GARMIN®

G1000™

*annunciations and alerts
for the Diamond DA42*

Record of Revisions			
Revision	**Date of Revision**	**Revision Page Range**	**Description**
A	12/03/04	9-1 – 9-18	Initial release.

9.1 INTRODUCTION

![checkmark icon] **NOTE:** *The Aircraft Flight Manual takes precedence over any conflicting information found in this document.*

The G1000 Alerting System conveys alerts to the pilot using a combination of the following items:

- **Annunciation Window**: The Annunciation window displays abbreviated annunciation text. Text is colored based on alert levels described in the Alert Level Definitions section. The Annunciation window is located to the right of the Altitude and Vertical Speed windows on the display. Up to 12 DA42 annunciations can be displayed in the annunciations window simultaneously. A white horizontal line separates annunciations that are acknowledged from annunciations that are not yet acknowledged. Higher priority annunciations are displayed towards the top of the window. Lower priority annunciations are displayed towards the bottom of the window.

- **Alerts Window:** The Alerts window displays alert text messages. Up to 64 prioritized alert messages can be displayed in the Alerts window. Pressing the **ALERTS** softkey displays the Alerts window. Pressing the **ALERTS** softkey a second time removes the Alerts window from the display. When the alerts window is displayed, the pilot can use the **large FMS** knob to scroll through the alert message list.

- **Softkey Annunciation**: During certain alerts, the **ALERTS** softkey may appear as a flashing annunciation to accompany an alert. The **ALERTS** softkey assumes a new label consistent with the alert level (WARNING, CAUTION, or ADVISORY). By pressing the softkey annunciation, the pilot acknowledges awareness of the alert. If alerts are still present, the **ALERTS** label will be displayed in inverse video (white background with black text). The pilot can press the **ALERTS** softkey a second time to view alert text messages.

- **System Annunciations**: Typically, a large red 'X' appears in windows when a failure is detected in the LRU providing the information to the window. See the G1000 System Annunciations section for more information.

- **Audio Alerting System**: The G1000 system issues audio alert tones when specific system conditions are met. See the Alert Level Definitions section for more information.
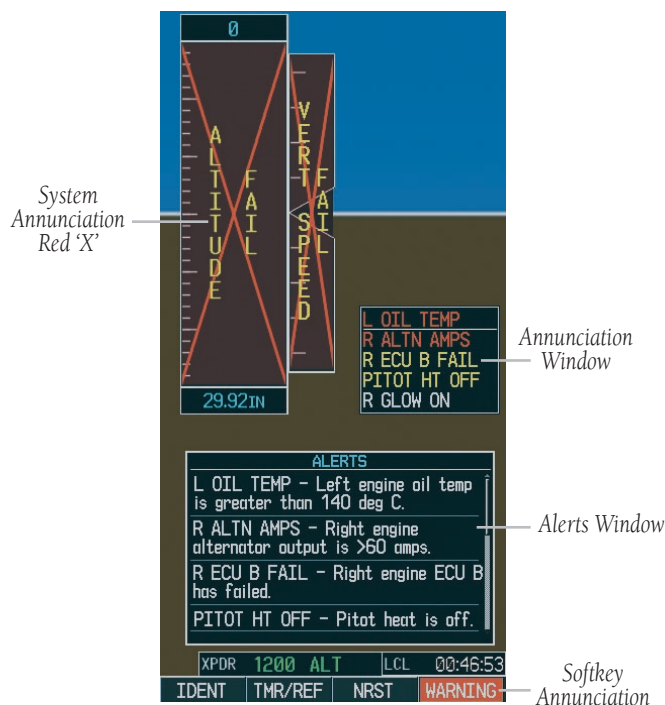

Figure 9.1.1 G1000 Alerting System

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9.2 ALERT LEVEL DEFINITIONS

The G1000 Alerting System, as installed in the Diamond DA42, uses four alert levels:

- **WARNING:** This level of alert requires immediate pilot attention. A warning alert is accompanied by an annunciation in the Annunciation window along with a continuous aural tone. Warning alert text is RED. A warning alert is also accompanied by a flashing **WARNING** softkey annunciation, as shown in Figure 9.2.1. Pressing the **WARNING** softkey acknowledges the presence of the warning alert and stops the aural tone. Pressing the **ALERTS** softkey displays the related alert message in the Alerts window.

- **CAUTION:** This level of alert indicates the existence of abnormal conditions on the aircraft that may require pilot intervention. A caution alert is accompanied by an annunciation in the Annunciation window along with a single aural tone. Caution alert text is YELLOW. A caution alert is also accompanied by a flashing **CAUTION** softkey annunciation, as shown in Figure 9.2.2. Pressing the **CAUTION** softkey acknowledges the presence of the caution alert. Pressing the **ALERTS** softkey displays the related alert message in the Alerts window.

- **ANNUNCIATION ADVISORY:** This level of alert provides general information to the pilot. An annunciation advisory alert is accompanied by an annunciation in the Annunciation window. Annunciation advisory alert text is WHITE. An annunciation advisory alert is also accompanied by a flashing **ADVISORY** softkey annunciation, as shown in Figure 9.2.3. Pressing the **ADVISORY** softkey acknowledges the presence of the message advisory alert and displays the alert message in the Alerts window.

- **MESSAGE ADVISORY:** Message advisory alerts are nearly identical to annunciation advisory alerts. The difference is that a message advisory alert does not appear in the Annunciation window. A message advisory alert is only accompanied by a flashing **ADVISORY** softkey annunciation, as shown in Figure 9.2.3. The majority of G1000 alerts are message advisories and are listed in the G1000 System Message Advisories section.

Figure 9.2.1 WARNING Softkey Annunciation

Figure 9.2.2 CAUTION Softkey Annunciation

Figure 9.2.3 ADVISORY Softkey Annunciation

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9.3 DA42 AIRCRAFT ALERTS

The following alerts are configured specifically for the Diamond DA42. See the Aircraft Flight Manual for recommended pilot actions.

WARNING Alerts

Annunciation Window Text	Alerts Window Message	Audio Alert
L / R ENG TEMP	Left/right engine coolant temp is >105 deg C.	Continuous Aural Tone
L / R OIL TEMP	Left/right engine oil temp is greater than 140 deg C.	
L / R OIL PRES	Left/right engine oil pressure is less than 1.2 bar.	
L / R GBOX TEMP	Left/right engine gearbox temp is >120 deg C.	
L / R ALTN AMPS	Left/right engine alternator output is >60 amps.	
L / R STARTER	Left/right engine starter is engaged.	
L / R FUEL TEMP	Left/right fuel temp is greater than 75 deg C.	
DOOR OPEN	Front, rear, or baggage door is not closed.	
AP TRIM FAIL	Autopilot automatic trim is inoperative.	No Tone

CAUTION Alerts

Annunciation Window Text	Alerts Window Message	Audio Alert
L / R ECU A FAIL	Left/right engine ECU A has failed.	Single Aural Tone
L / R ECU B FAIL	Left/right engine ECU B has failed.	
L / R FUEL LOW	Left/right engine main tank fuel quantity is low.	
L / R ALTN FAIL	Left/right engine alternator has failed.	
L / R VOLTS LOW	Left/right bus voltage is less than 25 volts.	
L / R ENG FIRE	Left/right engine fire detected.	
L / R COOL LVL	Left/right engine coolant level is low.	
PITOT FAIL	Pitot heat has failed.	
PITOT HT OFF	Pitot heat is off.	
STAL HT FAIL	Stall warning heat has failed.	
STAL HT OFF	Stall warning heat is off.	
L / R XFER FAIL	Left/right auxiliary fuel transfer has failed.	

Annunciation Window Text	Alerts Window Message	Audio Alert
DEICE LVL LO	De-icing fluid level is low.	Single Aural Tone
DEIC PRES HI	De-icing pressure is high.	
DEIC PRES LO	De-icing pressure is low.	
STICK LIMIT	Stick limiting system has failed.	

Annunciation Advisory Alerts

Annunciation Window Text	Alerts Window Message	Audio Alert
L / R GLOW ON	Left/right engine glow plug active.	No Tone
L / R FUEL XFER	Left/right fuel transfer from aux to main in progress.	

Message Advisory Alerts

Alerts Window Message	Audio Alert
PFD FAN FAIL – The cooling fan for the PFD is inoperative.	No Tone
MFD FAN FAIL – The cooling fan for the MFD is inoperative.	
GIA FAN FAIL – The cooling fan for the GIAs is inoperative.	

Voice Alerts

The following voice alerts can be configured for 'Male' or 'Female' gender by using the Aux System Setup Page on the MFD.

Voice Alert	Alert Trigger
"Traffic"	Played when a Traffic Advisory (TA) is issued.
"Traffic Not Available"	Played when the traffic system fails or cannot communicate.

NOTE: *Voice alerts are provided to the G1000 by the GIA 63 #1. Should this unit fail, audio and voice alerts will no longer be available.*

9.4 G1000 SYSTEM ANNUNCIATIONS

When an LRU or an LRU function fails, a large red 'X' is typically displayed on windows associated with the failed data. The following section describes various system annunciations. Refer to the Aircraft Flight Manual for additional information regarding pilot responses to these annunciations.

NOTE: Upon power-up of the G1000 system, certain windows remain invalid as G1000 equipment begins to initialize. All windows should be operational within one minute of power-up. If any window continues to remain flagged, the G1000 system should be serviced by a Garmin-authorized repair facility.

System Annunciation	Comment
	Attitude and Heading Reference System is aligning.
	Display system is not receiving attitude information from the AHRS.
	Display system is not receiving airspeed input from air data computer.
	Display system is not receiving altitude input from the air data computer.

System Annunciation	Comment
	Display system is not receiving vertical speed input from the air data computer.
	Display system is not receiving valid heading input from AHRS.
	Display system is not receiving valid OAT information from air data computer.
	Display system is not receiving valid true airspeed information from air data computer.
	GPS information is either not present or is invalid for navigation use. Note that AHRS utilizes GPS inputs during normal operation. AHRS operation may be degraded if GPS signals are not present (see AFMS).
	Display system is not receiving valid transponder information.
Other Various Red X Indications	A red 'X' through any other display field (such as engine instrumentation fields) indicates that the field is not receiving valid data.

A red 'X' may be the result of an LRU or an LRU function failure. The figure presented below illustrates all possible flags and the responsible LRUs.
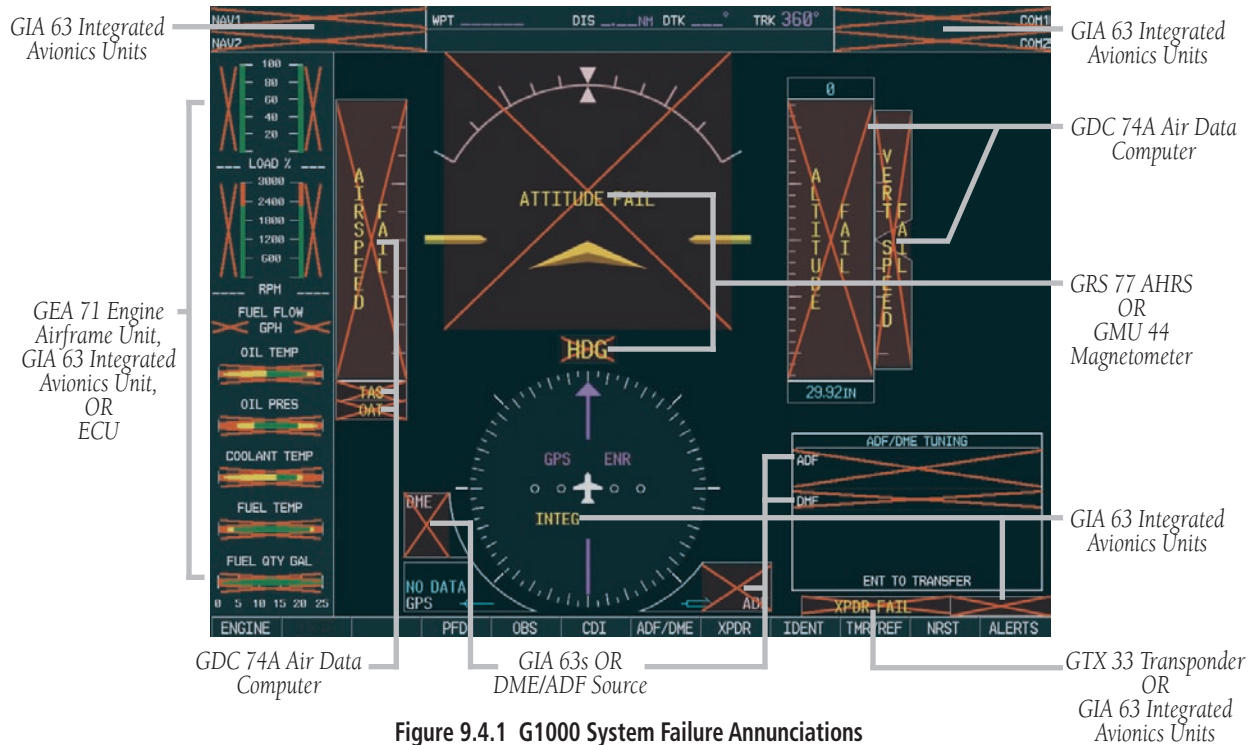

Figure 9.4.1 G1000 System Failure Annunciations

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9.5 G1000 SYSTEM MESSAGE ADVISORIES

This section describes various G1000 system message advisories. Certain messages are issued due to an LRU or LRU function failure. Such messages are normally accompanied by a corresponding red 'X' annunciation as shown previously in the G1000 System Annunciations section.

NOTE: This section provides information regarding G1000 message advisories that may be displayed by the system. Knowledge of the aircraft, systems, flight conditions, and other existing operational priorities must be considered when responding to a message. Always use sound pilot judgment. The Aircraft Flight Manual takes precedence over any conflicting guidance found in this section.

MFD & PFD Message Advisories

Message	Comments
DATA LOST – Pilot stored data was lost. Recheck settings.	The pilot profile data was lost. System reverts to default pilot profile and settings. The pilot may re-configure the MFD & PFD with preferred settings, if desired.
XTALK ERROR – A flight display crosstalk error has occurred.	The MFD and PFD are not communicating with each other. The G1000 system should be serviced.
PFD1 SERVICE – PFD1 needs service. Return unit for repair.	The PFD and/or MFD self-test has detected a problem. The G1000 system should be serviced.
MFD1 SERVICE – MFD1 needs service. Return unit for repair.	
PFD1 CONFIG – PFD1 configuration error. Config service req'd.	PFD and/or MFD configuration settings do not match backup configuration memory. The G1000 system should be serviced.
MFD1 CONFIG – MFD1 configuration error. Config service req'd.	
SW MISMATCH – GDU software mismatch. Xtalk is off.	The MFD and PFD have different software versions installed. The G1000 system should be serviced.
MANIFEST – PFD1 software mismatch. Communication halted.	The PFD and/or MFD has incorrect software installed. The G1000 system should be serviced.
MANIFEST – MFD1 software mismatch. Communication halted.	
PFD1 COOLING – PFD1 has poor cooling. Reducing power usage.	The PFD and/or MFD is overheating and is reducing power consumption by dimming the display. If problem persists, the G1000 system should be serviced.
MFD1 COOLING – MFD1 has poor cooling. Reducing power usage.	
PFD1 "KEY" KEYSTK – key is stuck.	A key is stuck on the PFD and/or MFD bezel. Attempt to free the stuck key by pressing it several times. The G1000 system should be serviced, if the problem persists.
MFD1 "KEY" KEYSTK – key is stuck.	

Database Message Advisories

Alerts Window Message	Comments
MFD1 DB ERR – MFD1 aviation database error exists. **PFD1 DB ERR** – PFD1 aviation database error exists.	The MFD and/or PFD detected a failure in the aviation database. Attempt to reload the aviation database. If problem persists, the G1000 system should be serviced.
MFD1 DB ERR – MFD1 basemap database error exists. **PFD1 DB ERR** – PFD1 basemap database error exists.	The MFD and/or PFD detected a failure in the basemap database.
MFD1 DB ERR – MFD1 terrain database error exists. **PFD1 DB ERR** – PFD1 terrain database error exists.	The MFD and/or PFD detected a failure in the terrain database. Ensure terrain card is properly inserted in display. Replace terrain card. If problem persists, the G1000 system should be serviced.
DB MISMATCH – Aviation database version mismatch. Xtalk is off.	The PFD and MFD have different aviation database versions installed. Crossfill is off. Install correct aviation database version in both displays.
DB MISMATCH – Aviation database type mismatch. Xtalk is off.	The PFD and MFD have different aviation database types installed (Americas, European, etc). Crossfill is off. Install correct aviation database type in both displays.

GMA 1347 Message Advisories

Alerts Window Message	Comments
GMA1 FAIL – GMA1 is inoperative.	The audio panel self-test has detected a failure. The audio panel is unavailable. The G1000 system should be serviced.
GMA1 CONFIG – GMA1 configuration error. Config service req'd.	The audio panel configuration settings do not match backup configuration memory. The G1000 system should be serviced.
MANIFEST – GMA1 software mismatch. Communication halted.	The audio panel has incorrect software installed. The G1000 system should be serviced.
GMA1 SERVICE – GMA1 needs service. Return unit for repair.	The audio panel self-test has detected a problem in the unit. Certain audio functions may still be available and the audio panel may still be usable. The G1000 system should be serviced when possible.
BACKUP PATH – Audio panel using backup data path.	The audio panel is using a backup communication path. The G1000 system should be serviced when possible.

GIA 63 Message Advisories

Alerts Window Message	Comments
GIA1 CONFIG – GIA1 configuration error. Config service req'd.	The GIA1 and/or GIA2 configuration settings do not match backup configuration memory. The G1000 system should be serviced.
GIA2 CONFIG – GIA2 configuration error. Config service req'd.	
GIA1 COOLING – GIA1 temperature too low.	The GIA1 and/or GIA2 temperature is too low to operate correctly. Allow units to warm up to operating temperature.
GIA2 COOLING – GIA2 temperature too low.	
GIA1 COOLING – GIA1 over temperature.	The GIA1 and/or GIA2 temperature is too high. If problem persists, the G1000 system should be serviced.
GIA2 COOLING – GIA2 over temperature.	
GIA1 SERVICE – GIA1 needs service. Return the unit for repair.	The GIA1 and/or GIA2 self-test has detected a problem in the unit. The G1000 system should be serviced.
GIA2 SERVICE – GIA2 needs service. Return the unit for repair.	
MANIFEST – GIA1 software mismatch. Communication halted.	The GIA1 and/or GIA 2 has incorrect software installed. The G1000 system should be serviced.
MANIFEST – GIA2 software mismatch. Communication halted.	
COM1 TEMP – COM1 over temp. Reducing transmitter power.	The system has detected an over temperature condition in COM1 and/or COM2. The transmitter will operate at reduced power. If the problem persists, the G1000 system should be serviced.
COM2 TEMP – COM2 over temp. Reducing transmitter power.	
COM1 SERVICE – COM1 needs service. Return unit for repair.	The system has detected a failure in COM1 and/or COM2. COM1 and/or COM2 may still be usable. The G1000 system should be serviced when possible.
COM2 SERVICE – COM2 needs service. Return unit for repair.	
COM1 PTT – COM1 push-to-talk key is stuck.	The COM1 and/or COM2 external push-to-talk switch is stuck in the enable (or "pressed") position. Press the PTT switch again to cycle its operation. If the problem persists, the G1000 system should be serviced.
COM2 PTT – COM2 push-to-talk key is stuck.	

GIA 63 Message Advisories (Cont.)

Alerts Window Message	Comments
COM1 RMT XFR – COM1 remote transfer key is stuck.	The COM1 and/or COM2 transfer switch is stuck in the enabled (or "pressed") position. Press the transfer switch again to cycle its operation. If the problem persists, the G1000 system should be serviced.
COM2 RMT XFR – COM2 remote transfer key is stuck.	
RAIM UNAVAIL – RAIM is not available from FAF to MAP waypoints.	GPS satellite coverage is insufficient to perform Receiver Autonomous Integrity Monitoring (RAIM) from the FAF to the MAP waypoints.
RAIM UNAVAIL – RAIM is not available.	GPS satellite coverage is insufficient to perform Receiver Autonomous Integrity Monitoring (RAIM) for the current phase of flight.
POSN ERROR – RAIM has determined GPS position is in error.	When a RAIM position error is detected, GPS is flagged and the system no longer provides GPS-based guidance.
DGRD GPS ACC – GPS position accuracy degraded & RAIM unavailable.	GPS position accuracy has been degraded and RAIM is not available.
GPS1 FAIL – GPS1 is inoperative.	A failure has been detected in the GPS1 and/or GPS2 receiver. The receiver is unavailable. The G1000 system should be serviced.
GPS2 FAIL – GPS2 is inoperative.	
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	A failure has been detected in the GPS1 and/or GPS2 receiver. The receiver may still be available. The G1000 system should be serviced.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	
NAV1 SERVICE – NAV1 needs service. Return unit for repair.	A failure has been detected in the NAV1 and/or NAV2 receiver. The receiver may still be available. The G1000 system should be serviced.
NAV2 SERVICE – NAV2 needs service. Return unit for repair.	
NAV1 RMTXFR – NAV1 remote transfer key is stuck.	The remote NAV1 and/or NAV2 transfer switch is stuck in the enabled (or "pressed") state. Press the transfer switch again to cycle its operation. If the problem persists, the G1000 system should be serviced.
NAV2 RMTXFR – NAV2 remote transfer key is stuck.	

GIA 63 Message Advisories (Cont.)

Alerts Window Message	Comments
G/S1 FAIL – G/S1 is inoperative.	A failure has been detected in glideslope receiver 1 and/or receiver 2. The G1000 system should be serviced.
G/S2 FAIL – G/S2 is inoperative.	
G/S1 SERVICE – G/S1 needs service. Return unit for repair.	A failure has been detected in glideslope receiver 1 and/or receiver 2. The receiver may still be available. The G1000 system should be serviced when possible.
G/S2 SERVICE – G/S2 needs service. Return unit for repair.	

GEA 71 Message Advisories

Alerts Window Message	Comments
GEA1 CONFIG – GEA1 configuration error. Config service req'd.	The GEA 71 configuration settings do not match those of backup configuration memory. The G1000 system should be serviced.
MANIFEST – GEA1 software mismatch. Communication halted.	The GEA 71 has incorrect software installed. The G1000 system should be serviced.
BACKUP PATH – EIS using backup data path.	The GEA 71 is using a backup communication path. The G1000 system should be serviced when possible.

GTX 33 Message Advisories

Alerts Window Message	Comments
XPDR1 CONFIG – XPDR1 config error. Config service req'd.	The transponder configuration settings do not match those of backup configuration memory. The G1000 system should be serviced.
MANIFEST – GTX1 software mismatch. Communication halted.	The transponder has incorrect software installed. The G1000 system should be serviced.
BACKUP PATH – Transponder using backup data path.	The transponder is using a backup communications path. The G1000 system should be serviced when possible.

GRS 77 Message Advisories

Alerts Window Message	Comments
AHRS TAS – AHRS not receiving airspeed.	The AHRS is not receiving true airspeed from the air data computer. The AHRS relies on GPS information to augment the lack of airspeed. The G1000 system should be serviced.
AHRS GPS – AHRS using backup GPS source.	The AHRS is using the backup GPS path. Primary GPS path has failed. The G1000 system should be serviced when possible.
AHRS GPS – AHRS not receiving any GPS information.	The AHRS is not receiving any GPS information and not operating in its normal mode. The G1000 system should be serviced.
AHRS GPS – AHRS not receiving backup GPS information.	The AHRS is not receiving backup GPS information. The G1000 system should be serviced.
AHRS GPS – AHRS operating exclusively in no-GPS mode.	The AHRS is operating exclusively in no-GPS mode. The G1000 system should be serviced.
MANIFEST – GRS1 software mismatch. Communication halted.	The AHRS has incorrect software installed. The G1000 system should be serviced.
BACKUP PATH – AHRS using backup data path.	The AHRS is using a backup communications data path. The G1000 system should be serviced when possible.
AHRS SERVICE – AHRS Magnetic-field model needs update.	The AHRS earth magnetic field model is out of date. Update magnetic field model when practical.
GEO LIMITS – Too far North/South, no magnetic compass.	The aircraft is outside geographical limits for approved AHRS operation. Heading is flagged invalid.

GMU 44 Message Advisories

Alerts Window Message	Comments
HDG FAULT – A magnetometer fault has occurred.	A fault has occurred in the GMU 44. Heading is flagged invalid. AHRS uses GPS for backup mode operation. The G1000 system should be serviced.
MANIFEST – GMU1 software mis-match. Communication halted.	The GMU 44 has incorrect software installed. The G1000 system should be serviced.

GDC 74A Message Advisories

Alerts Window Message	Comments
GDC1 CONFIG – GDC1 configuration error. Config service req'd.	GDC 74A configuration settings do not match those of backup configuration memory. The G1000 system should be serviced.
MANIFEST – GDC1 software mismatch. Communication halted.	The GDC 74A has incorrect software installed. The G1000 system should be serviced.
BACKUP PATH – Airdata using backup data path.	The GDC 74A is using a backup communications data path. The G1000 system should be serviced when possible.

Miscellaneous Message Advisories

Alerts Window Message	Comments
FPL WPT LOCK – Flight plan waypoint is locked.	Upon power-up, the G1000 system detects that a stored flight plan waypoint is locked. This occurs when an aviation database update eliminates an obsolete waypoint. The flight plan cannot find the specified waypoint and flags this message. This can also occur with user waypoints that exist in a flight plan that are deleted. Remove the waypoint from the flight plan if it no longer exists in any database, OR update the waypoint name/identifier to reflect the new information.
FPL WPT MOVE – Flight plan waypoint moved.	The system has detected that a waypoint coordinate has changed due to a new aviation database update. Verify that stored flight plans contain correct waypoint locations.
TIMER EXPIRD – Timer has expired.	The system notifies the pilot that the timer has expired.
DB CHANGE – Database changed. Verify user modified procedures.	This occurs when a stored flight plan contains procedures that have been manually edited. This alert is issued only after a aviation database update. Verify that the user modified procedures in stored flight plans are correct and up to date.
FPL TRUNC – Flight plan has been truncated.	This occurs when a newly installed aviation database eliminates an obsolete approach or arrival used by a stored flight plan. The obsolete procedure is removed from the flight plan. Update flight plan with current arrival or approach.
APPR VPROF – Approaching VNAV profile.	Aircraft is approaching VNAV profile. Prepare to climb or descend to meet VNAV profile.
APPR TRG ALT – Approaching target altitude.	Aircraft is approaching target altitude. Prepare to level aircraft.

Miscellaneous Message Advisories (Cont.)

Alerts Window Message	Comments
LOCKED FPL – Cannot navigate locked flight plan.	This occurs when the pilot attempts to activate a stored flight plan that contains locked waypoint. Remove locked waypoint from flight plan. Update flight plan with current waypoint.
WPT ARRIVAL – Arriving at waypoint -[xxxx]	Arriving at waypoint [xxxx] where xxxx is the waypoint name.
STEEP TURN – Steep turn ahead.	A steep turn is 15 seconds ahead. Prepare to turn.
INSIDE ARSPC – Inside airspace.	Aircraft is inside airspace.
ARSPC AHEAD – Airspace ahead less than 10 minutes.	Airspace is ahead of aircraft. Aircraft will penetrate airspace within 10 minutes.
ARSPC NEAR – Airspace near and ahead.	Special use airspace is near and ahead of the aircraft position.
ARSPC NEAR – Airspace near – less than 2 nm.	Special use airspace is within 2 nm of the aircraft position.
LEG UNSMOOTH – Flight plan leg will not be smooth.	The approaching flight plan waypoints are too close to make smooth turns. Prepare for steep turns ahead and expect noticeable course deviations.
APPR INACTV – Approach is not active.	The system notifies the pilot that the loaded approach is not active. Activate approach when required.
SLCT AUTOSEQ – Select auto sequence mode.	The system notifies the pilot to select auto-sequence mode. Press the **OBS** softkey to deactivate the OBS mode.
SLCT FREQ – Select appropriate frequency for approach.	The system notifies the pilot to load the approach frequency for the appropriate NAV receiver. Select the correct frequency for the approach.
SLCT NAV – Select NAV on CDI for approach.	The system notifies the pilot to set the CDI to the correct NAV receiver. Set the CDI to the correct NAV receiver.
NO WGS84 WPT – Non WGS 84 waypoint for navigation -[xxxx]	The selected waypoint [xxxx] does not use the WGS 84 datum. Cross-check position with alternate navigation sources.
TRAFFIC FAIL – Traffic device has failed.	The traffic information system TIS has failed. The G1000 system should be serviced.
STRMSCP FAIL – Stormscope has failed.	Stormscope has failed. The G1000 system should be serviced.
BACKUP PATH – Stormscope using backup data path.	Stormscope is using the backup communication path. The G1000 system should be serviced when possible.

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