DOCKET NO.: SA-517
EXHIBIT NO. 3-T

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

SAFETY BOARD RECOMMENDATION LETTER TO THE FAA dated APRIL 13, 1997 AND RESPONSES

(16 pages)

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: April 16, 1997

In reply refer to: A-97-22 through -27

Mr. Barry L. Valentine
Acting Administrator
Federal Aviation Administration
Washington, D.C. 20591

On October 2, 1996, at about 1112 eastern daylight time, a Piper PA-32-300, N2881 W, crashed in a heavily wooded area in Brandywine, Maryland, about 2 miles south of its intended destination, the Washington Executive/Hyde Field Airport, Clinton, Maryland. The pilot and two passengers were killed, and the airplane was destroyed. At the time of the accident, instrument meteorological conditions (IMC) prevailed. The flight had originated in Somerville, New Jersey, and an instrument flight rules (IFR) flight plan had been filed for the personal flight conducted under Title 14 Code of Federal Regulations (CFR) Part 91.

Although the investigation is ongoing, thus far it has disclosed air traffic control (ATC) deficiencies that the National Transportation Safety Board believes require corrective action by the Federal Aviation Administration (FAA). As part of the investigation, Safety Board staff have reviewed recorded voice communications, recorded radar data, and the teletype printout of the automated radar terminal system (ARTS) III-A, and have interviewed the controllers.

At the time of the accident, the pilot was receiving ATC services from two radar controllers working the F-2 radar position at the Washington National terminal radar approach control (TRACON). One of them was a developmental controller receiving on-the-job training (OJT) under the direction of a controller who was fully certified in the facility. The recorded voice communications indicate that the pilot was issued an altitude of 1,600 feet, which is the lowest altitude that can be issued near the airport. Because there is no instrument approach to the airport, the pilot was provided vectors to the vicinity of the airport with the expectation that he would see the airport visually, cancel his IFR flight plan and land. However, before the accident, both Washington National Airport and Andrews Air Force Base were reporting weather conditions that indicated very low ceilings and reduced visibility, decreasing the likelihood that the pilot would see the airport. Interviews with the controllers indicated that they were both aware of the weather conditions.

On the tape recording of voice transmissions, the accident pilot advised the controller that because he could not observe the airport at his assigned altitude of 1,600 feet, he would be descending to an altitude of 1,000 feet. After the pilot stated that he would be descending to an altitude of 1,000 feet, the TRACON minimum safe altitude warning (MSAW) aural alarm could be heard in the background while another aircraft was being instructed to join the localizer at Washington National. During an interview with Safety Board investigators, the controllers stated that they did not hear the pilot's transmission and that they never observed the airplane at an altitude below 1,600 feet. A computer printout of MSAW data from the Washington National TRACON indicated that during the aircraft's subsequent descent, four general terrain warning MSAW alerts were generated within the Washington National TRACON; however, both the developmental controller and his instructor stated that they did not recall seeing or hearing any MSAW alerts when they were at the position. Also, other controllers and a supervisor, who was in training at a radar display located across the room from the F-2 radar position, stated that they did not recall hearing or observing any low altitude wrnings before the accident.

During the investigation, the Safety Board's ATC investigator for this accident requested a tour of the radar room to observe the position that would have provided ATC services to the pilot of N2881 W. During this tour, the investigator noted that the MSAW aural alarm speaker, located directly above the F-2 radar position, was covered with heavy paper taped in place with what appeared to be masking tape. This is the only MSAW speaker in the radar room. The purpose of the MSAW system is to provide an aural warning to controllers, in conjunction with a visual warning displayed on their radar displays, that an airplane may be in close proximity to terrain, obstructions, or to other aircraft. After an MSAW alert is heard or observed, it is the controller's responsibility to issue a verbal warning to the pilot so that corrective action maybe taken.

Interviews with supervisors and controllers at the Washington National TRACON disclosed that the MSAW speaker in the TRACON might have been covered with paper for several years; however, these personnel did not know whether anyone had ever been questioned about who had covered it or why. The TRACON supervisor, who was on duty at the time of the accident, acknowledged that the cover might have been put on the speaker to mute its volume. Also, facility technicians stated that they were unaware that a cover had been placed on the MSAW speaker. When they heard an MSAW alarm in the tower or TRACON, they assumed that the system was working properly. The technician who conducted the recertification of the ARTS III-A after the accident said that he did not test the aural MSAW alarm because there had been no request from air traffic management to do so. Full facility evaluations conducted earlier by FAA Headquarters, and other regional and local office staff reports, contained no entries that the MSAW speaker in the TRACON had been covered. Such evaluations are routinely conducted through on-site observation and monitoring of operational positions.

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The Safety Board is concerned that this condition was unnoticed or unquestioned for so long. Accordingly, the Safety Board believes that the FAA should issue an urgent general notice (GENOT) to all affected air traffic managers directing them to conduct an immediate visual inspection and aural test of the MSAW speakers in their facilities to ensure that no devices have been placed over them that might hinder, mute, or prevent the aural warning from being heard in the operational quarters.

Further, the Safety Board believes that the FAA should require that a daily, visual inspection and aural test of the MSAW speakers located in the operational quarters be conducted by supervisory personnel prior to the start of each shift to ensure the integrity of the MSAW system. Also, these inspections should be recorded in the appropriate facility logs. Implementation of these recommendations should provide data to verify that the system is operating in the manner intended.

The Safety Board also believes that the FAA should require that all affected terminal personnel be briefed on the contents of this safety recommendation letter. This briefing should focus on generating awareness and vigilance in those situations in which a safety alert might occur and controllers must be prepared to respond, as directed in FAA Order 7110.65, "Air Traffic Control."

This accident is the second one that the Safety Board has investigated recently in which air traffic controllers have stated that they did not hear the MSAW alert immediately before the accident. On October 4, 1995, a Cessna C- 172N, crashed while executing an instrument landing system (ILS) approach to the Elmira/Corning Regional Airport. The private pilot and his passenger were fatally injured. The local controller, who was in communication with the pilot, told Safety Board investigators that he neither saw nor heard an MSAW warning, although the MSAW speaker was located about 3 feet from his operating position. At that time, the controller had another airplane on his frequency. The supervisor on duty disclosed that he was 7 to 8 feet from the speaker when he heard the aural MSAW alert, and he heard the local controller asking the pilot if his aircraft was established on the localizer. A teletype printout of the ARTS-IIIA system indicated that an MSAW alert occurred about 10 seconds prior to the local controller's inquiry to the pilot.

These examples indicate that some controllers are either failing to perceive, or are discounting, critical audio and visual safety alert information that may require their immediate response. In this accident, the radar controller who was responsible for the F-2 radar position stated that he did not hear the pilot advise that he would be descending to an altitude of 1,000 feet. However, the controller apparently did not miss other transmissions. Moreover, the position was sufficiently busy to warrant an almost continuous scan of the radar display. Given the aural and visual attentiveness required of the controllers at that time, the Safety Board is unable to understand how they could fail to note such vital and relevant safety cues as the MSAW warnings.

It is possible that controllers neither saw nor heard an MSAW alert because they had unconsciously "tuned out" these critical audio and visual cues. The Safety Board notes that in previous accident investigations, controllers have told investigators that their automated safety alert systems were alarming "almost constantly."

Also, the visual portion of an MSAW alert consists of a flashing "L/A" displayed in the automated datablock of the aircraft to represent a low altitude situation. However, in the course of their duties, radar controllers routinely effect automated handoffs on aircraft and once the handoff is accepted or received, the controller observes the datablock flash. Because controllers routinely observe datablocks flash, they may not be as attuned visually to the "L./A" flashing, requiring urgent response. The Safety Board believes that the FAA should require modifications to the MSAW system software to enhance the conspicuity of those aircraft that may require the controller's immediate attention and action. Such modifications might be accomplished by placing the target and datablock within a flashing circle.

The FAA recently announced that the Raytheon Corporation will supply new computers, displays and software for as many as 172 FAA approach control and tower radar facilities beginning in 1998 under the Standard Terminal Automation Replacement System (STARS). The Safety Board applauds this effort and strongly supports it. Further, the Safety Board believes that the FAA should require that the STARS program include an MSAW speaker at each radar display, a capability for the controller to momentarily override and mute an MSAW alert; and a computerized recording of the muting of such an alert.

Finally, the Safety Board believes that the FAA should require, as a part of the STARS program, that MSAW alerts on IFR aircraft be duplicated at a position in the operational quarters designated for supervisory personnel and that the supervisor determine the validity of the alert and whether appropriate corrective action has been initiated or is required. This requirement would put supervisory personnel "in-the-loop" for those instances in which their assistance might be warranted.

Therefore the National Transportation Safety Board recommends that the Federal Aviation Administration:

> Immediately issue an urgent general notice (GENOT) to all affected air traffic managers directing them to conduct an immediate visual inspection and aural test of the aural minimum safe altitude warning (MSAW) speakers in their facilities to ensure that no devices have been placed over them that might hinder, mute, or prevent the aural warning from being heard in the operational quarters. (A-97-22)
>
> Require that a daily, visual inspection and aural test of the minimum safe altitude warning (MSAW) speakers located in the operational quarters be conducted by supervisory personnel prior to the start of

each shift to ensure the integrity of the MSAW system. Require that these inspections be recorded in the appropriate facility logs. (A-97-23)

Require that all affected terminal personnel be briefed on the contents of this safety recommendation letter. This briefing should focus on generating awareness and vigilance in those situations in which a safety alert might occur and controllers must be prepared to respond, as directed in FAA Order 7110.65, "Air Traffic Control." (A-97-24)

Modify the software for the minimum safe altitude warning (MSAW) system to enhance the conspicuity of those aircraft that may require the controller's immediate attention and action. Such modifications might be accomplished by placing the target and datablock within a flashing circle. (A-97-25)

Require that the Standard Terminal Automation Replacement System (STARS) program include a minimum safe altitude warning (MSAW) speaker at each radar display; a capability for the controller to momentarily override and mute an MSAW alert; and a computerized recording of the muting of such an alert. (A-97-26)

Require, under the Standard Terminal Automation Replacement System (STARS) program, that minimum safe altitude warning (MSAW) alerts on instrument flight rules (IFR) aircraft be duplicated at a position in the operational quarters designated for supervisory personnel and that the supervisor determine the validity of the alert and whether appropriate corrective action has been initiated or is required. (A-97-27)

Chairman HALL, Vice chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA and BLACK concurred in these recommendations.

By: Jim Hall
Chairman

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970882

U.S. Department of Transportation
Federal Aviation Administration

Office of the Administrator

800 Independence Ave., S.W.
Washington, D.C. 20591

A-97-22
A-97-23
A-97-24
A-97-25
A-97-26
A-97-27

JUL 1 1997

6817

The Honorable James E. Hall
Chairman, National Transportation
Safety Board
490 L'Enfant Plaza East, SW.
Washington, DC 20594

Dear Mr. Chairman:

This is in response to Safety Recommendations A-97-22 through -27 issued by the Board on April 16, 1997. These safety recommendations were issued as a result of an accident on October 2, 1996, involving a Piper PA-32-300, N2881W. The airplane crashed in a heavily wooded area in Brandywine, Maryland, about 2 miles south of its intended destination, the Washington Executive/Hyde Field Airport, Clinton, Maryland. At the time of the accident, instrument meteorological conditions prevailed. The flight had originated in Somerville, New Jersey, and an instrument flight rules flight plan had been filed for the personal flight conducted under 14 CFR Part 91. The pilot and two passengers were killed, and the airplane was destroyed.

A-97-22. Immediately issue an urgent general notice (GENOT) to all affected air traffic managers directing them to conduct an immediate visual inspection and aural test of the aural minimum safe altitude warning (MSAW) speakers in their facilities to ensure that no devices have been placed over them that might hinder, mute, or prevent the aural warning from being heard in the operational quarters.

FAA Comment. The Federal Aviation Administration (FAA) agrees with this safety recommendation and on May 7, 1997, directed its air traffic division managers to brief all facility managers on this issue and instruct them to conduct a visual inspection of the minimum safe altitude warning (MSAW) speakers in their facilities and remove any muting devices from these speakers.

I consider the FAA's action to be completed on this safety recommendation.

A-97-23. Require that a daily, visual inspection and aural test of the minimum safe altitude warning (MSAW) speakers located in the operational quarters be conducted by supervisory personnel prior to the start of each shift to ensure the integrity of the MSAW system. Require that these inspections be recorded in the appropriate facility logs.

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FAA Comment. The FAA agrees with this safety recommendation and will revise FAA Order 7210.3, Facility Operation and Administration, to require supervisors to check the MSAW speaker as part of the shift checklist and to record the completion of this inspection on the appropriate facility log. In the interim, the FAA issued a general notice (GENOT) on June 1, 1997, to implement this requirement until the revision to the order becomes effective in January 1998. I have enclosed a copy of the GENOT and a copy of the change to the order for the Board's information.

I believe that the FAA has addressed the full intent of this safety recommendation, and I consider the FAA's action to be completed.

A-97-24. Require that all affected terminal personnel be briefed on the contents of this safety recommendation letter. This briefing should focus on generating awareness and vigilance in those situations in which a safety alert might occur and controllers must be prepared to respond, as directed in FAA Order 7110.65, "Air Traffic Control."

FAA Comment. The FAA addressed this safety recommendation in a memorandum dated June 9, 1997, to terminal facility managers through the regional air traffic division managers. The facility managers will have 2 weeks after receipt of the the memorandum to ensure that all operational personnel have been briefed on the requirements of Order 7110.65, Air Traffic Control, paragraphs 2-1-2, Duty Priority; 2-1-6, Safety Alert; and 5-15-7, Inhibiting Minimum Safe Altitude Warning (MSAW), and on what actions are to be taken when controllers are made aware of an aircraft's close proximity to terrain by the MSAW system. This review shall be considered refresher training and be documented appropriately in each individual's training records. Each facility will notify headquarters when the actions have been completed.

I believe that the FAA has addressed the full intent of this safety recommendation, and I consider the FAA's action to be completed.

A-97-25. Modify the software for the minimum safe altitude warning (MSAW) system to enhance the conspicuity of those aircraft that may require the controller's immediate attention and action. Such modifications might be accomplished by placing the target and datablock within a flashing circle.

FAA Comment. The FAA has reviewed the feasibility of modifying the software for the MSAW system to enhance the conspicuity of the data blocks in the past. The FAA concluded that the existing MSAW processing generates sufficient alarms. The

current system, which provides both aural and visual alarms, is completely adequate when operated according to design. As indicated in the FAA comments above for A-97-22 and A-97-23, the FAA has taken action to conduct visual inspection and aural tests of the MSAW speakers, remove any muting devices, and ensure the system is able to function as designed.

I plan no further action on this safety recommendation, and I consider the FAA's action to be completed.

A-97-26. Require that the Standard Terminal Automation Replacement System (STARS) program include: a minimum safe altitude warning (MSAW) speaker at each radar display; a capability for the controller to momentarily override and mute an MSAW alert; and a computerized recording of the muting of such an alert.

FAA Comment. The FAA's specifications for STARS currently address this safety recommendation. The STARS specification includes the following MSAW requirements:

3.1.6 Minimum Safe Altitude Warning Processing (Air Traffic)

3.1.6.1 - The system shall detect unsafe proximity between associated tracked aircraft and terrain and obstructions using valid altitude information from the altitude tracker or from the manually entered assigned altitude when Mode C data from the aircraft is not available.

3.1.6.2 - The system shall allow authorized FAA and Department of Defense personnel to enable and disable MSAW processing for the entire facility.

3.1.6.3 - The system shall print, display, and store messages for each minimum safe altitude warning.

3.1.10.19 - The system shall generate MSAW visual alerts and aural alarms.

3.1.10.19.1 - The system shall provide each terminal controller workstation with the capability to enable and disable visual alerts and aural alarms.

I believe that these requirements address the full intent of this safety recommendation, and I consider the FAA's action to be completed.

A-97-27. Require, under the Standard Terminal Automation Replacement System (STARS) program, that minimum safe altitude warning (MSAW) alerts on instrument flight rules (IFR) aircraft be duplicated at a position in the operational quarters designated for supervisory personnel and that the supervisor

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determine the validity of the alert and whether appropriate corrective action has been initiated or is required.

FAA Comment. There is no requirement in the current STARS operational requirements document to duplicate MSAW alarms at supervisory positions. Supervisory positions do not currently include controller displays and there is no plan to provide supervisory displays. However, with STARS, a supervisor will have the ability to monitor MSAW alarms immediately from every controller position which displays the alarm.

I consider the FAA's action to be completed on this safety recommendation.

Sincerely,

Barry L. Valentine
Acting Administrator

Enclosures

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TELEGRAPHIC MESSAGE

NAME OF AGENCY	PRECEDENCE	SECURITY CLASSIFICATION
Federal Aviation Adminstration Air Traffic Rules and Procedures Washington, D.C.	ACTION: Routine INFO:	Unclassified
ACCOUNTING CLASSIFICATION	DATE PREPARED 6/1/97	FILE N:\120\bramble\genots\laca.doc
FOR INFORMATION CALL		
NAME C. R. Bramble, ATO-120.11	PHONE NUMBER (202) 267-9343	TYPE OF MESSAGE ☐ SINGLE ☐ BOOK ☒ MULTI ADDRESS
THIS SPACE FOR USE OF COMMUNICATION UNIT		

MESSAGE TO BE TRANSMITTED *(Use double spacing and all capital letters)*

To: KRWA NOUS2 _____

GENOT RWA_____SVC B

GG ALRGNS 1/500 ALATFO AMA/1 ACT/1

NOTICE N7210.456

SUBJECT: MINIMUM SAFE ALTITUDE WARNING (MSAW) SPEAKER OPERATION

EFFECTIVE: IMMEDIATELY

CANCELLATION: 6/1/98

AIR TRAFFIC MANAGERS SHALL ENSURE THAT SUPERVISORY PERSONNEL CONDUCT A VISUAL INSPECTION AND AURAL TEST OF THE MSAW SPEAKER(S) LOCATED IN THE OPERATIONAL QUARTERS AS PART OF THE EQUIPMENT CHECKS REQUIRED DURING EACH WATCH. THE PURPOSE OF THIS INSPECTION IS TO ENSURE THE AURAL

TELEGRAPHIC MESSAGE

NAME OF AGENCY	PRECEDENCE	SECURITY CLASSIFICATION
Federal Aviation Adminstration Air Traffic Rules and Procedures 'ashington, D.C.	ACTION: Routine INFO:	Unclassified
ACCOUNTING CLASSIFICATION	DATE PREPARED	FILE
		-
FOR INFORMATION CALL		
NAME	PHONE NUMBER	TYPE OF MESSAGE
		☐ SINGLE ☐ BOOK ☒ MULTI ADDRESS
THIS SPACE FOR USE OF COMMUNICATION UNIT		

MESSAGE TO BE TRANSMITTED *(Use double spacing and all capital letters)*

ALARM IS FUNCTIONING AND AUDIBLE TO THE APPROPRIATE OPERATIONAL PERSONNEL. ORDER 7210.3 WILL BE AMENDED TO INCLUDE THIS REQUIREMENT DURING THE NEXT PUBLICATION CYCLE.

GRIFFITH, ATO-1

	PAGE NO.	NO. OF PGS	SECURITY CLASSIFICATION
	2	2	Unclassified

STANDARD FORM 14 (ELECTRONIC VER)

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AIR TRAFFIC CONTROL DOCUMENT CHANGE

ORDER/PUBLICATION: 7210.3, FACILITY OPERATION AND ADMINISTRATION
CHANGE: CHANGE 1
EFFECTIVE DATE: 1/1/98
SPECIALIST/ROUTING: C. R. Bramble, ATO-120.11

1. PARAGRAPH NUMBER AND TITLE:
Paragraph, 13-2-7 Title, MINIMUM SAFE ALTITUDE WARNING (MSAW) AND CONFLICT ALERT (CA)

2. BACKGROUND:
As a result of a National Transportation Safety Board (NTSB) investigation , the Federal Aviation Administration has received a recommendation to ensure speakers associated with the Minimum Safe Altitude Warning (MSAW) system are in working order at the beginning of each shift.

3. EXPLANATION OF CHANGE:
This change assigns the Facility Manager the responsibility of ensuring that the MSAW speakers are inspected as part of the equipment checks list during each watch.

4. CHANGE:

OLD	NEW
13-2-7 MINIMUM SAFE ALTITUDE WARNING (MSAW) AND CONFLICT ALERT (CA)	**13-2-7 MINIMUM SAFE ALTITUDE WARNING (MSAW) AND CONFLICT ALERT (CA)**
a. thru e. (3) SAME	**a. thru e. (3) NO CHANGE**
	4. A visual inspection and aural test of the MSAW speakers located in the operational quarters by supervisory personnel is included as part of the equipment check list required during each watch. The purpose of this inspection is to ensure the aural alarm is functioning and audible to the appropriate operational personnel.

No further changes to paragraph

5. OPERATIONAL IMPACT:
Watch supervision shall include the inspection of MSAW speaker(s) which are located in the operational quarters, during their performance of the watch equipment checks list.

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6. **INDEX CHANGES:**

Add: MSAW equipment check list, 13-2-7

If you have any questions regarding this proposal, please contact C. R. Bramble, ATO-120.11 at (202) 267-9343.

For Charles R. Reavis
Acting Manager, Strategic Operations/Procedures Division, ATO-100

T-13

National Transportation Safety Board
Washington, DC 20594

1967 - 30 Years of Transportation Safety - 1997

Office of the Chairman

Honorable Jane F. Garvey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

Dear Ms. Garvey:

Thank you for the Federal Aviation Administration's (FAA) July 1, 1997, response to the National Transportation Safety Board's Safety Recommendations A-97-22 through -27.

Safety Recommendation A-97-22 asked the FAA to immediately issue an urgent general notice to all affected air traffic managers directing them to conduct an immediate visual inspection and aural test of the aural minimum safe altitude warning (MSAW) speakers in their facilities to ensure that no devices had been placed over them that might hinder, mute, or prevent the aural warning from being heard in the operational quarters. Safety Recommendation A-97-23 asked the FAA to require that a daily visual inspection and aural test of MSAW speakers located in the operational quarters be conducted by supervisory personnel prior to the start of each shift to ensure the integrity of the MSAW system and to require that these inspections be recorded in the appropriate facility logs.

On May 7, 1997, the FAA directed its air traffic division managers to brief all facility managers on these issues and instruct them to conduct a visual inspection of the MSAW speakers in their facilities and remove any muting devices from these speakers. In the interim, on June 1, 1997, the FAA issued a general notice to implement the requirement for supervisors to check the MSAW speaker as part of the shift checklist and to record the completion of this inspection on the appropriate facility log. This change was reflected in a revision to FAA Order 7210.3, "Facility Operation and Administration," effective in January 1998. Based on these actions, the Safety Board classifies Safety Recommendations A-97-22 and -23 "Closed—Acceptable Action."

Safety Recommendation A-97-24 asked the FAA to require that all affected terminal personnel be briefed on the contents of the safety recommendation letter. The briefing should focus on generating awareness and vigilance in those situations in which a safety alert might occur and controllers must be prepared to respond, as directed in FAA Order 7110.65, "Air Traffic Control."

On June 9, 1997, the FAA issued a memorandum to terminal facility managers through the regional air traffic division managers. The facility managers were directed that within 2 weeks after receipt of the memorandum they must ensure that all operational personnel were briefed on the requirements of FAA Order 7110.65, "Air Traffic Control," paragraphs 2-1-2, Duty Priority; 2-1-6, Safety Alert; and 5-15-7, Inhibiting Minimum Safe Altitude Warning (MSAW). Operations personnel

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must also be briefed on what actions are to be taken when controllers are made aware of an aircraft's close proximity to terrain by the MSAW system. The review would be considered refresher training and documented in each individual's training records. Each facility has to notify headquarters when these actions have been completed. The Safety Board staff have asked FAA staff for documentation of these actions and have received a copy of the June 9, 1997, memorandum to all facility managers. However, we have not received written confirmation that the actions directed by the memorandum were completed for the Guam air traffic facilities. The situation regarding Guam is of particular interest because of the circumstances of the Korean Air Boeing 747 accident on August 6, 1997, and the findings that the MSAW system was not operating as intended. Consequently, the Safety Board requests that the FAA provide documentation that the provisions of the June 9, 1997, memorandum to all facilities were completed. In the meantime, A-97-24 is classified "Open—Acceptable Response."

Safety Recommendation A-97-25 asked the FAA to modify the software for the MSAW system to enhance the conspicuity of those aircraft that may require the controller's immediate attention and action. Such modifications might be accomplished by placing the target and datablock within a flashing circle.

In the past, the FAA has reviewed the feasibility of modifying the software for the MSAW system to enhance the conspicuity of the datablocks. The FAA concluded that the existing MSAW system generates sufficient alarms. The FAA believes that the current system, which provides both aural and visual alarms, is completely adequate when operated according to the design. The FAA plans no further action on this safety recommendation, and considers its action to be completed.

As noted in Safety Recommendation A-97-25, this is not the first time the issue of datablock conspicuity has been addressed (A-90-160 through 163 dated October 29, 1990) and the Safety Board is disappointed that the FAA continues to maintain that the design of the current MSAW visual display is adequate. As stated in the safety recommendation letter that outlined the facts and circumstances of the airplane accident at Brandywine, Maryland, on October 2, 1996, the evidence clearly shows that multiple MSAW visual and aural warnings were generated in the operational quarters of the Washington National Terminal Radar Approach Control (TRACON) and Andrews Air Force Base. However, all controllers who were interviewed or polled on their recollections of MSAW warnings that day, told Safety Board investigators that they neither heard nor saw an MSAW alert before the time of the accident. During a replay of the recorded voice communications of the accident, the aural MSAW alert can be heard in the background during a period that the TRACON controllers were talking to other aircraft. For some unexplained reason, the controller failed to note the alerts.

The Safety Board believes that the FAA should reconsider its position on this safety recommendation and that more effort should be made to remedy the deficiencies that led to the recommendation. Our staff are prepared to meet with FAA air traffic managers and staff to discuss this matter. The Safety Board would include human performance specialists in such discussions in an attempt to better understand the situation. Hopefully, the FAA would also include human performance specialists in discussions about the reasons controllers are not perceiving MSAW aural and visual alerts. In the meantime, Safety Recommendation A-97-25 is classified "Open—Unacceptable Response."

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Safety Recommendation A-97-26 asked the FAA to require that the standard terminal automation replacement system (STARS) program include: an MSAW speaker at each radar display; a capability for the controller to momentarily override and mute an MSAW alert; and a computerized recording of the muting of such an alert.

The FAA states that the specifications for STARS currently address this safety recommendation. However, it is not clear from the FAA's response whether it plans to install an MSAW speaker at each STARS controller radar workstation. In addition, the Safety Board believes that for those aircraft that qualify for MSAW as a part of routine air traffic control services, the controller should not be given the option to permanently inhibit MSAW processing. Instead, the intent of the safety recommendation is that once an MSAW alert is generated, the controller should be able to temporarily mute the alert to acknowledge that the warning was received and then to act on such an alert, if required. Further, the FAA's response does not address whether a computerized recording of each instance of muting is to be included in the STARS program. Pending further clarification of these issues, Safety Recommendation A-97-26 is classified "Open—Acceptable Response."

Safety Recommendation A-97-27 asked the FAA to require, under the STARS program, that MSAW alerts on instrument flight rules aircraft be duplicated at a position in the operational quarters designated for supervisory personnel and that the supervisor determine the validity of the alert and whether appropriate corrective action has been initiated or is required.

The Safety Board notes that there is no requirement in the current STARS operational requirements document to duplicate MSAW alarms at supervisory positions. Supervisory positions do not currently include controller displays and there are no plans to provide supervisory displays. However, with STARS, a supervisor will have the ability to monitor MSAW alarms immediately from every controller position that displays the alarm.

The Safety Board did not intend that a controller workstation be designed for supervisors. The intent of the safety recommendation is to enable the supervisor to be "in the loop" if an MSAW alarm were generated so that he/she would be able to assist, should it be required, and to ensure that the controller's actions were appropriate and timely. The Safety Board believes that such an arrangement would serve as a form of redundancy that could enhance the benefits of MSAW in STARS. Pending our staffs' meeting to discuss this matter, and further correspondence on this issue, Safety Recommendation A-97-27 is classified "Open—Unacceptable Response."

Sincerely,

Jim Hall
Chairman

cc: Dr. Donald R. Trilling, Director
Office of Environment, Energy and Safety

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