

Honeywell

KTA870/ KMH880

Pilot's Guide

BENDIX/KING®

Traffic Advisory System/
Multi-Hazard Awareness System

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SYSTEM COMPONENTS

TRAFFIC DISPLAYS:

KMD 850

Compatible Radar Indicators via GC 362A,

Compatible EFIS.

TAS CONTROLS

KMD 850

CP 66B TCAS I Controller

Discretes

KTA 870 & KA 815 W/ OPTIONAL OMNI.

KMU 820/KTA 810 Block Diagram

INTRODUCTION

TAS (an acronym formed from the phrase Traffic Advisory System) is an airborne system used for detecting and tracking aircraft near your own aircraft. TAS includes a TAS processor, antennas, a traffic display and a means to control the system. The TAS processor and antennas detect and track other aircraft by interrogating their transponders. Aircraft detected, tracked, and displayed by TAS are referred to as Intruders. TAS analyzes the transponder replies to determine range, bearing and relative altitude, if the Intruder is reporting altitude. Should the TAS processor determine that a possible collision hazard exists, it issues visual and aural advisories to the crew. The visual advisory is shown by symbols on the traffic display. Complementing the traffic display, TAS provides appropriate synthesized voice announcements in the cockpit. A complete list of traffic symbols and announcements is given in the Theory of Operation and Symbology section of this Pilot's Guide.

TAS is unable to detect any Intruding aircraft without an operating transponder. TAS can detect and track aircraft with either an ATCRBS (operating in Mode A or C) or Mode S transponders.

The traffic display shows the Intruding aircraft's position. TAS identifies the relative threat of each Intruder by using various symbols and colors. The Intruder's altitude, relative to your own aircraft's altitude, is annunciated if the Intruder is reporting altitude. A trend arrow is used to indicate if the Intruder is climbing or descending more than 500 feet per minute. TAS traffic may be displayed on a weather radar indicator, on a dedicated TAS display, on a TAS compatible EFIS Display Unit or a TA/VS (combination traffic display and vertical speed instrument).

TAS modes and functions are controlled by switches located on a TAS control panel or in combination with various other controls. A description of controls is given in the Controls and Displays section of this Pilot's Guide.

ATC procedures and the "see and avoid concept" will continue to be the primary means of ensuring aircraft separation. However, if communication is lost with ATC, TAS adds a significant backup for collision avoidance.

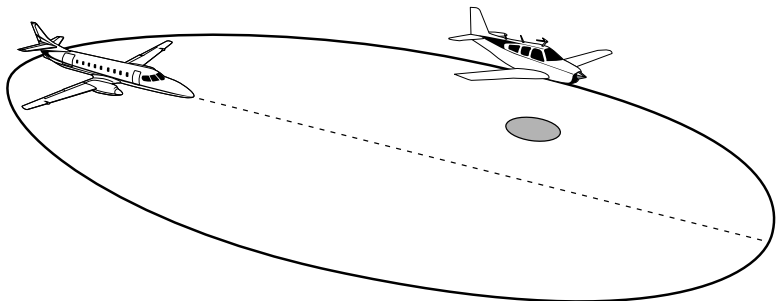
TAS:

- Is compatible with the ATC System
- Determines if a threat exists from ATCRBS or Mode S Transponder equipped aircraft
- Provides display and audio announcement to the crew
 - Position information displayed on a traffic display
 - Synthesized voice
- Incorporates sensor inputs and sophisticated algorithms to minimize nuisance visual and aural annunciations.

EGPWS:

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SECTION I : THEORY OF OPERATION AND SYMBOLOGY



SECTION I DESCRIBES TAS AND EGPWS THEORY OF OPERATION AND SYMBOLLOGY.

TAS OPERATION

TAS monitors the airspace surrounding your aircraft by interrogating the transponder of the Intruding aircraft. The interrogation reply enables TAS to compute the following information about the Intruder:

1. Range between your aircraft and the Intruder.

2. Relative bearing to the Intruder.

3. Altitude and vertical speed of the Intruder, if the Intruder is reporting altitude.

4. Closing rate between the Intruder and your aircraft.

Using this data TAS predicts the time to, and the separation at, the Intruder's Closest Point of Approach (CPA). Should TAS predict that certain safe boundaries may be violated, it will issue a Traffic Advisory (TA) to alert the crew that closing traffic is nearby.

TAS SENSITIVITY LEVEL

TAS separates the surrounding airspace into two altitude layers. A different sensitivity threshold level for issuing TAs (traffic advisories) is applied to each altitude layer. Lower altitudes have less sensitive TA threshold levels to prevent unnecessary advisories in the higher traffic densities anticipated at lower flight levels, i.e., terminal areas.

TAS has two sensitivity levels (SL) which are described in Table 1, TAS Sensitivity Levels. SL A is invoked using the following order of precedence: (1) when the TAS aircraft is below 2,000 feet AGL (if equipped with radio altimeter) OR (2) when the landing gear is Extended (no radio altimeter installed). SL B occurs under all other flight conditions. Table 2, Typical Traffic Advisory Conditions for Sensitivity Levels describes what conditions will cause a TA to be issued. If aircraft is not equipped with either a radio altimeter or retractable landing gear, TAS will stay in SL B at all times.

Sensitivity Level	DESCRIPTION
SL A	In sensitivity level A, TAS performs surveillance and tracking functions and provides traffic advisories. The conditions for sensitivity level A are any one of the following: (1) Own aircraft is in-flight and is below 2,000 feet AGL, if a radio altimeter is installed. (2) Own aircraft is in-flight and the Landing Gear is extended, if a radio altimeter is NOT installed.

SL B	In sensitivity level B, TAS performs surveillance and tracking functions and provides traffic advisories. The conditions for sensitivity level B are based on own aircraft in-flight and: (1) If radio altitude source is installed and own aircraft altitude is above 2,000 feet AGL (radio altitude). (2) If radio altitude source is NOT installed and own aircraft has Landing Gear Retracted. (3) If the aircraft has a fixed landing gear and no radio altimeter is installed.
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Table 1: TAS Sensitivity Levels

Sensitivity Level	CONDITIONS FOR TRAFFIC ADVISORIES (TAs)
SL A	The following conditions cause TAS to generate a TA in sensitivity level A: • TAS calculates that if current closing rate is maintained, separation of less than 600 feet in altitude between own and Intruder will occur in 20 seconds. • Separation between own and Intruder is less than 600 feet in altitude and less than 0.20 nautical mile range. • NAR (Non-Altitude Reporting) Intruder is within 15 seconds or 0.20 nautical mile range.
SL B	The following conditions cause TAS to generate a TA in sensitivity level B: • TAS calculates that if current closing rate is maintained, separation of less than 800 feet in altitude between own and Intruder will occur in 30 seconds. • Separation between own and Intruder is less than 800 feet in altitude and less than 0.55 nautical miles in range. • NAR (Non-Altitude Reporting) Intruder is within 20 seconds or 0.55 nautical mile range.
Standby or Fail Mode	• TAs are not generated.

Table 2: Typical Traffic Advisory Conditions for Sensitivity Levels

TAS SURVEILLANCE VOLUMES

Surveillance volume is that volume of airspace within which other aircraft with Mode S or ATCRBS transponders are tracked by own aircraft's TAS.

(1) Range Tracking Volumes

The shape and size of the range tracking volume is dependent on whether tracking is occurring on a directional or OMNI antenna and attenuation levels applied to the transmitted pulses from the TAS processor's transmitter. The typical range tracking volume is pictured as a circle.

The maximum range for TAS is 20 nm. TAS reduces range tracking volumes in high density areas to reduce the number of receptions to be processed by TAS and for interference limiting. TAS can track as many as 45 aircraft and displays up to 30 of them.

(2) Altitude Tracking Volumes

TAS tracks other transponder equipped aircraft that are within a relative altitude of +/-9,000 feet.

TAS AURAL INHIBITS

TAS will inhibit the aural annunciation using the following order of precedence: (1) below 400 feet AGL (if equipped with radio altimeter) OR (2) when the landing gear is Extended (no radio altimeter installed). For installations aboard aircraft with fixed landing gear, the aural annunciation is never inhibited by the TAS processor. The aural annunciation is enabled above 600 feet AGL in aircraft equipped with a radio altimeter.

TAS TRAFFIC DISPLAY SYMBOLS

TAS will display three different traffic symbols on the traffic display. The type of symbol selected by TAS is based on the Intruder's location and closing rate. Relative bearing and distance to the Intruder are shown by the position of the Intruder symbol in relation to the own-aircraft symbol.

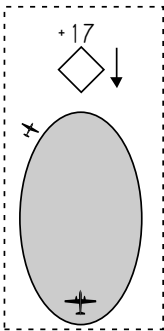
The symbols change shape and color as separation decreases between your aircraft and Intruders to represent increasing levels of urgency.

The traffic symbols may also have an associated altitude tag that shows relative altitude in hundreds of feet, indicating whether the Intruder is climbing, flying level or descending. A + sign and number above the symbol means the Intruder is above your altitude. A - sign and number beneath indicates the Intruder is below your altitude. A trend arrow appears when the Intruder's vertical rate is 500 feet per minute or greater.

No altitude number or trend arrow will appear beside any Intruder that is Non-Altitude Reporting (NAR).

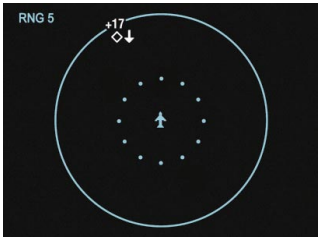
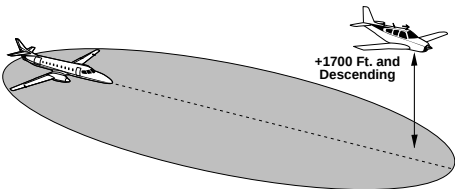
If TAS direction finding techniques fail to locate the azimuth of another aircraft, a NO BEARING message appears on the screen when the Intruder becomes a Traffic Advisory.

NON-THREAT TRAFFIC

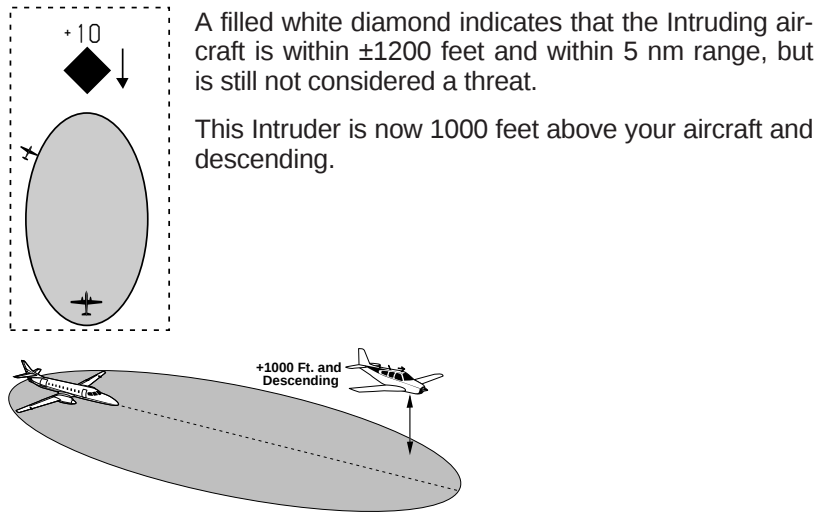


An open white diamond indicates that an Intruder's relative altitude is greater than ± 1200 feet, or its distance is beyond 5 nm range. It is not yet considered a threat.

This traffic is 1700 feet above your own altitude, descending at 500 feet per minute or greater.

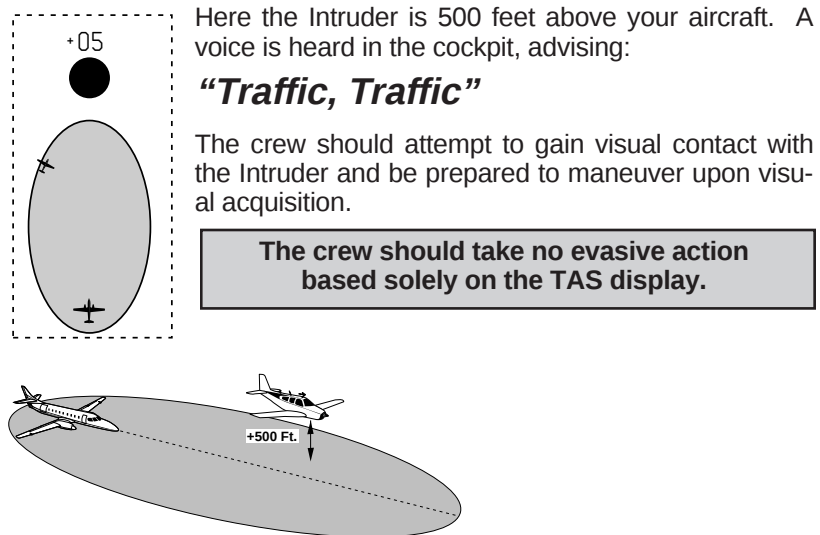


PROXIMITY INTRUDER TRAFFIC



TRAFFIC ADVISORY (TA)

A symbol change to a filled yellow circle indicates that the Intruding aircraft is considered to be potentially hazardous. Depending upon TAS sensitivity level, TAS will display a TA when time to CPA (Closest Point of Approach) is 15 to 30 seconds.



OFF SCALE TRAFFIC

Threat aircraft (TAs) that are beyond the selected display range are indicated by one half of the traffic symbol at the edge of the screen. The position of the half-symbol represents the bearing of the Intruder.

TA traffic on 5 mile range.

Same TA traffic; beyond selected range.

TAS INDICATIONS AND VOICE ANNOUNCEMENTS

“Tra”Traffic, Traffic”ffic, Traffic”

Situation:

One Intruder is ahead near the 2:00 o'clock position, between 2 and 3 miles, 400 feet below your altitude and closing. TAS recognizes the threat and issues a TA.

TAS TRAFFIC ADVISORY ANNUNCIATION (TA):

Aural	Visual	Crew Response
"TRAFFIC, TRAFFIC"	A filled yellow circle on the Traffic Display	Conduct visual search for the Intruder. If successful, maintain visual acquisition to ensure safe operation.

IMPORTANT:

The pilot should NOT initiate evasive maneuvers using information on the Traffic Display only. Use the TA (Traffic Advisory) symbol to visually acquire the Intruder and be prepared to maneuver upon visual acquisition.

Audio Announcements:

Synthesized voice announcements are issued by TAS over the aircraft audio system. The following table lists all the audio messages, and advisories, in the TAS vocabulary.

Audio Messages

CONDITION	ADVISORY MESSAGE
Traffic Advisory	"TRAFFIC, TRAFFIC"
If Previous TA is Active	"TRAFFIC"
Self Test Passed	"TAS SYSTEM TEST OK"
Self Test Failed	"TAS SYSTEM TEST FAIL"

SECTION II: CONTROLS AND DISPLAYS



***SECTION II DESCRIBES CONTROLS AND
DISPLAYS OF THE TAS EQUIPMENT.***

TAS CONTROLS

This section describes the control units for the TAS equipment. A couple of control units are described. The TAS functions can be controlled by various control panels or discrete switches. Not all the functions described are required in every installation.

TAS CONTROL PANEL; CP 66B



CP 66B
TAS Control Panel

The CP 66B can have up to four separate knobs as shown above. Depending upon the system interface, the Range Knob and/or Display Selector may be removed.

The CP 66B amber Fail Annunciator will light during self test and in normal operation will flash if a system failure has been detected. If a failure has been detected, turning the Power Switch to **OFF** will turn off the flashing annunciator.

Power Switch:



The **OFF** position deactivates selector switches and push buttons and extinguishes **FAIL** annunciation if on.

The **SBY** position places the TAS in Standby mode. In Standby mode, surveillance and tracking operations are disabled and the traffic display is blanked except for a "TAS STBY" ("TCAS STBY") mode annunciation.

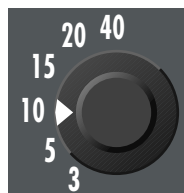
The **ON** position enables the tracking and surveillance operations at the selected range, display and altitude limit.

Pressing the **TEST** button in the center of the knob initiates a comprehensive self test lasting approximately eight seconds. Refer to the Appendix for a description of the self test function.

Range Knob:

The TAS RANGE knob is used to select the range on the traffic display. The range selections are 3, 5, 10, 15, 20, and 40. All ranges are in nautical miles.

Note: This feature may not be available in all installations or this feature may be superseded by a range control on the traffic display bezel.



Display Select Switch:

The Display Select Switch is used in installations where the weather radar indicator is the traffic display. It selects between **T/Wx** (TAS w/Weather), **Wx** (Weather Only), and **TCAS** (Traffic Only) presentations on the radar screen. Details of the various modes are described later in this section under Weather Radar Indicators.



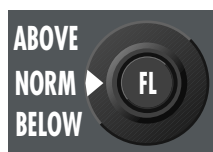
Altitude Limit Switch:

The Altitude Limit Select Switch selects altitude display limits. It has no effect on the TAS logic giving TAs. There are three selections available.

ABOVE - Traffic that is between 8700 feet above and 2700 feet below own aircraft will be displayed. Typically ABOVE is used during the climb phase of flight.

NORM - Traffic that is between 2700 feet above and 2700 feet below will be displayed. Typically NORM is used during the en route phase of flight.

BELOW - Traffic that is between 2700 feet above and 8700 feet below will be displayed. Typically BELOW is used during the descent phase of flight.



The **FL** (Flight Level) push button in the center of the Altitude Limit Select Switch replaces Intruder's relative altitude with absolute altitude for 15 seconds. During this period the altitude is displayed in flight level format. That is, 19,000 ft. is displayed as 190. After 15 seconds the absolute reading reverts to relative altitude.

The FL function is flagged below 18,000 feet MSL on most traffic displays unless barometric corrected altitude is available from an air data source. FL is not inhibited on the Radar indicator when used with GC 362A.

If FL is selected while inhibited, “FL - - -” will show in place of own flight level.

WEATHER RADAR INDICATORS

RDS 81, 82, 84 & 86, RDR 2000, RDR 2100 and Primus /Collins Color Indicators

The GC 362A TAS Graphic Processor allows TAS traffic to be displayed on a variety of Color Radar indicators. A T/Wx (TAS/Weather) select button is required to switch between Weather Only, Weather with TAS Traffic overlaid and TAS Only display modes. The T/Wx switch may be a separate momentary push button or included on another control panel.

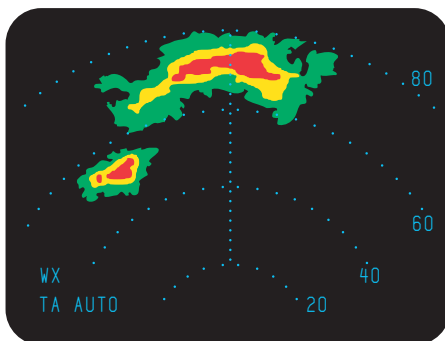
Compatible Weather Radar Indicators	
Brand	Mode
Bendix/King	RDS-81,82,84,86 & RDR 2000/2100
Collins	WXR System with IND-270
Honeywell	200/300SL/400/870/P90/650/800



WEATHER ONLY MODE

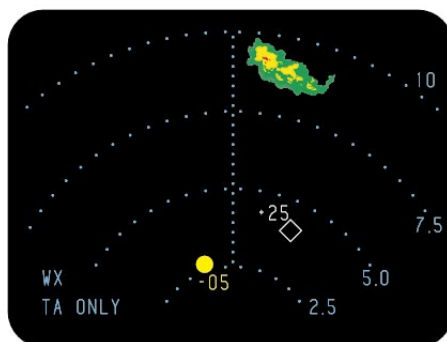
In this mode of operation, only weather radar information is displayed until a Traffic Advisory is issued by the TAS Processor. The range is controlled by the weather radar range control in this mode of operation. When a Traffic Advisory occurs, the display will revert to the default TAS display (either TAS Only or Weather/TAS Overlay)

selected during installation by the pop-up default discrete. When TAS determines the Traffic Advisory is over, the display will revert to the weather radar picture. The TAS mode is annunciated by TA AUTO in the lower left hand corner of the screen.



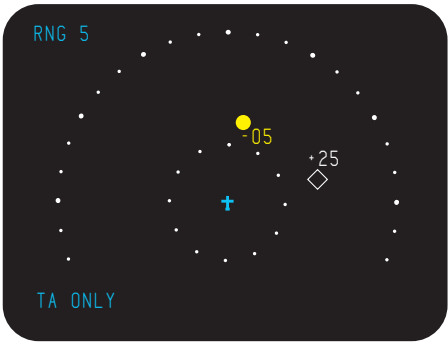
WEATHER WITH TAS TRAFFIC MODE

A full time TAS display overlays the weather display in this mode. The display origin may be either at the bottom of the screen or the center of the screen, depending on the specific installation. Weather will be displayed in the upper 90° or 120° sector, depending on which radar is being used. Weather is blanked in the areas where TAS traffic is displayed. The range displayed in this mode is that which was selected for weather radar. If weather radar is in the standby mode or other non-radar mode, the display will be the same as that in the TAS Only mode. This mode is maintained unless another mode is manually selected. The TAS operational mode is annunciated along with the pilot selected weather radar mode in the lower left hand corner of the screen unless the radar is in standby, in which case the TAS mode is displayed in the upper right hand corner.



TAS ONLY MODE

In this mode the screen’s origin point is 1/3 up from the bottom of the screen. Only TAS information is displayed. This mode is maintained unless another mode is manually selected. The range displayed is that selected on the TAS control panel. A 2 nm range ring is displayed on ranges 3, 5,10, and 15 nm. The 2 nm range ring consists of discrete dots (cyan) at each of the 12 clock positions. The 2 nm range ring is not displayed on ranges 20 and 40 nm; instead, a half-range ring is displayed. The half-range ring consists of discrete dashes (cyan). The TAS operational mode is annunciated in the lower left hand corner of the screen.



Note: On the “TAS ONLY” display “WX ON” will be annunciated in the upper right hand corner if the weather radar is transmitting. See Weather Radar operating guide.

At power-up the screen initially displays the Radar with TAS Overlay mode. When the Test mode is selected on the TAS control panel the self test pattern is displayed unless TAS system failures are detected. If system failures are detected the screen is blanked and a list of faults is displayed.

WX & TAS MESSAGE FORMATS

TAS Mode Annunciations:

<u>TEXT</u>	<u>Color</u>	<u>Description</u>
TCAS STBY	(Blue)	TAS in Standby
TEST	(Blue)	TAS in TEST
TA ONLY	(Blue)	TA ONLY Mode
TA AUTO	(Blue)	TA ONLY Pop-Up

Note: When the Radar is placed in Standby, the TAS mode annunciation is moved to the upper right hand corner and the display is in the WX only or TAS/WX modes.

TAS Fault Annunciations:

Weather Only and Weather with TAS Mode.
 In the event of a failure, all TAS information will be removed from the display. One of the following failure messages will be annunciated in the upper left corner of the screen.

<u>TEXT</u>	<u>Color</u>	<u>Description</u>
TCAS	(Yellow)	TAS System Failure.
GP FAIL	(Yellow)	GC362A Failure.

Additional failure information will be available in the TAS ONLY mode, if the failure will permit mode change.

TAS ONLY mode

In the event of a failure, all TAS information will be removed from the display. If the failure will disallow mode change, the mode shall revert to the Weather Only mode and the fault shall be displayed as above. Otherwise, one or more of the following failure message will be annunciated in yellow text.

TCAS SYSTEM FAIL	TCAS PROCESSOR
UPPER ANTENNA	LOWER ANTENNA
RADIO ALT #1	RADIO ALT #2
ATTITUDE	HEADING
TRAFFIC DISPLAY #1	TRAFFIC DISPLAY #2
ALT DATA #1 & #2	GP RAM
NO RADAR 429 DATA	NO TCAS 429 DATA

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SECTION III: OPERATIONAL PROCEDURES

TAS Traffic Display Test Page

**SECTION III DESCRIBES OPERATION OF THE TRAFFIC
ADVISORY SYSTEM AND THE GA-EGPWS**

TAS OPERATING PROCEDURES

TAS warns the operator with an aural and visual Traffic Advisory whenever TAS detects another transponder equipped aircraft and predicts the Intruder to be a threat. The pilot should NOT initiate evasive maneuvers using information from the traffic display only or on a traffic advisory (TA) only, without visually sighting the traffic. These displays and advisories are intended only for assistance in visually locating the traffic and lack the resolution and coordination ability necessary for use in evasive maneuvering. The flight crew should attempt to visually acquire the intruder aircraft and maintain/attain a safe separation in accordance with the regulatory requirements and good operating practice. If the flight crew can not acquire the aircraft, air traffic control should be contacted to obtain any information that may assist concerning the intruder aircraft. Based on the above procedures minor adjustment to the vertical flight path consistent with air traffic requirements are not considered evasive maneuvers.

BEFORE TAKEOFF

TAS should be tested using the pilot initiated self test feature during cockpit preparation. After passing self test, TAS should remain in SBY before takeoff.

TAS Traffic on the Radar Display:

If the weather radar indicator is used as the TAS Traffic Display, select Radar to "STBY", "TST" or "ON". Note that the weather radar RT is radiating when in the radar is On. See the weather radar operator's guide for proper radar operation. Select the "T/WX" (TAS/Weather) Display Mode switch to display TAS, i. e., "TA AUTO" or "TA ONLY".

Before taking the active runway, TAS should be turned ON. Range, if available, may be selected to 10 nm or lower. Above/Norm/Below, if available, may be selected to ABOVE.

FLIGHT PROCEDURES

The TAS TA (traffic advisory) should alert the flight crew to use extra vigilance to identify the Intruding aircraft. Any time the traffic symbol becomes a yellow circle or "TRAFFIC, TRAFFIC" is announced in the cockpit, conduct a visual search for the Intruder. If successful, maintain visual acquisition to ensure safe separation.

Use of the TAS self-test function in-flight will inhibit TAS operation for up to eight seconds.

During initial departure, select the 10 nm TAS range or lower because the traffic density is the greatest near the airport.

During the climb phase of flight, select the 10 nm range or greater and continue to use the Above display volume mode, if available. If a TA occurs, select the 10 nm range or lower on the TAS traffic display.

During cruise, the longer TAS ranges may be used. The Above/Norm/Below selection should be NORM. A 10 NM (or greater) range may be selected for high altitude cruise.

During Descent and Approach, Below may be selected using the Above/Norm/Below switch. A TAS range of 10 nm or lower may be used.

1. If a stall warning occurs during a TA, immediately execute the stall recovery procedure. TAS will continue to provide TA alerts during a stall warning.
2. If a TA occurs while in the landing configuration, conduct a visual search for the Intruder. A TA does not mandate a missed approach.
3. If a TA is encountered during a high speed buffet, adjust pitch force as necessary to reduce buffet.
4. While it is extremely rare, GPWS or Wind Shear may issue an alert while a TA (traffic advisory) is in progress. If this occurs, TAS will automatically inhibit the TAS audio alerts, but visual display of TAs will continue.

AFTER LANDING

After departing the active runway, TAS should be turned to Standby (SBY) or Off.

Post Flight

If a failure of the TAS system has occurred, give Maintenance as much specific information about the problem as possible. Avoid phrases such as "TAS Inop." Provide information in terms of fault lights lit, audio announcements, test pattern discrepancies and screen annunciations that indicate which unit was observed to have failed.

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SECTION IV: SYSTEM CONSIDERATIONS



TID 66A Traffic Display

SECTION IV EXPLAINS CONSIDERATIONS OF THE TAS SYSTEM; WARNINGS AND LIMITATION, AND NOTES.

LIMITATIONS AND NOTES

LIMITATIONS

Refer to the Airplane Flight Manual .

NOTES

The capability of TAS is dependent upon the type of transponder in the Intruding aircraft:

The Intruding aircraft must be equipped with a properly operating transponder for normal TAS operation. TAS is unable to detect any aircraft without an operating transponder.

If the Intruder is Non-Altitude Reporting (NAR), TAS will display only the range and bearing. It can issue a TA (Traffic Advisory) based on distance and direction of flight. TAS assumes Non-Altitude Reporting (NAR) traffic is at the same altitude as your own aircraft.

Wiring options for TAS also include the following:

- * Intruders determined to be on the ground can be displayed or not via the configuration module.
- * The maximum number of targets displayed (3 - 30) can be selected via the configuration module.
- * The TAS display may have pilot selectable range or may be a fixed range controlled by the aircraft wiring.
- * The TAS system can be automatically placed in standby when the aircraft is on the ground.
- * The manually initiated system self test can be inhibited in flight.
- * TAS can be wired to give GPWS and Wind Shear a higher aural warning priority.

If a radio altimeter is installed, the TAS aural warning (TRAFFIC, TRAFFIC) is inhibited below 400 feet AGL during descent and below 600 feet during ascent. If no radio altimeter is installed, then the aural warning is inhibited whenever the Landing Gear is EXTENDED.

NOTES (CON'T)

It is possible to see an aircraft flying the same course and direction as your own aircraft, yet TAS may not consider it a threat. TAS calculates the closure rate of the Intruder, and derives the time to the Closest Point of Approach (CPA). If there is no closure rate, no advisory will be issued, unless the Intruder is very close (within approximately 0.2 mile). Conversely, traffic at the same altitude very far ahead (about 10 miles) may be shown as a TA by TAS because of a very rapid closure rate.

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APPENDIX: TAS & GA-EGPWS SELF TESTS

***THE APPENDIX INCLUDES
A DESCRIPTION OF TAS & GA-EGPWS SELF TEST.***

TAS SELF TEST

The TAS self test determines the operational status of the entire TAS system. Select self test on the KMD 550/850. Once begun, self test continues automatically for approximately eight seconds. During self test, normal TAS operation is inhibited. For optimum display during self test, selection of the 5 nm range is recommended.

During the first few seconds of the test sequence, the traffic display allows verification of each type of Intruder symbol. The test generates the symbols arranged as shown. The traffic display annunciates the phrase "TAS TEST".

Use of the TAS self test function in flight will inhibit normal TAS operation for up to 15 seconds. For this reason, the pilot should use caution when initiating the test in flight.

KMD 550/850 TAS Test Patterns; 5NM range

A Traffic Advisory (yellow circle) will appear at 9 o'clock, range of 2 miles, 200 feet below and climbing.

Proximity traffic (solid white diamond) will appear at 1 o'clock, range 3.6 miles, 1000 feet below, descending.

Non-Threat traffic (open white diamond) will appear at 11 o'clock, range of 3.6 miles, flying level 1000 feet above.

At the conclusion of a successful Self Test, a synthesized voice announces:

“TAS SYSTEM TEST OK”

FAILURE CONDITIONS:

Should a failure be detected during self test, the audio message says:

“TAS SYSTEM TEST FAIL ”

A “TAS” flag will be annunciated on the traffic display. A self test failure may indicate that the auxiliary equipment required for TAS is not operational. Check the associated equipment.

Should a display failure be detected at any time, the Display Fail flag will appear on the KMD 550/850. A “Display Fail” flag is not caused by the TAS processor.

RADIO ALTIMETER

If RALT is installed and is inoperative, TAS will be Inoperative.

GLOSSARY OF TAS TERMS

ABBREVIATIONS AND DEFINITIONS

AFM or AFMS Airplane Flight Manual or Airplane Flight Manual Supplement.

AGL Above Ground Level. Height above the ground.

ATC Air Traffic Control. A federally operated ground based system that manages aircraft traffic flow.

ATCRBS ATC Radar Beacon System. A ground based secondary radar and airborne transponder system used to monitor traffic.

Absolute Altitude The altitude shown on a traffic display is described as Absolute whenever the FL mode has been selected. Otherwise, TAS displays the Relative Altitude between your own aircraft's pressure altitude and the encoded altitude of the Intruder aircraft.

Altitude Tag Data tag shown above or below threat symbol giving the relative altitude of the Intruder.

BITE Built-In Test Equipment. A feature of TAS that continuously monitors itself for operational errors.

CPA Closest Point of Approach. CPA refers to predicted point at which the Intruder will be closest to your own aircraft.

EGPWS Enhanced Ground Proximity Warning System.

FL Flight Level. This is a TAS mode that allows the annunciation of Absolute Altitude on the traffic display. The traffic display will indicate the altitude in hundreds of feet, I. E., 190 is 19,000 feet.

GA General Aviation.

Indicated Altitude Altitude shown on the altimeter with barometric correction setting set to local sea level pressure. Indicated altitude is used by the crew below 18,000 feet but not used for TAS processing.

Intruder Any aircraft that is in the surveillance range of TAS.

LRU Line Replaceable Unit. A self-contained avionics component that can be replaced in the field.

Mode A Transponder ATCRBS transponder that replies to ATC interrogations sending identification code but without giving altitude data.

Mode C Transponder ATCRBS transponder that replies to ATC interrogations giving identification code or encoded altitude data.

Mode S Transponder Transponder that replies to ATC interrogations giving an ATCRBS identification code, encoded altitude and other data fields including discrete aircraft address and airspeed capability.

NAR Non-Altitude Reporting traffic.

Non-Threat Intruder An aircraft that has entered the TAS surveillance volume at a distance greater than 5 miles or altitude greater than 1200 feet above or below your own aircraft.

Pressure Altitude Indicated altitude when barometric pressure is set to 29.92" Hg. (1013mb). Pressure altitude is used by TAS to determine the relative altitude of traffic.

Proximity Intruder An aircraft that is within 5 miles range and within 1200 feet above or below your own aircraft but does not meet the TAS definition of a threat.

Rad Alt or RALT Radio Altitude is the height above the ground as determined by a radio altimeter. RALT is used by TAS to inhibit TAS close to the surface. Radio altitude above terrain is absolute. As such, RALT height is sometimes referred to as absolute altitude in some systems. RALT systems typically function below 2,500 ft AGL.

Relative Altitude The difference in altitude between two aircraft. TAS calculates relative altitude as the difference between your own aircraft's pressure altitude and the encoded pressure altitude of the Intruder.

Self Test A functional test that determines equipment status. Self test differs from BITE performance monitoring because it is initiated by the crew and is not performed continually or automatically.

Sensitivity Level TAS has two sensitivity levels (SL). SL A shall be automatically invoked using the following order of precedence: (1) when the TAS aircraft is below 2,000 feet AGL (if equipped with radio altimeter) OR (2) when the landing gear is Extended (no radio altimeter installed). SL B occurs under all other flight conditions. If aircraft is not equipped with either a radio altimeter or retractable landing gear, TAS shall stay in SL B at all times.

Surveillance Volume The volume of airspace surrounding your aircraft that TAS scans for Intruding traffic. The TAS system scans approximately 20 NM in front of and 9000 feet above and below the aircraft. The volume will automatically begin to decrease when flying into a high density area.

TA Traffic Advisory. An audio and visual indication that another aircraft is a potential threat.

Threat An aircraft that has satisfied TAS threat detection logic and thus requiring a Traffic Advisory.

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