	500	
5	PEPSI	GAO "gap"	VFR	1800	500	

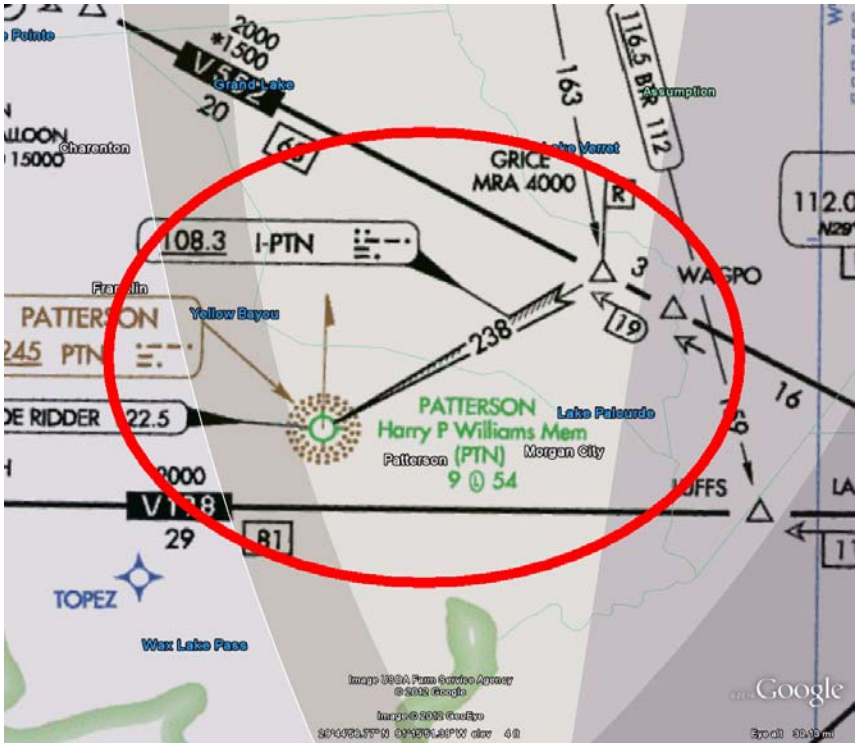
Air Space Assessment (RADAR Gap Locations):

The SBS Systems Engineering Group (Airspace Assessment Program) and [facility] personnel have identified these gap locations/areas that need to be checked during the flight inspection.

Lat/Long for gap locations:

GAO (Galliano) = 29 26 34.49 N 90 15 32.23 W

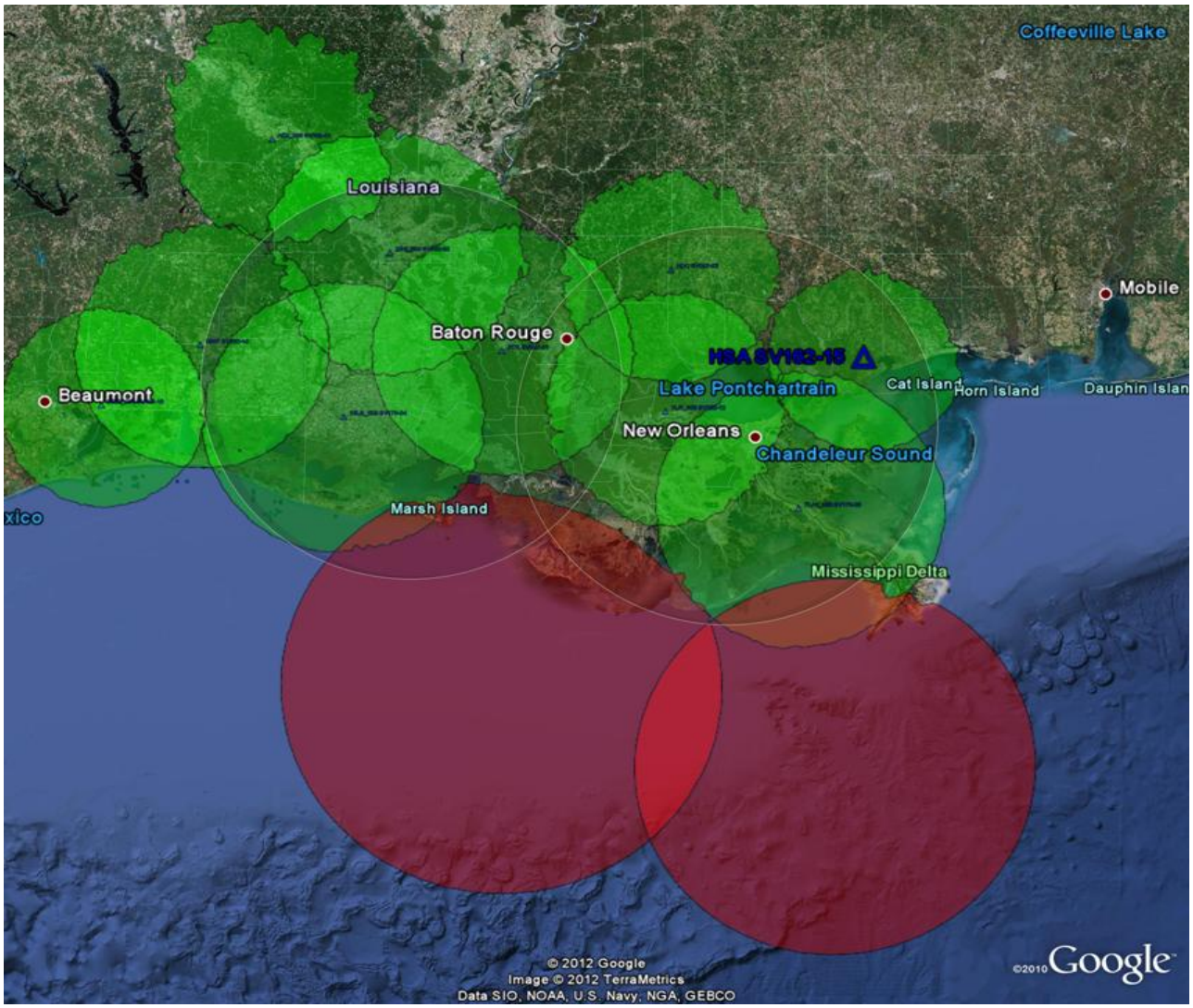
The following are gap locations/areas to be checked; find the lower limits of coverage for the listed Gaps. Coordinate the specific maneuver parameters with the flight inspection crew.



MSY/ZHU ARTCC Offshore Sector Boundary. From GAO south – 33nm from MSY ASR-9 outward. "Gap" is below 3000ft.

3) Evaluation:

Air Traffic and Engineering personnel will determine if the facility coverage meets operational requirements. Post flight inspection data analysis defined later in this document will be used to evaluate the airway/route coverage. The altitudes where detection was lost or acquired will be identified in addition to the detailed analysis parameters outlined later in this document in the post flight inspection analysis section.



ADS-B predicted Coverage
Green Sectors ≤ 500ft MSL & Red Sectors ≤ 1500ft MSL

Fix/ Map Accuracy:

1) **Purpose:**
   To verify all airways, routes, fixes, and runway centerlines on the video map display.

2) **Detailed Procedure:**
   Compare reported aircraft position relative to the airway, route, or fix with the video map presentation. Similarly, verify runway centerline to video map alignment by observing landing and departing aircraft. In addition, at least one time, the controller observing the ADS-B enabled display will call out over the radio to the flight inspection aircraft when passing over a marked fix or NAVAID. The flight inspection crew will either confirm over the fix, or provide the distance from it.

3) **Evaluation:**
   During the flight inspection ensure the flight check aircraft aligns to the map markings correctly.

Modes and Codes:

1) **Purpose**:
The purpose of the modes/codes check is to verify that the system is processing the 3/A code and altitudes properly. There is no need to check any of the emergency codes. ADS-B data should be recorded on the aircraft in case a discrepancy is identified to aid in analysis of the problem. Along with the codes, ensure that the ATC altitude readout is within ±125 feet of the indicated aircraft altitude.

2) **Detailed Procedure:**
Personnel must monitor the flight inspection aircraft transponder replies throughout the general coverage, airway, route, and terminal checks to verify correct altitude readout. The 3/A code changes should be done during any of the airway/route checks at the discretion of the flight check personnel. Note the location and time of the 3/A code changes for the post flight check data analysis purposes. Change 3/A code to 1200 and another discrete code containing the number 7, (e.g., 0707, or 7070). Conduct the code change check using the UAT link only, unless the aircraft is outside the range of all radar coverage.

3) **Evaluation:**
Flight inspection personnel must ensure the displayed transponder reading agrees with the aircraft transponder setting. In the post flight check data analysis the 3/A codes should be verified along with the 3/A code changes that were conducted.

Minimum Safe Altitude Warning (MSAW):

1) **Purpose**:

Perform an end-to-end check of Minimum Safe Altitude Warning (MSAW) features activated solely by an ADS-B only target, thus verifying a target processed through the ADS-B network will trigger a low altitude alert correctly. There are two different components of MSAW: General Terrain Monitor (GTM) and Approach Path Monitor (APM). An APM check can be accomplished at any airport with an APM adaptation. The GTM must be in an area away from any airports and not in a MSAW inhibited area. During both the APM and GTM checks, the aircraft will switch off the Mode S and ADS-B 1090ES transmissions, while transmitting the proper Mode 3/A code on UAT only. This ensures an ADS-B only target. If the UAT transceiver altitude offset feature is in use, it must be disabled so the ADS-B network will forward the actual altitude to automation. Proper attention to the correct configuration on the ATC automation system is required, including selecting the proper Mode-3/A code and associating the aircraft with an instrument flight rule (IFR) flight plan. Testing 1090ES activated MSAW end-to-end functionality is nearly impossible due to fusing of ADS-B and radar targets by ATC automation, and is not required.

2) Detailed Procedures:
During both the APM and GTM checks, the aircraft will switch off the Mode S and ADS-B 1090ES transmissions, while transmitting the proper Mode 3/A code on UAT only. If the UAT transceiver altitude offset feature is in use, it must be disabled so the ADS-B network will forward the actual altitude to automation. If the offset feature is activated, deactivate it by changing the UAT flight ID to "FLCKU##," where ## is the 2-digit N-number of the flight check aircraft. Descend when in position and ask the controller to announce the low altitude alert when it happens. This check is not specifically verifying the altitude that triggers the alert, however the altitude and descent rate at which the alert triggers should be reasonable.

3) **Evaluation:**

Ensure the MSAW alarm is activation occurs as expected.

POST FLIGHT INSPECTION DATA ANALYSIS:

Post-flight analysis of data collected by the flight inspection aircraft and that recorded from the ADS-B system and associated automation system will be conducted by Engineering Services. GPS-based truth data, and ADS-B IN data, including TIS-B, FIS-B and ADS-R, will be collected by the flight inspection aircraft and provided for analysis of Air Traffic Separation Services performance and an assessment of Advisory Services.

Data analysis should include, but is not limited to, the following:

Description	Required Data / Test Parameters
Verify ATC Target Display is correct and accurate and latency is within tolerance.	All sources (aircraft, ADS-B system, and automation).
When multiple ADS-B Radio Stations exist within a service volume (a definite for en route, probable for all other types of service volumes)	Lat/ Lon position broadcast by the Radio Station for site location should be checked (UAT).
Comparison of ADS-B data recordings to predicted coverage charts.	Verify that actual ADS-B coverage is comparable to Radio Station coverage shown in the predicted coverage plots.
Overall Track Probability of Detection (Coverage) for 1090ES/UAT	The purpose of this test is to validate that ADS-B is available throughout the flight check. The coverage probability of detection will be calculated by dividing the number of times the target sent a reply to the total number of times the target should have sent a reply. Analyze use of low power settings for aircraft transponder. Verify ADS-B coverage is provided over areas of interest (airways, airports, fixes etc.).
Latency	The test shall verify that the maximum delay between the reception of an ADS-B Message, containing a State Vector or an emergency condition, and the reception of the corresponding ADS-B Report at the SDP are less than or equal to 700 ms under the conditions of the operating environment.

Description	Required Data / Test Parameters
Validation	The objective of this test is to validate the position information in the ADS-B message. The methods of validation include SSR, time difference of arrival, and time of arrival messages. The test will also verify the automation platform's use of validated position reports to update existing tracks or create new tracks.
Position/Velocity Accuracy (both truth data comparison and target position comparison on KML)	The purpose of this test is to validate that the vertical and horizontal position and velocity data broadcast by the aircraft, received by the radio station and presented to automation are unaltered by the service and within the accuracy bounds set in the listed requirements. Comparison of GPS Truth Data to SDP CAT33 should be conducted for verification. A visual verification of target plots over landmarks (such as a VOR) can be made using the KML files.
Update Rate	The purpose of this test is to validate that ADS-B update rates meet specifications within the service volume.
Integrity	The objective of the ADS-B Data Integrity test will be to verify that data fields in the ADS-B SDP CAT33 message or ADS-B CDR message are encoded with accurate values from the ADS-B aircraft source data.
Navigational Integrity Code (NIC)	The final rule requires the position integrity (NIC) must be less than 0.2 NM, which correlates to NIC = 7.
Navigational Accuracy Code (NAC_p) Position	The final rule requires the position accuracy (NAC_p) must be less than 0.05 NM, which correlates to NAC_p of 8.
Altitude	Ensure no erroneous plot altitudes are displayed

DETAILED PROCEDURES: FLIGHT ASSESSMENT OF ADS-B IN ADVISORY SERVICES:

The following is guidance when collecting data on ADS-B IN Advisory Services. The advisory services are not designed for aircraft surveillance or separation, and thus not authorized for either purpose The advisory services are not part of the ADS-B commissioning and are not mandatory for the SBS flight inspection. However, the appropriate data will be collected and analyzed for the advisory services if available.

1) **General Coverage:**

Verify ADS-B IN coverage on both links as appropriate; e.g., FIS-B only operates on the UAT link, TIS-B operates on both. Check coverage in conjunction with flying the commissioning flight inspection of the Service Volume ADS-B OUT Critical Services. Engineers may request additional areas to be flown if deemed necessary. Operating in the "dual-link" configuration will allow the check to be accomplished without repeating any profiles and is necessary to check ADS-R.

During the commissioning flight inspection of the Service Volume ADS-B OUT Critical Services, test targets should be turned on over every Radio Station within the subject SV. The test targets, typically at FL600, continuously broadcast their position on both links. When seen by the flight inspection aircraft ADS-B avionics, it proves communication with that particular Radio Station and demonstrates signal coverage.

2) **TIS-B:**

TIS-B is the ADS-B IN function that provides for the in-cockpit display of other aircraft (without ADS-B) in the vicinity that are being seen via FAA secondary radar. General observations can be made during the flight to verify that known radar targets are appearing in the correct relative position on the ADS-B display(s) in the flight inspection aircraft. Of course, if there are no such targets-of-opportunity in the area during the flight, the opportunity to check TIS-B in this way will not be possible. The flight inspection aircraft should record ADS-B data on both links for post-flight analysis. Because position "truth" data will not be available for the TOO aircraft, engineers will only be able to compare the TIS-B information recorded on the flight inspection aircraft, with the position of the TOO, as recorded in the radar data input to the ADS-B system. Analysis should concentrate on missing and false targets.

3) **FIS-B:**

FIS-B reception may be checked using a single or dual-linked configuration since it currently only provides products over the UAT link. FIS-B data reception can be spot checked visually in flight, but post-flight analysis should check for reception coverage, content, and availability. Proper operation (products available and display quality), vice coverage, can be considered satisfactory if it has already been validated with the same version of ADS-B system software. No specific profiles are required.

4) **Service Volume Transition:**

This check concerns ADS-R operation and does not directly impact the surveillance (ADS-B OUT) operation. Verify the ground system's ability to continue ADS-R operation as the aircraft transitions from one SV to the next (vertical or lateral). Any SV that is contained within the SV being inspected should be transitioned also. This check would normally be accomplished in the course of checking coverage. This check requires the flight inspection "dual-link" configuration and the flight inspection aircraft to record both position truth data and ADS-B data for post-flight analysis.

5) ADS-R Coverage and Functionality:

This check requires the "dual-link" flight inspection configuration, or two ADS-B equipped flight inspection aircraft flying in formation. This test can be performed simultaneously with other coverage checks so that it is checked in multiple areas of the SV. Special attention should be placed on high traffic areas. ADS-R requirements (such as latency, availability, etc.) are tighter when compared to the TIS-B rebroadcast service requirements. Thus, inspection of SV's with ADS-R service will need to verify ADS-R independently of the TIS-B service. Service filters and their proper operation are of primary interest. This evaluation requires the flight inspection aircraft to record position truth data and ADS-B data for post-flight analysis. Assessment of ADS-R performance is accomplished by comparing the recorded flight inspection aircraft position truth data to the corresponding rebroadcast ADS-R positions (UAT ADS-R ownship position received over the 1090ES data link, and the 1090ES ADS-R ownship

position received over the UAT data link). These time-stamped truth and ADS-R positions are then compared to evaluate coverage, accuracy, latency, and availability. It is also important to check ADS-R for hazardous or misleading information.