# SPECIAL CERTIFICATION REVIEW

# Eclipse Aviation Corporation
# Model EA500 Airplane

**September 12, 2008**

*Prepared for the Federal Aviation Administration*
*Associate Administrator for Aviation Safety*

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# EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) chartered a Special Certification Review Team (SCR Team) to evaluate specific issues of compliance regarding the type certification of the Eclipse Aviation Model 500 (Eclipse 500) airplane. This review was conducted at the direction of the Associate Administrator for Aviation Safety, based on a number of concerns raised by FAA employees following the issuance of the type certificate (TC). The team's objective was to review the certification program to determine if the Eclipse 500 was certificated in accordance with 14 CFR part 23, specifically in the following four areas: cockpit displays/screen blanking, stall speeds, trim, and flaps.

The SCR Team was composed of experienced technical and managerial personnel. No team members had any prior involvement in the Eclipse 500 type certification program.

The review was conducted between August 11, 2008, and September 12, 2008. The team met with FAA and Eclipse personnel, and reviewed FAA regulations and related policy material, compliance documentation including ground and flight tests, and in-service reports. In addition, the team was contacted by other individuals who provided useful information.

The SCR Team concluded the airplane met the applicable requirements of 14 CFR part 23 in the four areas. The team discovered that during the course of the type certification program, there were situations challenging the FAA certification team. This led to the perception by some that the airplane was not ready for type certification. Technical problems were encountered during the type certification, but this is not uncommon for a new airplane development program.

The team also was tasked to review service difficulty reports (SDR), which operators flying 14 CFR part 135 are required to submit to the FAA. Because of time constraints, the team agreed to direct its focus on SDRs in the four areas of concern and determine if the data highlighted shortcomings related to the type certification process. Nevertheless, the team also reviewed other events believed to be significant and included an assessment of those events in this report. Overall, the team concluded the majority of the SDRs resulted from reliability issues separate from compliance with the minimum FAA standards.

During the course of the review, the team identified the following eight findings:

- The means of compliance proposed for the Eclipse 500 Electronic Flight Information System was acceptable.
- There were no instances of screen blanking affecting multiple screens.
- The stall warning system was properly certified, but approach speeds were incorrectly documented in the Airplane Flight Manual at the time of initial type certification.
- At the time of certification on conforming flight test articles, there were no trim issues.
- The flap system was properly certified at the time of type certification.
- The FAA flight test function of the certification program was not staffed with an appropriate mix of flight test engineers and pilots.

- Communication among parties was not effective.
- The objective of Function & Reliability testing was not well-defined.

Also during the review, the team identified six recommendations. These recommendations include improvements in regulatory and policy guidance, and improved coordination between FAA offices.

The team did not identify any unsafe condition needing immediate attention within the areas reviewed.

# 1.0 Introduction to This Task

## 1.1 Team Task

The Federal Aviation Administration (FAA) chartered the Eclipse Special Certification Review Team (SCR Team) to evaluate specific issues of compliance regarding the type certification of the Eclipse Aviation (Eclipse) Eclipse 500 in accordance with paragraph 2–7e(1) of FAA Order 81 10.4C, Type Certification. This review was conducted at the direction of the Associate Administrator for Aviation Safety, based on a number of concerns raised by employees since the issuance of the type certificate (TC) through a union grievance filed October 2006 and whistleblower reports to the Office of Oversight and Investigations of the House Committee on Transportation and Infrastructure.

The SCR Team was tasked to review and evaluate certain areas of type certification and continued operational safety information to determine if the type design complies with the requirements of part 23 of Title 14, Code of Federal Regulations (14 CFR). Specifically, the SCR Team—

1. Reviewed whether the airplane was properly certificated in the areas of cockpit displays/screen blanking, stall speeds, aircraft trim, and flaps in accordance with part 23 on the date the TC was issued.
2. Reviewed service difficulty reports (SDR) to determine whether they indicate that concerns raised during the certification process are manifesting themselves in operation.
3. Determined whether SDR data indicate any other areas of concern in the operation of the Eclipse.

The team provides this report to the Associate Administrator for Aviation Safety.

## 1.2 Team Composition and Activity

A team of personnel with experience in type certification who were not involved in the Eclipse 500 certification was assembled to conduct the special certification review. The team was composed of the following personnel:

- Associate Aircraft Certification Office (ACO) Manager, Wichita ACO, Flight Test
- Aircraft Certification Service (AIR) Flight Program Manager
- Manager, Office of Aviation Safety Analytical Services
- Special Projects Team Leader, Avionics Branch, Aircraft Engineering Division
- Manager, Transport Airplane Directorate
- Senior Advisor, Flight Standards Service (AFS)
- United States Air Force Senior Advisor to the Secretary for Aviation and Space, U.S. Department of Transportation

- Deputy Associate Administrator for Aviation Safety
- Independent Certification and Safety Advisor – Team Lead

# 2.0 Background

## 2.1 Team Approach

The SCR Team began its review by understanding the charter and the intended focus of its review considering both the short-term nature of the task and the need to travel to several locations to conduct the evaluations.

During its first meeting, the SCR Team developed a process, shown in figure 1, to effectively conduct its review. The team considered the airplane's type certification basis (regulations), who the team would need to meet with from the FAA and from Eclipse, and how to evaluate SDRs to access their connection, if any, to the original certification program.

During its review, the SCR Team held several meetings and teleconferences to review and discuss the data, and its findings and recommendations, and to draft its report. The SCR Team also met with personnel at Eclipse in Albuquerque, New Mexico, and conducted interviews, in person and on the telephone, with FAA and Eclipse flight test and engineering personnel, the FAA ACO, and a certificate management office (CMO) overseeing Eclipse 500 part 135 operations. The team members reviewed certification documentation and reports. In addition, the team interviewed Eclipse personnel; FAA program management, flight test, and flight standardization personnel; and other personnel with direct operational experience with the Eclipse 500.

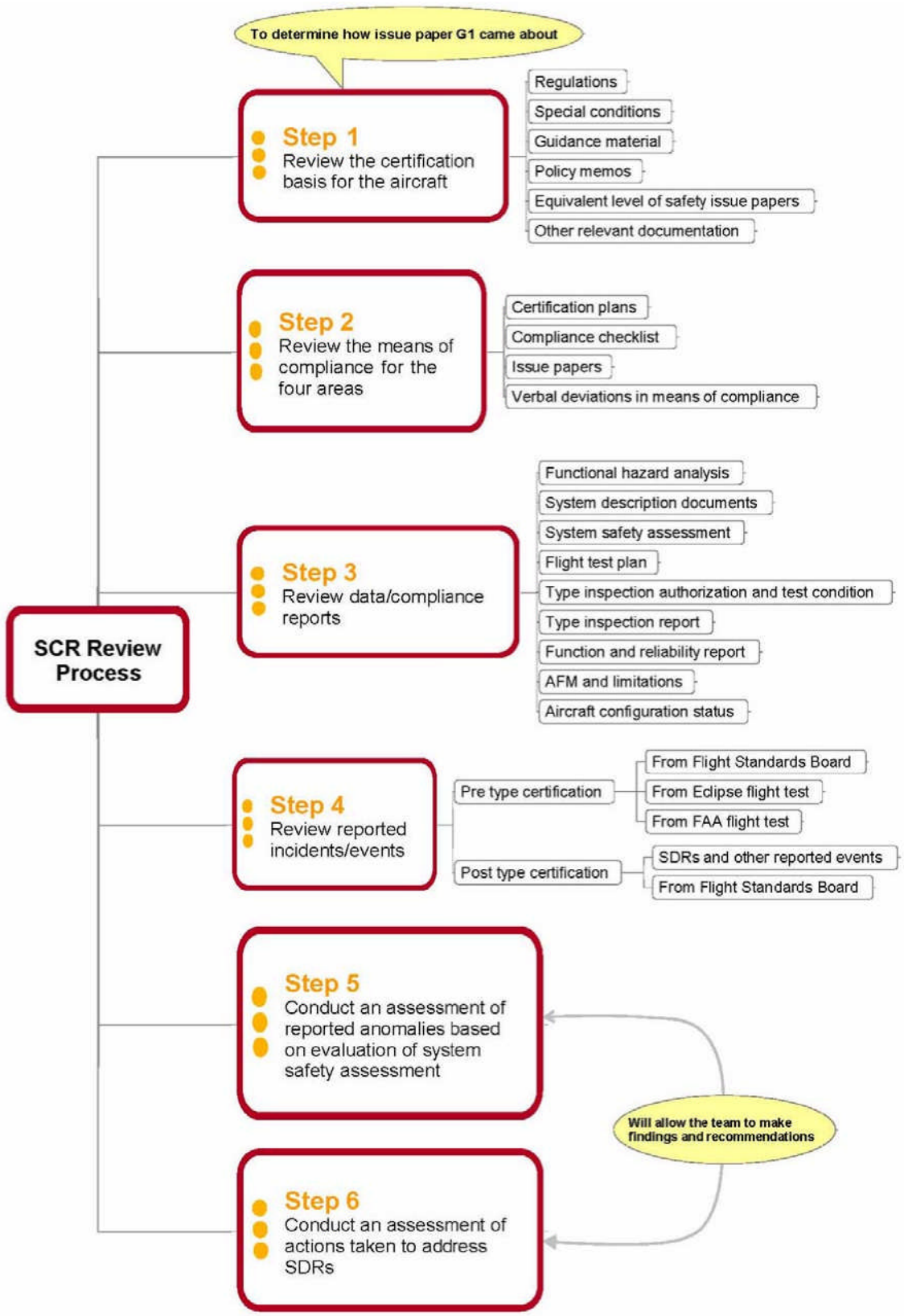


**Figure 1—SCR Team Review Process**

## 2.2 Description of the Eclipse 500 Airplane

The Eclipse 500 is a low-wing, T-tail airplane powered by twin tail-mounted Pratt & Whitney Canada PW610F turbofan engines. It is one of the new class of part 23 airplanes, commonly referred to as very light jets (VLJ), with modern and highly integrated avionics systems. The airplane is capable of carrying up to six occupants, with a standard seating configuration accommodating five passengers. The design of the airplane is intended to permit single-pilot operation. At the time of the special certification review, approximately 235 Eclipse 500 airplanes have been delivered to customers.

Williams International initially applied for FAA type certification for the Eclipse 500 in September 2000. At that time, the certification program was under the jurisdiction of the FAA Chicago ACO. In July 2001, Eclipse took responsibility for the program and established operations in Albuquerque, New Mexico, and the FAA type certification program became the responsibility of the Fort Worth ACO.

Between 2001 and 2006, Eclipse and the FAA engaged in the compliance planning and implementation phases of type certification of the Eclipse 500, with flight testing taking place in 2006. The FAA issued Eclipse a Provisional TC for the Eclipse 500 on July 27, 2006. Normal Category TC No. A00002AC was issued on September 30, 2006, and a Production Certificate No. 500 was issued on April 26, 2007.

### Electronic Flight Information System (EFIS) Description

The Eclipse 500 airplane integrated avionics system provides many required controls and displays, sensor data processing, and airplane subsystem monitoring and flightcrew interfaces. The EFIS is composed of two primary flight display (PFD) units, an multifunction display (MFD), an autopilot control panel (ACP), a center switch panel, and a keyboard. Refer to figure 2 for a picture of the flightdeck.

The PFD information is displayed on a 10.1-inch liquid crystal display (LCD) that is connected to a general purpose avionics computer. There are two PFDs located directly in front of each pilot station. The PFD changes the information displayed based on which pilot is in command using the bezel buttons and knobs, keyboard keys, and buttons and controls located on the ACP. In normal mode, the PFD provides a traditional electronic flight instrument representation with an upper attitude indicator and a lower horizontal situation indicator. In composite mode, the PFD provides a reversionary capability showing airplane systems information that may be used in the event the MFD fails.

The MFD is a 15.3-inch diagonal LCD connected to a general purpose avionics computer. In normal mode, the MFD provides the flight management system (FMS) function, electronic checklists, moving map, airplane system synoptic displays, and crew alerting system (CAS), including the visual and aural alerts. The MFD attitude display indicator (ADI) in the upper left corner is a smaller version of the top of the PFD and includes flight mode annunciation.


**Figure 2—Eclipse 500 Instrument Panel[1]**

## Stall Speeds

The Eclipse 500's stall warning system uses angle-of-attack (AOA) sensors on the airplane's nose to sense stall conditions. Data from the AOA sensors and flap position are transmitted to the airplane's air data computers (ADCs) for stall computation. If the computed data exceeds the threshold value for a stall warning condition, a stall warning will sound. If the computed threshold value for a stall is detected, the stick pusher will actuate with 40 pounds of nose-down force on the side stick. If the autopilot is engaged, it will automatically disengage. See figure 3 for a depiction of the Eclipse 500 flight control systems.

## Trim

The Eclipse 500 is equipped with pitch, rudder, and roll trim systems actuated by cockpit controls. Pitch and roll trim are actuated by a switch on the control stick, and the rudder trim is actuated by a rotary knob on the center console. The mechanical components of the pitch and rudder trim systems include actuators powered by electrical stepper motors to move trim tabs on the control surfaces. The pitch trim system includes independently actuated tabs on the right and left elevators, while the rudder trim is provided by a tab on the lower section of the rudder. The mechanical components of the roll trim system include actuators that drive spring cartridges to bias the surface of the ailerons. See figure 3 for a depiction of the Eclipse 500 flight control systems.

[1] Provided by and used with permission from Eclipse.

## Flaps

The Eclipse 500's flap system is composed of a single flap panel on each wing, each deployed by two electromechanical actuators. The flap panels are independently operated without a mechanical interconnect between the two flap panels. The flap selector switch is located on the throttle quadrant. Flap deployment is monitored by both Aircraft Computer Systems (AC S). In the event of an asymmetry of 2.5 degrees or greater between the left and right flap panels, or between the flap actuators on a single flap, the ACS will shut down further movement of the flaps.

The flap position is displayed on the upper portion of the MFD. In the event of a flap position mismatch, an amber "FLAP FAIL" caution message will appear on the CAS. Other CAS messages also will appear in the event of various sensed failures.

See figure 3 for a depiction of the Eclipse 500 flight control systems.

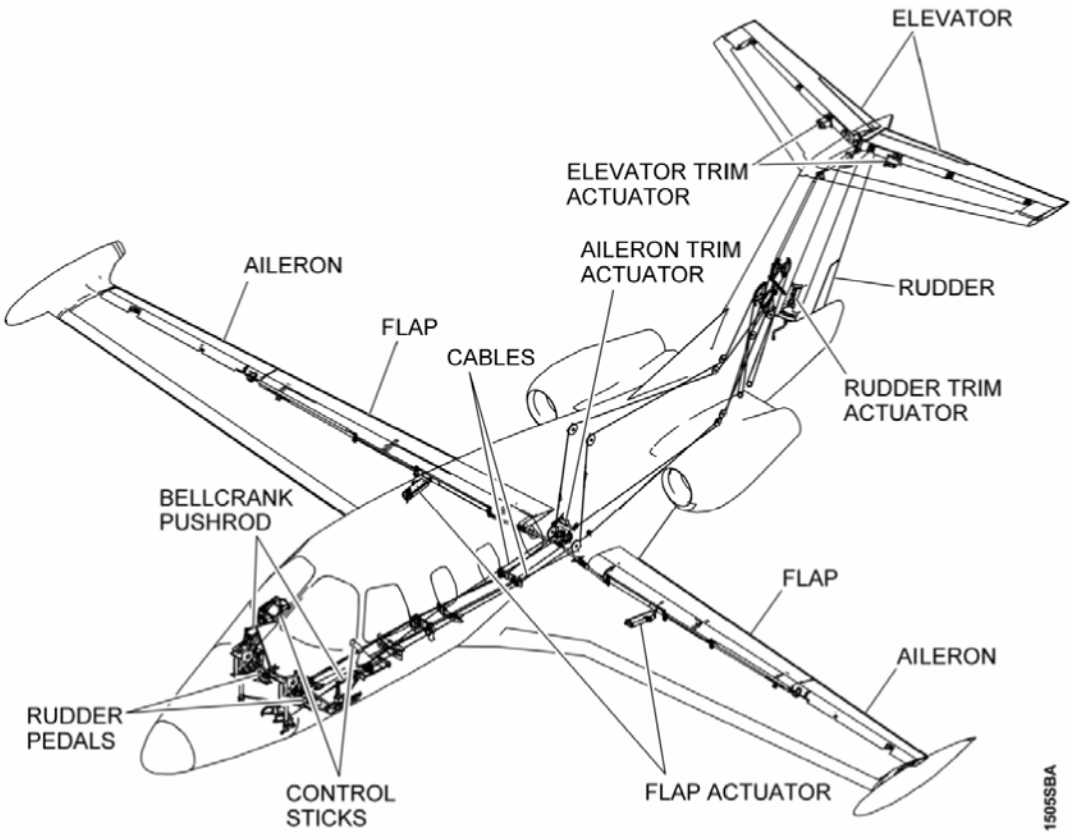


**Figure 3—Eclipse 500 Flight Control Systems[2]**

[2] Provided by and used with permission from Eclipse.

# 3.0 Review of Certification Basis

## 3.1 Airplane Certification Basis

The certification basis for the Eclipse 500 as identified in the TC data sheet was as follows:

### Regulations

- 14 CFR part 23 through amendment 55
- 14 CFR part 34 through amendment 34–3
- 14 CFR part 36 through amendment 36–24

### Special Conditions (SC)

- 23–128–SC for Engine Fire Extinguishing System
- 23–121–SC for Electronic Engine Control System
- 23–1 12A–SC for High Intensity Radiated Fields (HIRF) Protection

### Equivalent Level of Safety Findings

- ACE–02–19: 14 CFR §§ 23.777(d) and 23.781, Fuel Cutoff Control
- ACE–05–32: 14 CFR §§ 23.1545(a) and 23.1581(d), Indicated Airspeeds
- ACE–05–34: 14 CFR §23.181(b), Dynamic Stability
- ACE–05–35: 14 CFR §23.1353(h), Storage Battery Design and Installation
- ACE–05–36: 14 CFR §23.1323(c), Airspeed Indicating System
- ACE–06–0 1: 14 CFR § 23.1 545(b) (4), Airspeed Indicator
- ACE–06–05: 14 CFR part 23, appendix H, § H23.5, Installation of an Automatic Power Reserve System
- ACE–07–04: 14 CFR § 23.1545(b)(4), Airspeed Indicator

### Exemptions Approved by the FAA Under 14 CFR § 11.27

- None

The Eclipse 500 did not demonstrate compliance for issuance of a TC for flight into known or forecast icing (at the time of type certification) and ditching. In addition, for this class of airplane, Function & Reliability (F&R) testing and the special condition for flight performance, flight characteristics, and operating limits were not applicable because of the maximum certificated takeoff weight of the Eclipse 500 (less than 6,000 pounds).

## 3.2 Review of Compliance Data as Related to the SCR Task

The SCR Team reviewed the following documents to assess compliance in the four focus areas:

- Airplane-level functional hazard assessment (FHA)
- System safety assessments (SSA)
- Issue papers[3]
- Methods of compliance
- Compliance reports for the applicable regulations
- Problem reports before TC issuance
- Compliance summary
- Type inspection reports (TIR)
- Problem reports post TC issuance
- In-service difficulty reports

Section 4.0 of this report discusses the specific requirements contained in part 23 that the SCR Team evaluated.

[3] An issue paper provides a means for identifying and resolving significant technical, regulatory, and administrative issues occurring during the certification process.

## 4.0 Compliance Review

The purpose of this section is to provide information on the evaluation of the four focus areas. To accomplish this task, the SCR Team interviewed the key FAA participants in the certification and flight test of the Eclipse 500, met with Eclipse technical personnel, and reviewed numerous documents related to the certification of the Eclipse 500.

The SCR systems team reviewed the following documents:

- Cockpit Design Compliance Report for the Eclipse 500, document No. EAC R02–9006, revision B, dated September, 21, 2006
- Issue Paper SE–1, Allowable Quantitative Probabilities with Respect to § 23.1309 Compliance
- Issue Paper SE–2, Allowable Software Development Assurance Levels with § 23.1309 Compliance
- Issue Paper SE–5, Commercial Off-the-Shelf Databuses
- Airplane Level Functional Hazard Assessment for the Eclipse Model 500 Airplane, document No. R02–5024
- EFIS System Safety Analysis, document No. R02–5016
- Compliance summary for the Eclipse 500 EFIS, document No. EAC R02–5014

The SCR flight test team reviewed the following documents:

- Pilot's Operating Handbook and FAA-approved Airplane Flight Manual Eclipse 500, Eclipse Aviation Corporation, September 29, 2006
- Flight Control System Presentation, Eclipse Aviation, Brett Rands, August 19, 2008
- Flight Characteristics Substantiation Report, R02–8003 Rev B, Eclipse Aviation, September 25, 2006
- Type Inspection Report, Eclipse Model 500, TIR 500–15 Part II; Eclipse Aviation Corporation, September 21, 2006; Shannon Hall
- F&R Briefing; Eclipse Aviation, Albuquerque, NM; August 21, 2008; Jackman
- Document No. R02–3024, Flap Failure Modes and Asymmetry Test Plan, and document No. R02–3025, Flap Failure Modes, Asymmetry Test Report
- System Level Functional Hazard Assessment for the Eclipse Model 500. document No. R02–5032
- Eclipse Aviation System Safety Analysis for the Eclipse Model 500 Flight Control System, document No. R02–3007
- Qualification Test Report, EMS QTR 1021

- Master Minimum Equipment List Eclipse EA 500
- Production Flight Test Profile and Procedures, Eclipse Aviation Corporation (Draft)

The team review focused on the four areas to investigate whether aspects of the certification process were either overlooked or done improperly. The SCR Team's main focus included but was not limited to cockpit displays/screen blanking, stall speeds, trim, and flaps. Other certification issues raised during interviews or in-service difficulty reports also were addressed in this report if they impacted the compliance or safety of the Eclipse 500.

## 4.1 Screen Blanking

The review of screen blanking focused on initial certification of the EFIS, post-type certification testing, and in-service reports.

### 4.1.1 Systems Evaluation *Review of the EFIS Certification Plan*

The SCR Team reviewed the EFIS certification plan because of changes that occurred during the certification process. The initial plan was for the EFIS developer/manufacturer to receive FAA approval of the system and software under the technical standard order authorization (TSOA) process. The TSOA is used to obtain 14 CFR part 21, subpart O, design and production approval to minimum operational performance standards (MOPS) and, if required by the TSOA, compliance to DO–178B for the software.

TSOA approval by itself does not meet the requirements in §§ 23.1301 and 23.1309 and requires a separate approval process for installation in an airplane. Although the TSOA process may be used for system approval, the TSOA is not required for compliance to §§ 23.1301 and 23.1309. After it was determined that the EFIS TSOA would not be available at the time of type certification, Eclipse proposed another method of compliance.

#### EFIS Compliance to the Applicable Regulations

The Flight Deck Design Compliance Report for the Eclipse 500, document No. EAC R02–9006, revision B, dated September, 21, 2006, shows design compliance to the applicable regulations for the integrated cockpit and display systems. The SCR Team focus was primarily on §§ 23.1301 and 23.1309, which are applicable to EFIS screen blanking.

#### Issue Paper SE–1, Allowable Quantitative Probabilities with Respect to § 23.1309 Compliance

This issue paper, used in combination with Advisory Circular (AC) 23.1309–1 C, Equipment, Systems, and Installations in Part 23 Airplanes, provides guidance for a quantitative probability determination for system and equipment installed in a multiengine turbine airplane under 6,000 pounds. The Eclipse EFIS numerical probability for hazardous and catastrophic failure classifications was determined to be a class III airplane as described in AC 23.1309–1 C. Figure 2 in the AC provides the relationship between airplane classes, probabilities, severity of failure conditions, and software development assurance levels.

### Issue Paper SE–2, Allowable Software Development Assurance Levels with § 23.1309 Compliance

This issue paper, used in combination with AC 23.1309–1C, requires that all Eclipse 500 airplane system software be developed to class III airplane development assurance. Using this issue paper as a means of compliance, the EFIS software should be developed using DO–178B level B software guidelines.

### Issue Paper SE–5, Commercial Off-the-Shelf Data Buses

This issue paper provides a method of compliance to use commercial-off-the-shelf data buses for safety-critical applications, including the EFIS data bus interfaces to other avionics systems.

## *Review of EFIS Data and Compliance Reports*

### Airplane-Level Functional Hazard Assessment

The airplane FHA was performed and documented in document No. R02–5024, Airplane Level Functional Hazard Assessment for the Eclipse Model 500 Airplane. The failure effect classification of the EFIS for complete loss of function or hazardously misleading information was determined to be catastrophic. The failure classification for loss of function for a single PFD was determined to be a minor failure classification. This safety assessment provides fault tree analysis to demonstrate that the right and left PFDs are asynchronous and independent, and a failure in one system would not propagate into the second system.

### EFIS System Safety Analysis

The SSA for the Eclipse 500 EFIS is contained in document No. R02–5016, dated May 10, 2006. This document provides an SSA for the two PFDs and single MFD, and includes all of the sensors and processing required for acquiring primary flight, direction, and engine performance information. The SSA is a systematic, comprehensive evaluation of the implemented EFIS, its architecture, and its installation, to show that relevant safety requirements are met. The SSA presents verification that the implemented system design satisfies both the qualitative and quantitative safety requirements as defined in the system FHA and as derived from the airplane-level FHA.

### EFIS Screen Blanking Fault-Tolerant Design

For the purpose of this report, screen blanking is defined as loss of all information on either a single display or multiple displays. The EFIS has three separate displays, and it is important to assess whether individual screen blanking occurred or whether two or all three EFIS displays blanked at the same time. As an example, the EFIS fault-tolerant design would classify an individual PFD blanking as a minor failure effect classification, and simultaneous blanking of all three EFIS displays as a catastrophic failure effect classification.

### Airplane-Level Validation of Highly Integrated Avionics Systems

Eclipse designed and built two full-scale laboratories intended to be representative of the actual airplane environment for its avionics integration tests. One of these laboratories was conformed and used for certification credit for certain avionics tests and demonstrations. During the SCR Team site visit, Eclipse described the overall capability of its integration laboratories and explained the validation and verification of the EFIS requirements in normal operation and with lab-induced failures to ensure proper system fault response.

During the SCR Team interview process with certain Eclipse personnel, the following observations were noted:

- The airplane-level integration of avionics systems is more complicated than the TSOA minimum operational performance standards (MOPS). For this reason the EFIS is more likely to have in-service difficulties related to installation and integration requirements rather than the TSOA MOPS.
- The Eclipse 500 airplane uses a traditional federated avionics architecture designed to eliminate single point failures, which could cause a catastrophic failure effect. Eclipse's design strategy was that software errors be mitigated by the fault-tolerant design.

Regardless of the means of compliance proposed, software is not independently approved. Software is part of the avionics system, which is certified once the TC is issued.

### Method for Showing Compliance to §§ 23.1301 and 23.1309

Successful completion of type inspection authorization (TIA) certification ground and flight tests is used to demonstrate compliance with various regulations, including §§ 23.1301 and 23.1309. The SCR Team interviewed Eclipse and FAA software specialists to obtain information on the software compliance to DO–178B at the time of TIA and at the time of type certification. The Eclipse and FAA software specialists agreed that partial compliance to DO–178B was sufficient at the time of TIA, provided software conformity level II requirements were met. The SCR Team reviewed the TIR; no EFIS discrepancies were documented.

After successful completion of laboratory, ground, and airplane certification flight test activities, some of the DO–178B low-level[4] verification activities had not yet been completed. For this reason, Eclipse proposed another method for software compliance with §§ 23.1301 and 23.1309.

[4] Software development processes produce one or more levels of software requirements. High-level requirements are produced directly through analysis of system requirements and system architecture. Usually, these high-level requirements are further developed during the software design process, thus producing one or more successive lower level requirements.

The Eclipse method of compliance included the use of partial credit for the DO–178B processes that had been completed. These DO–178B processes, combined with conformed laboratory integration test results, system architecture mitigations of the EFIS, SSA, and substantive ground and flight test activities, demonstrated compliance with §§ 23.1301 and 23.1309. The use of full-scale integration tests and demonstrations was intended to ensure the EFIS high-level and low-level requirements were correct and complete. The proposed method of compliance was not documented in an issue paper or policy memorandum, and therefore did not go through normal internal coordination.

The compliance summary for the Eclipse 500 EFIS, document No. EAC R02–5014, dated September 22, 2006, documents the EFIS compliance with §§ 23.1301 and 23.1309.

The SCR Team reviewed the Eclipse proposed means of compliance for the EFIS as documented in this section of the report and, based on the following review, found it to be acceptable to show compliance with 23.1301 and 23.1309.

### EFIS Single Screen Blanking Occurrences Pre-Type Certification

A software coding error in the attitude and heading reference system (AHRS) and a requirements error in the ADC could, under certain conditions, disrupt communications between these two systems. A left or right PFD display reset of approximately 15 seconds may occur. There may be a series of resets before the PFD stabilizes. This failure condition, requiring flightcrew action, was detailed in section 3 of the Airplane Flight Manual (AFM), document No. 06 –100106, dated September 29, 2006. This AFM procedure provided information to the pilot to maintain proper and safe operation of the airplane.

This discrepancy was corrected by the latest software revision, and Service Bulletin (SB) 500–34–003 was issued January 18, 2007 to retrofit in-service airplanes. The AFM procedure to address the discrepancy is no longer required.

### Post-Type Certification EFIS Certification Activities

Although not required for compliance to §§ 23.1301 and 23.1309 for type certification, Eclipse agreed to obtain TSOA approval for the EFIS and retrofit legacy Eclipse 500 airplanes post-type certification. The TSOA/DO–178B design approval allows a standard process for future EFIS software revisions and demonstrates that the TSOA meets industry and FAA MOPS.

The agreement was formally documented in meeting minutes between the FAA and Eclipse and letters stating that all Eclipse 500 airplanes would remain under the control of Eclipse until the EFIS TSOA was approved.

The EFIS received TSOA approval in March 2007, following completion of the low-level verification activities. These low-level verification activities revealed no major concerns related to the EFIS design and operation.

### SCR Team Finding No. 1

The SCR Team found that the means of compliance proposed for the Eclipse 500 EFIS was acceptable.

The SCR Team found that the data presented to the ACO was adequate for showing compliance with §§ 23.1301 and 23.1309 for the EFIS at the time of type certification.

The SCR Team found that because of time constraints, commonly used FAA internal communication processes (for example, issue papers or policy memorandums to provide guidance to the FAA project team) were not used to document the means of compliance. This led to differences of opinion within the certification team of whether the proposed guidance was suitable.

### SCR Team Finding No. 2

The SCR Team did not discover any instances of simultaneous screen blanking affecting multiple screens during the certification program or after type certification. The SCR Team found that screen blanking was limited to blanking of a single screen, which is addressed by AFM procedures.

### 4.1.2 Flight Test Evaluation

The flight test team members reviewed certification documentation and reports, and interviewed Eclipse personnel and FAA program management, flight test, and Aircraft Evaluation Group (AEG) personnel to generate this report.

## 4.2 Stall Speeds

### 4.2.1 Systems Evaluation

The stall speed issues related to stall warning are considered to be operational issues and were reviewed under the flight test evaluation. The SCR Team reviewed available documentation, and determined stalls and the stall prevention system complied with the applicable regulations.

### 4.2.2 Flight Test Evaluation

The Flight Characteristics Substantiation Report provides details on 120 stalls in all configurations to demonstrate compliance with applicable part 23 requirements. Stick pusher induced stalls were flown to substantiate compliance. The test report identified one stall at high altitude that failed to meet warning criteria, but this stall was flown at a slower than specified entry rate and it was determined that this did not constitute a failure. Another anomaly noted was that high altitude stalls with maximum thrust tended to produce engine surges; however, the engine was reported to recover immediately and showed no sign of damage in post-flight inspection.

### *Wings Level, Turning Flight, and Accelerated Turning Stalls (§§ 23.201, 23.203, and 23.691)*

For wings level stalls, it must be possible to produce and correct roll and yaw by unreversed use of the appropriate controls up to pusher activation. During entry into and recovery from the stall, it must be possible to prevent more than 15 degrees of roll or yaw. Turning flight and accelerated turning stalls were satisfactorily demonstrated in all appropriate weight, center of gravity (cg), landing gear, flap, and engine thrust configurations. It was shown that after the airplane stalled, it was possible to regain wings level flight by normal use of the flight controls without increasing power and without exceeding the regulatory requirements. All stalls were defined by a 40-pound stick pusher activation that provided a nose-down pitching motion of the airplane.

### *Stall Warning Margins (§ 23.207(a), (b), (c), and (e))*

Stall warning margins were satisfactorily demonstrated in flight concurrent with stall characteristics testing in all appropriate weight, cg, landing gear, flap, and engine thrust configurations. Stall warning is provided by a CAS audible warning that provides a clearly distinguishable indication of an impending stall. Stall warning began at a speed not less than 5 knots before stick pusher activation and continued until the stick pusher activated during flight tests with stall entry rates of 1 knot per second. During all accelerated turning stalls, the audible stall warning began sufficiently in advance of the pusher activation to allow the pilot to recover before the pusher activated.

### *Nuisance Stall Warnings (§ 23.207(d))*

When following the procedures provided by § 23.1585, it was determined during TIA testing that the stall warning did not normally activate during (1) a takeoff with all engines operating, (2) a takeoff with one engine inoperative, or (3) an approach to landing. Review of the type inspection data did, however, reveal that on one all-engine takeoff a momentary stall warning did occur. That warning was attributed to the fact that the pilot pitched the airplane up to approximately 20 degrees. A momentary warning also was noted on a single-engine takeoff where some light turbulence possibly was encountered. These momentary events were not considered to be a problem and likely represented an actual stall warning event activated by g-loading. No nuisance stall warnings were recorded during landing approach TIA testing.

### *Potential Source of Problems*

Problems reported with the stalls may be related to the activation of the CAS audible stall warning during approaches for landing. These reports stemmed from the Flight Standardization Board (FSB) evaluations occurring from September 2006 through December 2006. In November 2006, the ACO dispatched the FAA Certification Program Chief Test Pilot to verify updated software functionality in support of the FSB. During his test flight, the stall warning problem was identified and reported on November 6, 2006. It was determined at that time that the approach speeds published in the AFM were too low. This resulted in the FSB pilots flying at speeds too close to the stall, particularly during abnormal approach conditions, and getting stall warning system activation. Eclipse validated the problem in December 2006 and changed

the approach speeds in the AFM. As a result, the stall warnings during approach essentially ceased. Resolution of this problem occurred before any airplanes left the control of Eclipse.

**SCR Team Finding No. 3**

The SCR Team found that the stall warning system was properly certified but the published approach speeds in abnormal flap landing configurations were incorrectly documented in the AFM at the time of initial type certification.

## 4.3 Trim

### 4.3.1 Systems Evaluation

The SCR Team reviewed the SSA, system description, and discrepancy reports and determined that the aircraft presented for certification complied with the applicable regulations at the time of type certification. The SCR Team reviewed all available SDRs. The trim-related SDRs are addressed in section 5.3.3 of this report. The SCR Team also learned of undocumented reports of in-service trim failures. The SCR Team was not able to undertake an in-depth review of those reports because of the lack of detail. Eclipse acknowledged that it was having problems with reliability of trim system components.

### 4.3.2 Flight Test Evaluation

Issues relating to trim did not occur on any airplane during the type certification flight tests, as fully conformed airplanes were used as required for official TIA testing. However, issues relating to trim occurred during FSB flight evaluation using an airplane that was not in conformity with the type design[5]. FAA certification and Eclipse engineering personnel acknowledged that little if any communication existed between the F SB/Eclipse training department and the FAA ACO/Eclipse engineering.

#### *Available Data*

The Flight Characteristics Substantiation Report documents the details of the trim conditions flown during certification testing.

#### *Lateral and Directional Trim (§ 23.161(b))*

It was demonstrated that the airplane could maintain lateral and directional trim in flight with the landing gear and flaps retracted up to a speed of at least $V_{MO}$.

[5] As understood through SCR Team discussions with Eclipse and FAA personnel. Details of the FSB evaluations are contained in appendix B to this report.

### *Longitudinal Trim (§ 23.161(c))*

Longitudinal trim characteristics were found to be acceptable and meet the regulatory requirements for hands-off longitudinal trim with both engines operating for all weight and cg combinations for takeoff, climb, cruise, descent, and approach and landing configurations for all speeds up to $V_{MO/MMO}$. The trim system, however, would not produce hands-off elevator trim down to the desired 1.3 $V_S$ speed at a forward, regardless of loading in a landing configuration. The minimum trim speed for the forward cg, regardless of weight condition in the approach configuration, was determined to be 1.36 $V_S$. That speed was therefore determined to be the minimum approach speed ($V_{REF}$).

### *Single-Engine Longitudinal, Directional, and Lateral Trim (§ 23.161(d))*

Longitudinal, directional, and lateral trim were found to be acceptable in the critical engine inoperative condition with zero lateral, directional, and longitudinal force inputs by the pilot.

### *Pitch Trim Failure (§23.672(d))*

Flight demonstrations were conducted at the critical weight/cg combinations to show that if the pitch trim fails (or jams) at high speed, the trim and stability characteristics were not impaired below a level to permit continued safe flight and landing. Both single and dual pitch trim failures were satisfactorily tested. An Emergency AFM Pitch Trim Fail Procedure is provided for this failure.

### *Pitch, Roll, and Yaw Trim Runaways (§ 23.672(d))*

Flight demonstrations were conducted at the critical weight/cg combinations to show that the airplane is safely controllable and that the pilot can perform all maneuvers and operations necessary to affect a safe landing following any probable powered trim runaway that reasonably might be expected in service, allowing for appropriate time delay after pilot recognition of the runaway. An Emergency Trim Uncommanded AFM Procedure is provided for this failure.

### *Potential Source of Trim Problems*

During the Phase I FSB evaluation program, the Production 2 flight test airplane was used for flight evaluations on September 28 and 29, 2006. During the Phase I FSB flights, the Production 2 airplane exhibited both elevator trim and aileron trim issues. At high speeds the airplane required 98- to 100-percent full nose-down elevator trim, and essentially 100-percent right aileron trim to hold the wings level. Production 2 was one of two test airplanes that Eclipse engineering stated to the FAA was not in conformity and had not completed a production flight test evaluation. As a result, both of those airplanes were removed from the initial FSB evaluations.

In the subsequent 2 to 3 months, the Production 2 airplane went through an extensive troubleshooting process to resolve the trim problems, including a wing change to correct an apparent incidence problem. The same airplane after rework was used in the Phase III FSB review and did not exhibit any reported trim issues.

A review of the SDRs revealed a large number of aileron/roll trim problems, several pitch trim problems, and a single rudder trim event.

Undocumented in-service reports of pitch and rudder trim difficulties indicated problems could be related to either reliability or functionality. Eclipse reports that these are reliability problems with trim actuators, but Eclipse did not provide evidence of a rigorous root cause analysis to determine the underlying origin of the reported trim problems. Eclipse is in the process of replacing the actuators to improve performance and reliability.

Several of the aileron/roll trim issues seem to be related to excess friction and aileron rigging. The SCR Team notes that the roll axis does not use trim tabs, but uses a bungee system that only has the capability of trimming out approximately 5 pounds of mistrim. With a limited trim capability in roll, the airplane will be highly susceptible to any misrigging or production quality issues that could cause roll asymmetry. Roll trim issues have been resolved on some airplanes by installing Gurney[6] tabs on the wing flap. The roll trim problem was attributed to a production tolerance stack up between wing build and aileron build. This appears to be a production problem that would be revealed during production flight test and resolved before a standard airworthiness certificate is issued for an airplane.[7]

#### SCR Team Finding No. 4

The SCR Team determined that at the time of certification on conforming flight test articles there were no trim issues.

In-service reports indicate problems with reliability and, potentially, functionality of the pitch and rudder trim control systems.

## 4.4 Flaps

### 4.4.1 Systems Evaluation

Document No. R02–3024, Flap Failure Modes and Asymmetry Test Plan, and document No. R02–3025, Flap Failure Modes, Asymmetry Test Report, demonstrate compliance with § 23.701, Flap interconnection, through the incorporation of actuator position monitoring and software control of position. The testing established the asymmetric limits that could be seen on a loaded flap, assuming a structurally failed single actuator.

Flight test compliance is reported in the Flight Characteristics Substantiation Report. Flight testing was performed to validate safe flight characteristics under the worst case asymmetry (as defined in R02–3025).

Document No. R02–5032, System Level Functional Hazard Assessment for the Eclipse Model 500, and document No. R02–3 007, Eclipse Aviation System Safety Analysis for the Eclipse Model 500 Flight Control System, provide the failure probability in support of the electrical design.

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[6] The Gurney tab is an L-shaped piece of metal bonded to the bottom of the wing on one side to even out trim. The use of a Gurney tab is now part of the Eclipse 500 type design.
[7] See recommendation No. 3 in section 8.0 of this report.

Qualification testing is documented in EMS QTR 1021, Qualification Test Report, which established endurance and strength limits for the actuators.

### 4.4.2 Flight Test Evaluation

#### *General (§ 23.699)*

This paragraph was not specifically called out in the TIA; however, this requirement with regard to controls is a natural fallout from the other tests specified. Flight test personnel indicated compliance with these requirements during the review.

#### *Wing Flap Controls (§ 23.697)*

Throughout the flight test type certification program, the rate of movement of the flaps in response to the operation of the pilot's control or automatic device gave satisfactory flight and performance characteristics under steady or changing conditions of airspeed, engine power, and attitude. This also was demonstrated during compliance with the appropriate paragraphs of §§ 23.143 and 23.145.

#### *Flap Failure (§ 23.672)*

It was satisfactorily demonstrated by flight test that if the wing flaps fail in any position not considered extremely improbable, that the airplane is safely controllable at any speed or altitude within the approved operating envelope and the flight characteristics are not impaired below a level needed to permit continued safe flight and landing. An AFM Emergency Procedure is provided for Landing with Flap Malfunction.

#### *Flap Interconnection (§ 23.701)*

It was satisfactorily demonstrated by flight test that the airplane has safe flight characteristics with the flap surfaces at the maximum possible asymmetric angle as limited by the automatic shutdown system. An AFM Emergency Procedure is provided for landing with a "FLAP FAIL" message posted.

#### *Potential Source of Problems*

There were numerous "FLAP FAIL" CAS messages after engine start during both the F&R testing and the FSB evaluations. On one occasion during the FSB evaluations, it was reported that the flaps stopped between the "UP" and "TAKEOFF" positions, but little additional data on this occurrence was available. Eclipse investigated the "FLAP FAIL" problem and determined that the "FLAP FAIL" messages after engine start were caused by a software problem, which was corrected. The stoppage of the flaps between "UP" and "TAKEOFF" was explained as a software coding problem. Eclipse added procedures to the AFM to deal with both problems. Eclipse also issued software revisions intended to address both problems. Only one "FLAP FAIL" occurrence has been reported in service through the SDR system. It also should be noted that a stoppage of the flaps because of a miscompare is a safety design to

prevent a split flap condition. Should this condition be encountered in flight, a safe landing can be made at any flap setting using the AFM Emergency Procedure.

### SCR Team Finding No. 5

The SCR Team determined that the flap system was properly certified at the time of type certification and there were no type certification issues. The SCR Team found that most flap-related events were caused by system requirements errors that were mitigated for certification by AFM procedures and eventually resolved by software updates.

# 5.0 Review of Reported Incidents/Events

## 5.1 General

Under 14 CFR, certificated air carriers are required to submit SDRs detailing the occurrence or detection of a variety of described failures, malfunctions, or defects (for example, engine fires during flight, loss of brake actuating force, or structural defects requiring major repair). An air carrier also is required to report any other failure, malfunction, or defect that, in its opinion, has endangered or may endanger the safe operation of its aircraft. Persons other than air carriers, such as certificated repair stations, air taxi operators, and members of the general public, may, but are not required to, submit similar information in malfunction or defect (M or D) reports. Additionally, FAA inspectors discovering conditions potentially adversely affecting safety of flight must initiate the appropriate report.

Data from SDRs and M or D reports are analyzed by the AFS, which issues a daily summary of SDR information submitted and maintains a database of past service difficulty information. This information is available to assist in correction of conditions adversely affecting continued airworthiness of aeronautical products.

## 5.2 SDR Review

The SCR Team reviewed all SDRs for the Eclipse 500 with two objectives in mind: (1) to determine if the data in any way highlights possible shortcomings of the certification approach or means of compliance demonstration, and (2) to assess those events related to the four focus areas. SDR data is not without limitations. Eclipse has established protocols for reviewing SDRs and provided an assessment to the FAA ACO. SDRs represent past events and the descriptions are limited. Specific details are not consistently reported.

A total of 85 SDRs pertaining to the Eclipse 500 were identified and reviewed by the SCR Team. The SDRs selected for review involved 28 different airplanes. Of these airplanes, all but one was operated by DayJet; the other was operated by North American Jet. These SDRs, extracted on June 14, 2008, include reports submitted between July 29, 2007, and May 13, 2008. After the SCR Team study began, an additional 11 reports were received in the SDR system. A review of these SDRs did not identify any additional information relevant to the four focus areas. Nevertheless, they are included in the SDR data summary in appendix D to this report.

The SDR data was classified into general categories to help identify trends and records pertinent to the SCR Team's four focus areas. The 85 events were classified into 21 categories, which are shown in figure 4. Of these categories, the highest number of reports (13 reports) involved "airspeed disagree" messages displayed on the PFD, with the next highest report count (11 reports) related to the airplane's trim systems. It should be noted that these categories should not be considered definitive because some of the categories are interrelated. For example, an aileron rigging issue could manifest itself as a trim issue or vice versa.

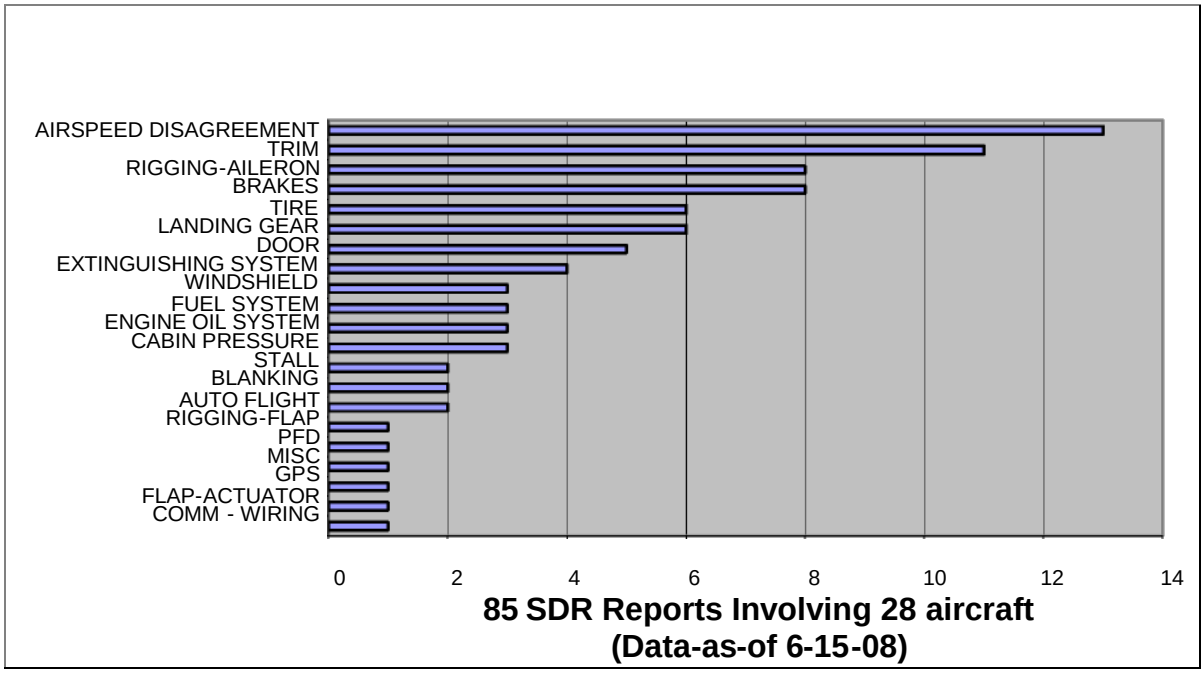


**Figure 4—Eclipse 500 SDR Classification**

The SCR Team relied on the SDR assessment conducted by the ACO for additional details related to SDRs involving component failures and follow-on activities. The SCR Team reviewed the SDR data with the ACO and Eclipse. However, because of time constraints, the SCR Team was not able to discuss these issues with the component manufacturers and airplane operators.

The vast majority of the SDRs were reported by DayJet, which is currently operating a fleet of 28 Eclipse 500 airplanes. These airplanes have accumulated significant flight hours relative to the remainder of the Eclipse 500s. The SDRs may be considered a representative sample of fleet-wide service difficulties.

## 5.3 SDR Review Results

### 5.3.1 EFIS Screen Blanking Events

The SDR data contained two reports characterized as blanking events. However, complete loss of the display was not indicated in either report. One event involved smoke from the MFD, followed by dimming of the display. The second event involved pixelation of the PFD on final approach. In both cases, the displays were replaced to correct the problem.

Subsequent follow-up by the ACO and Eclipse determined that the event involving smoke from the MFD was caused by the failure of a capacitor in the power supply. The capacitor was returned to the original equipment manufacturer (OEM) for a failure analysis. The OEM concluded that the incident was caused by a random component failure.

In the event involving pixelation, the unit was returned to the OEM for analysis. The OEM was not able to duplicate the malfunction.

### 5.3.2 Stall Events

The SDR data contained two stall warning events on climb-out that occurred low to the ground. One event was addressed by tightening the connector for the center switch panel and the other by replacing the left and right pitot probes. In the second stall event, the corrective action indicated the cause was a faulty primary pitot/AOA probe. These events were not related to the stall issues encountered during the TC program.

### 5.3.3 Trim Events

A review of the SDRs revealed a large number of aileron/roll trim problems, several pitch trim problems, and a single rudder trim event. Several of the aileron/roll trim issues were related to excess friction and aileron rigging; the root cause of the pitch/rudder trim issues has not been established, but they seem to be related to the reliability of the actuators.

The SCR Team did not discover any trim issues on the conforming airplanes used for the certification flight test program. Some trim issues were documented during the Phase I FSB flight test program on a nonconforming airplane. Section 4.3.2 and appendix B to this report contain additional details regarding these issues.

### 5.3.4 Flap Events

The SDRs contained two reported flap events. One was resolved by replacing the flap actuator, and the other event was determined not to be flap-related.

# 6.0 Other Areas of Concern

## 6.1 SDR Data Evaluation

During its review of the certification of the Eclipse and the SDR data, the SCR Team identified several areas of concern other than the four focus areas identified in the charter. The team believes these areas should be evaluated further.

### 6.1.1 Airspeed Disagree

The largest reported category in the SDR data was airspeed disagree (13 airspeed disagree events were reported). Airspeed disagree events were not experienced during certification flight testing. During initial certification, the airplane was predominately flown in a dry climate and in visual meteorological conditions. Subsequent in-service experience identified water contamination issues with the pitot static system as a source of airspeed disagree issues. The FAA and Eclipse have implemented some mitigations and are continuing to address this issue.

#### *TC Probe*

The design of the pitot probe did not meet the requirements of § 23.1323(c), and Eclipse requested an equivalent level of safety determination by the FAA. The FAA prepared an issue paper and determined that the Eclipse 500 did meet the criteria for issuance of an equivalent level of safety; however, in-service experience indicated that the pitot static system did not provide the equivalent level of safety expected.

After type certification a large number of airspeed disagree events were reported. Investigation into the events revealed that during descent, the probe would freeze (total pressure side of the probe) and as the airplane moved into warmer temperatures, the problem abated. Eclipse determined that moisture contamination was occurring in the total pressure side of the probe. Because the probe did not have a drain, accumulated water was not burned off by heat.

The FAA issued an airworthiness directive (AD) to resolve the problem. The new probe (AD probe) incorporated a water drain hole and the redesign of total pressure plumbing. All TC probes have been removed from all airplanes.

#### *FIKI Probe*

Because it was determined that the AD probe did not have sufficiently uniform heat distribution, Eclipse developed a new probe that maintained the same aerodynamic design but distributed the heat more consistently. The flight into known icing (FIKI) probe was incorporated into production before Eclipse received FIKI approval. However, during the FIKI program, Eclipse started experiencing airspeed disagrees, and the subsequent investigation determined that the AOA side of the probe had no provision for draining and was freezing. The FAA and Eclipse are aware of these events and are currently developing corrective action.

### 6.1.2 Brakes

The SDR data set contained eight reports related to brakes. One additional SDR was received subsequent to the analysis to bring the total to nine reports. Subsequent follow-up by the ACO and Eclipse concluded that, because the system is unpowered, it is very sensitive to poor brake bleeding. Eclipse has detailed procedures in the airplane maintenance manual that, when properly followed, eliminate this condition. Eclipse is in the process of detailing a pedal design change to address some ergonomic issues raised by pilots.

### 6.1.3 Tires

The SDR data set contained six reports of tire failures upon landing. Three additional SDRs were received subsequent to the analysis to bring the total to nine reports. Many factors can contribute to the failures of the tires, including airplane speed at touchdown and improper brake application. Influencing these factors is the fact that the Eclipse 500 does not have an anti-skid system, speed brakes, or a lift dump system. Although these appear to be operational issues, Eclipse addressed these issues through pilot training, and is planning additional changes, including a more robust tire and ergonomic brake pedal changes that will help address high braking forces.

### 6.1.4 Leaking Engine Fire Suppression Bottles

The SDRs contained four reports of leaking fire bottles. A subsequent meeting with a CMO overseeing Eclipse 500 part 135 operations revealed that there have been additional fire suppression bottle failures not reported through the SDR system. The leaking bottles have caused corrosion damage, and extensive maintenance is required to clear the leak contamination. Subsequent follow-up by the ACO and Eclipse identified evidence of corrosion internal to the fire extinguisher cartridge. It was determined to be caused by contamination of the fire extinguishing agent. Improved quality control of handling of the agent is being implemented at the OEM. Changes to the cartridge to incorporate additional corrosion protection are under review.

### 6.1.5 Autopilot

The SDR data set contained two reports related to autopilot. A subsequent meeting with a CMO overseeing Eclipse 500 part 135 operations revealed a significant number of servo failures not reported through the SDR system. New troubleshooting procedures and software upgrades are pending for the yaw servos. [redacted].

In addition, information obtained from the Aviation Safety Hotline revealed that the autopilot system is sensitive to turbulence (even in light conditions) and quite often will disengage and will not easily reengage. Considering that the airplane is certified for single-pilot operations and normally operates in reduced vertical separation minimum airspace, autopilot failures will impact pilot workload in single-pilot operations. This information was made available to the SCR Team near the end of its evaluation process and requires additional study.

## 6.2 Other Information That Arose During the Special Certification Review

### 6.2.1 Single-Pilot Instrument Flight Rules (IFR) Evaluation

Some concern was raised during interviews conducted by SCR Team members regarding the early approval of the Eclipse 500 for single-pilot IFR operations. Although not included in the SCR Team charter, the SCR Team did review the crew workload evaluation process to the extent possible. To address single-pilot approval, Eclipse conducted a flightcrew workload evaluation September 19 through 29, 2006. The evaluation was conducted by Eclipse using FAA subject pilots. FAA human factors personnel also participated in the evaluation flights. Eclipse found that the workload for single-pilot operation is acceptable, provided the autopilot is operational, a headset mounted microphone is used, the transponder Ident button on the control stick is operational, and a Quick Reference Handbook (QRH) is available to the pilot to handle abnormal and emergency situations.

The FAA accepted the results of the crew workload evaluation and certified the airplane for single-pilot IFR operations.

### 6.2.2 Project Management *Understaffed*

#### *Flight Test Personnel at A CO*

The flight test element of the FAA's certification program was staffed by only one flight test pilot by the responsible ACO. There were no flight test engineers initially assigned to the program. One flight test engineer from another ACO was subsequently temporarily assigned to supplement the flight test program, but only after flight testing had commenced. This resulted in a very high workload for the pilot, with little support. Eventually, another flight test pilot was designated to be the primary flight test pilot. While this did not prevent proper evaluation of flight test elements of certification, it contributed to the improper selection of approach speeds and hampered AFM development.

#### SCR Team Finding No. 6

The FAA flight test function of the certification program was not staffed with an appropriate mix of flight test engineers and pilots. The lack of a full-time flight test engineering focal point for the program was detrimental to ensuring efficient documentation of issues, coordination, and follow up. This also led to excessive reliance on Eclipse personnel for management of the FAA flight test program.

### *Communications and Coordination*

From discussions with both Eclipse and FAA personnel and review of available data, it was apparent that cross-organizational communications and coordination were inadequate. AEG personnel stated that they did not provide feedback to the ACO, and vice versa. In addition, Eclipse Flight Test indicated they did not coordinate with the Eclipse Training organization. These apparent lapses in coordination resulted in information not being shared that could have revealed problem areas and given direction in early resolution of problems. (Examples can be found in the FSB evaluations in appendix B to this report.) Compounding the problem were the miscommunications between and among organizations, which appeared to promote a perception by some team members of inadequate certification compliance findings.

#### SCR Team Finding No. 7

Communication between departments in Eclipse and within the FAA was not effective and appeared to promote the perception by some team members of inadequate certification compliance findings.

### *Function & Reliability Testing*

Under § 21.35(b)(2), F&R testing is not a requirement for airplanes with a maximum certificated weight of 6,000 pounds or less. Historically, the level of complexity of an airplane has been proportionate to its weight. Because of its gross weight of less than 6,000 pounds, F&R testing was not required for the Eclipse 500. Nevertheless, Eclipse volunteered to do a 200-hour F&R test program, with 100 hours to be completed before type certification and 100 hours post-type certification. The pre-type certification F&R testing was completed September 29, 2006, the day before the TC was issued.

Although the company voluntarily conducted F&R testing and took limited certification credit for those tests, there was no specific pass/fail criteria defined, because it was not viewed by the FAA team as a requirement. Eclipse provided AFM procedures to address anomalies encountered during F&R testing before TC issuance.

#### SCR Team Finding No. 8

An F&R program was not required for the Eclipse 500. Eclipse voluntarily conducted F&R testing, but there were no criteria for determining successful completion of F&R. Nevertheless, the results of F&R testing were used to establish compliance with §§ 23.1301 and 23.1309 in some areas.

The newly designed VLJs have modern and integrated complex avionics. The traditional approach of defining certification requirements for part 23 airplanes based solely on maximum certificated weight is no longer valid.

# 7.0 FINDINGS

For ease of reference, the SCR Team findings are presented below.

## Finding No. 1

The SCR Team found that the means of compliance proposed for the Eclipse 500 EFIS was acceptable.

The SCR Team found that the data presented to the ACO was adequate for showing compliance with §§ 23.1301 and 23.1309 for the EFIS at the time of type certification.

The SCR Team found that because of time constraints, commonly used FAA internal communication processes (for example, issue papers or policy memorandums to provide guidance to the FAA project team) were not used to document the means of compliance. This led to differences of opinion within the certification team of whether the proposed guidance was suitable.

## Finding No. 2

The SCR Team did not discover any instances of simultaneous screen blanking affecting multiple screens during the certification program or after type certification. The SCR Team found that screen blanking was limited to blanking of a single screen, which is addressed by AFM procedures.

## Finding No. 3

The SCR Team found that the stall warning system was properly certified but the published approach speeds in abnormal flap landing configurations were incorrectly documented in the AFM at the time of initial type certification.

## Finding No. 4

The SCR Team determined that at the time of certification on conforming flight test articles there were no trim issues.

In-service reports indicate problems with reliability and, potentially, functionality of the trim control system.

## Finding No. 5

The SCR Team determined that the flap system was properly certified at the time of type certification and there were no type certification issues. The SCR Team found that most flap-related events were caused by system requirements errors that were mitigated for certification by AFM procedures and eventually resolved by software updates.

### Finding No. 6

The FAA flight test function of the certification program was not staffed with an appropriate mix of flight test engineers and pilots. The lack of a full-time flight test engineering focal point for the program was detrimental to ensuring efficient documentation of issues, coordination, and follow up. This also led to excessive reliance on Eclipse personnel for management of the FAA flight test program.

### Finding No. 7

Communication between departments in Eclipse and within the FAA was not effective and appeared to promote the perception by some team members of inadequate certification compliance findings.

### Finding No. 8

An F&R program was not required for the Eclipse 500. Eclipse voluntarily conducted F&R testing, but there were no criteria for determining successful completion of F&R. Nevertheless, the results of F&R testing were used to establish compliance with §§ 23.1301 and 23.1309 in some areas.

The newly designed VLJs have modern and integrated complex avionics. The traditional approach of defining certification requirements for part 23 airplanes based solely on maximum certificated weight is no longer valid.

# 8.0 Recommendations

Based on its review, the SCR Team's recommendations are presented below.

### Recommendation No. 1

The FAA should develop guidance for demonstrating compliance to regulatory requirements based on a combination of software and system development processes.

### Recommendation No. 2

The FAA should revise AC 23.1309–1C, Equipment, Systems, and Installations in Part 23 Airplanes, to address the emergence of turbine engine airplanes weighing 6,000 pounds or less maximum certificated weight.

### Recommendation No. 3

The FAA and Eclipse should conduct a root cause analysis of the operational trim and mistrim issues being reported in the field.

### Recommendation No. 4

The FAA and Eclipse should conduct a root cause analysis of the trim actuator failures documented through the SDR system and other in-service reports.

### Recommendation No. 5

All cognizant FAA offices (ACO, MIDO, AEG, and CMO) should work together to establish appropriate corrective action for fire suppression bottle failure issues documented through the SDR system and other in-service reports.

### Recommendation No. 6

The FAA should reevaluate the criteria for applicability of F&R testing.

# APPENDIX A ~ ACRONYMS

| | |
|---|---|
| **14 CFR** | Title 14, Code of Federal Regulations |
| **AC** | advisory circular |
| **ACO** | aircraft certification office |
| **ACP** | autopilot control panel |
| **ACS** | aircraft computer systems |
| **AD** | airworthiness directive air |
| **ADC** | data computer |
| **ADI** | altitude display indicator |
| **AEG** | Aircraft Evaluation Group |
| **AFM** | airplane flight manual |
| **AFS** | Flight Standards Service |
| **AHRS** | attitude and heading reference system |
| **AIR** | Aircraft Certification Service angle of attack |
| **AOA** | |
| **CAS** | crew alerting system |
| **CMO** | certificate management office |
| **EFIS** | electronic flight information system |
| **F&R** | function and reliability Federal |
| **FAA** | Aviation Administration functional |
| **FHA** | hazard assessment flight into known |
| **FIKI** | icing flight management system |
| **FMS** | Flight Standardization Board |
| **FSB** | Joint Aircraft System/Component Code |
| **JSAC** | liquid crystal display |
| **LCD** | multifunction display |
| **MFD** | minimum operational performance standard |
| **MOPS** | original equipment manufacturer primary |
| **OEM** | flight display quick reference handbook |
| **PFD** | service bulletin |
| **QRH** | |
| **SB** | |

| | |
|---|---|
| **SCR** | special certification review |
| **SDR** | service difficulty report |
| **SSA** | system safety assessment |
| **TC** | type certificate |
| **TIA** | type inspection authorization |
| **TIR** | type inspection report |
| **TSOA** | technical standard order authorization |
| **VLJ** | very light jet |

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# APPENDIX D — SDR SUMMARY OF RAW DATA

This section provides a table containing the raw data for the Eclipse 500 SDRs.

| SDR Report Number | Phase of Flight | SME Catogories | Narrative | Registration No. | Serial Number | Part Name | Part Location | Part Condition | Part Total Time |
|---|---|---|---|---|---|---|---|---|---|
| WGEA200800010 | TAKEOFF | AIRSPEED DISAGREEMENT | CAS MESSAGE AIRSPEED DISAGREE ON TAKEOFF, 70 KTS LIGHT RAIN CALM WINDS (ABORTED T/O). PERFORMED FLIGHT ENVIRONMENT DATA ADJUSTMENT TEST IAW EA 500 M/M 34-10-00. SYSTEM TEST AND CHECKS GOOD, NO DEFECTS NOTED. | 146DJ | 58 | WARNING MESSAGE | 7013348949 | FALSE ACTIVATION | |
| WGEA200800032 | TAKEOFF | AIRSPEED DISAGREEMENT | DURING T/O ROLL, CAS MESSAGE AIRSPEED DISAGREE AT 45KTS. REFERENCE DAYJET WORK ORDER 1434, NR-00002. CHECKED FOR WATER IN THE PITOT DRAINS IAW EA500 AMM 34-10-00. NO WATER FOUND. FOUND CODE 764 - AIRSPEED MISCOMPARE. C/W FLIGHT ENVIRO MENT DATA ADJUSTMENT/TEST IAW EA500 AMM 34-10-00. SYSTEM TEST AND CHECKS GOOD AT THIS TIME. NO DEFECTS NOTED. | 146DJ | 58 | UNKNOWN | | UNKNOWN | |
| WGEA200800056 | CLIMB | AIRSPEED DISAGREEMENT | AFTER TAKEOFF, CASS MESSAGE AS/ALT DISAGR EE, YD FAIL, RED X RIGHT ATT/AS/ALT FOR DURATION OF FLIGHT. MFD RED X ATT ONLY . REMOVED AND REPLACED RT PFD WITH REPAIRED UNIT IAW EA5OO AMM 31-10-16. PERFORMED DISPLAY AND CONTR OL PANEL-ADJ/TEST IAW EA500 AMM 31-10-00 AND TRANSPONDER SYSTEM ADJ/TEST IAW EA500 AMM 34-50-60. ALL CHECKS GOOD. VERIFIED TRANSPONDER N R 1 AND NR 2 COMPLY WITH FAR 91 .413, AND FAR PART 43 APP F. PERFORMED ALTITUDE REPORTING CORRELATION TEST PER PARA OF FAR PART 43 APP E, NO DATA CORRESPONDENCE ERRORS FOUND FOR TRANSPONDER NR 1 OR NR 2. | 152DJ | 71 | DISPLAY | ZONE 100 | FAILED | 64 |
| WGEA200700003 | CLIMB | AIRSPEED DISAGREEMENT | ON INITIAL LEVEL OFF AT 4000 FT ACCELERATING TO 220 KEAS HAD AIRSPEED DISAGREE, YAW DAMP FAIL AND AUTO PILOT FAIL CAS ME SSAGE. AUTO PILOT DISENGAGE, AIRSPEED 224 LEFT 216 RIGHT. SUP CLEANED PILOTS AND COPILOTS PITOT PROBES. PERFORMED PIT OT/STATIC VERIFICATION TEST. SYSTEM OP'S CHECK GOOD, AIRSPEED/ALTITUDE MATCHED PERFECTLY IAW EA 500 AMM 34-10-00. | 130DJ | 23 | PROBE | PITOT/STATIC SYS | OBSTRUCTED | 42 |
| WGEA200800053 | TAKEOFF | AIRSPEED DISAGREEMENT | DURING T/O, RECEIVED AIRSPEED DISAGREE AND STICK PUSHER FAIL MESSAGE. CPT AIRSPEED INDICATED 74 KTS ON TAXI IN AND 63 K TS STOPPED ON THE RAMP. RESOLVED ON W/O:1834 TASKCARD: NR-00001. REPLACED LT PITOT/AOA PROBE WITH NEW PROBE IAW AMM 34 -10-10. PERFORMED ADJUSTMENT/TEST IAW AMM 34-10-00. TESTED AIR DATA SYSTEM IAW AMM 34-10-00, NO AIRSPEED DISAGREE, SYS TEM CHECKS GOOD, NO DEFECTS NOTED. | 158DJ | 74 | PITOT TUBE | LEFT | DEFECTIVE | 112 |
| WGEA200800019 | CLIMB | AIRSPEED DISAGREEMENT | CENTER AIRSPEED AND ALTIMETER READS 200 FEET LOW AND 20 KNOTS RESPECTIVELY UP TO CRUISE ALTITUDE OF 2200 FEET. REMOVED AND REPLACED STANDBY PITOT/STATIC PROBE WITH SERVICEABLE PROBE IAW EA500 AMM 34-10-12. PERFORMED STANDBY PITOT/STATIC VE RIFICATION TEST. OPS CHECK GOOD IAW EA500 AMM 34-10-00. | 160DJ | 77 | PROBE | PITOT/STATIC | MALFUNCTIONED | 42 |
| WGEA200700009 | TAKEOFF | AIRSPEED DISAGREEMENT | AIRSPEED DISAGREE CAUTION DURING TAKEOFF ROLL. LEFT PFD INDICATED 55 KTS, RIGHT PFD INDICATED 65KTS. PERFORMED PITOT AN D STATIC VERIFICATION TEST IAW EA500 AMM 34-10-00. FAILED AT 6000 FEET AND 71 KNOTS. REMOVED AND INSTALLED A NEW NR 2 AIR DATA COMPUTER IAW EA500 AMM 34-10-16. PERFORMED FLIGHT ENVIRONMENT DATA ADJUSTMENT AND TEST IAW EA500 AMM 34-10-00. OPS CHECK GOOD. | 119DJ | 22 | ADC | ZONE 200 | OUT OF TOLERANCE | 114 |
| WGEA200700011 | TAKEOFF | AIRSPEED DISAGREEMENT | "AIRSPEED DISAGREE" CAS MESSAGE DURING TAKEOFF. RWY 09 KLAL, WINDS 060 AT 10 G15, MOD RAIN, XWIND 5-8 FROM LT, SPEEDS AT ABORT 68 LT PFD, 68 STBY, 74 RT PFD. SUPPLEMENTARY INFORMATION, PERFORMED FLIGHT ENVIRONMENT DATA ADJUSTMENT TEST IAW E A500 MM 34-10-00. SYSTEM GOOD TO SPECIFICATIONS. | 135DJ | 36 | WARNING MESSAGE | AIRSPEED | ILLUMINATED | |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200800006 | TAKEOFF | AIRSPEED DISAGREEMENT | AIRSPEED DISAGREE AT 45 KTS. AIRSPEED CHECK AT 25 KTS ON T/O ROLL WAS OK, WIND 160/9 LIGHT RAIN. USED RUNWAY 11. SUPPLEM ENTAL INFORMATION. INSPECTED PITOT/STATIC DRAIN LINES, NO WATER FOUND. PERFORMED PITOT STATIC LEAK CHECK AND PITOT/STAT IC PROBE VERIFICATION TEST IAW MM 31-10-00 ON BOTH ADC 1 AND ADC 2 SYSTEMS SIMULTANEOUSLY. ALL ALTITUDES AND AIRSPEEDS C HECKED GOOD. NO AIRSPEED DISAGREE CAS MESSAGE. NO DEFECTS NOTED. | 142DJ | 56 | INDICATOR | AIRSPEED | MALFUNCTIONED | |
| WGEA200800002 | TAKEOFF | AIRSPEED DISAGREEMENT | MX LOG PG NR1404 DISC NR 1 AND WO NR1096 AIRSPEED DISAGREE CAS MESSAGE ON TAKEOFF ROLL. ABORTED TAKEOFF. SUPPLEMENTAL IN FORMATION- PERFORMED FLIGHT ENVIRONMENT DATA ADJUSTMENT TEST FOR NR 1, NR 2 ADC'S AND LT AND RT PITOT/AOA PROBES IAW MM 31-10-00. ALL TESTS CHECK GOOD. NO DEFECTS NOTED. NO MORE THAN 1 KNOT SPLIT BETWEEN NR 1, NR 2, AIRSPEEDS. SUSPECT PREVI OUS (AIRSPEED DISAGREE) TO BE CAUSED BY MOISTURE. | 158DJ | 74 | INDICATION SYS | AIRSPEED | SPLIT | |
| WGEA200800027 | TAKEOFF | AIRSPEED DISAGREEMENT | ON TAKEOFF ROLL, NO AIRSPEED INDICATIONS ON LEFT PFD, MFD AND RIGHT PFD INDICATED UP TO 65KTS PRIOR TO ABORT. CONNECTED BARFIELD DPS 450 TO AIRCRAFT IAW AMM 34-10-00-070-701 TO SIMULATE AIRSPEED ON LEFT PFD. AIRSPEED CORRESPONDED WITH TES T BOX. SUSPECT MOISTURE WAS PRESENT EARLIER. | 158DJ | 74 | INDICATOR | AIRSPEED | MALFUNCTIONED | |
| WGEA200800005 | TAKEOFF | AIRSPEED DISAGREEMENT | AIR SPEED DISAGREE CAS MESSAGE AT 80 KTS. 15 KTS SPLIT, CAPTAIN SIDE FASTER. REMOVED AND REPLACED NR 1 ADC IAW EA500 M M 34-10-15, 34-10-00, OPS CHECK GOOD. | 152DJ | 71 | ADC | NR 1 | MALFUNCTIONED | 35 |
| WGEA200800054 | TAKEOFF | AIRSPEED DISAGREEMENT | AIRSPEED DISAGREE CAS MESSAGE DISPLAYED DURING TAKEOFF. SUPPLEMENTAL INFORMATION, RESOLVED ON W/O: 1826 TASKCARD: NR-00 001. REMOVED NOSE ACCESS PANEL 211CT, PILOT'S AND CO-PILOTS SEATS, DRAINED PITOT/AOA PROBES IAW AMM SUBTASK 34-10-00-06 1-611-00; PERFORMED PITOT/AOA LEAK TEST IAW AMM SUBTASK 34-10-00-071-701-001. TEST GOOD; PERFORMED PITOT AND STATIC VER IFICATION TEST IAW AMM SUBTASK 34-10-00-071-701-005. FOUND LEFT PFD AIRSPEED TO BE OUT OF LIMITS AND SUSPECT FAULTY NR 1 ADC ME 0020195 04.08.08. REMOVED UNSERVICEABLE ADC FROM NR 1 POSITION. INSTALLED SERVICEABLE ADC, WHICH WAS REMOVED FROM N139DJ NR 1 POSITION, AND INSTALLED IN NR 1 POSITION IAW AMM 34-10-15. COMPLETED ADJUSTMENT/TEST OF AIR DATA COMPU | 156DJ | 73 | ADC | NR 1 | FALSE INDICATION | 36 |
| WGEA200800030 | CLIMB | AUTO FLIGHT | ON CLIMB-OUT , AHRS FAILED AND STICK PUSHER FAILED. SUPPLEMENTAL INFORMATION, REMOVED AND INSTALLED AHRS NR 1 IAW EA 50 0 AMM 34-20-11. PERFORMED ATTITUDE AND DIRECTION SYSTEM ADJUSTMENT TEST FOR AHRS. SYSTEM CHECKS GOOD IAW 34-20-10. DU RING TROUBLESHOOTING ADC1 WAS ELECTRICALLY DISCONNECTED THEN RECONNECTED. PERFORMED FLIGHT ENVIRONMENT DATA ADJUSTMENT TEST FOR ADC IAW EA 500 AMM 34-10-00. ALL TESTS CHECK GOOD. VERIFIED TRANSPONDER NR 1 AND NR 2 COMPLIED WITH FAR 91.41 3 AND FAR PART 43 APPENDIX F. PERFORMED ALTITUDE REPORTING CORRELATION TEST PER PART (C) OF FAR 43 APPENDIX E. NO DATA CORRESPONDENCE ERRORS FOUND FOR TRANSPONDERS NR 1 OR NR 2. | 142DJ | 56 | AHRS | ZONE 200 | MALFUNCTIONED | 75 |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200700012 | TAKEOFF | AUTO FLIGHT | ON T/O ROLL, APR ARMED, THE A/P INOP AND YAW DAMPER FAIL CAS CAME ON. ABORTED TAKEOFF. CREW PERFORMED PROCEDURES IN QRH AND A/P TEST, ALL APPEARED NORMAL. SECOND T/O SAME. CHECKED CABLE TENSIONS ON YAW, PITCH AND ROLL SERVO'S. FOUND ROLL SERVO TO BE OUT OF LIMITS. YAW AND PITCH CHECKED WITHIN LIMITS. RIGGED ROLL SERVO CABLE IAW EA500 MM 27-00-01. PERFORME D AUTO FLIGHT SYSTEM ADJUSTMENT TEST IAW EA500 MM 22-00-00. SYSTEM OP'S CHECK GOOD. | 134DJ | 35 | CABLE | YAW DAMPER | OUT OF RIG | 89 |
| WGEA200700010 | APPROACH | BLANKING | LT PFD BECAME PIXELATED ON FINAL APPROACH, COMPLETLEY UNUSEABLE, RT PFD DISPLAY WERE FINE. PROBLEM CLEARED UP FEW MINUTE S LATER. REMOVED AND REPLACED LT PFD IAW EA500 AMM 31-10-16. PERFORMED DISPLAY AND CONTROL PANEL ADJUSTMENT/TEST IAW A MM 31-10-00 AND TRANSPONDER SYSTEM ADJUSTMENT/TEST IAW AMM 34-50-60. ALL CHECKS GOOD. VERIFIED NR 1 AND NR 2 COMPLY WIT H FAR 91.413, AND FAR 43 APPENDIX F. PERFORMED ALTITUDE REPORTING CORRELATION TEST IAW PARA.(C) OF FAR PART 43 APPENDIX E, NO DATA CORRESPONDENCE ERRORS FOUND FOR TRANSPONDER NR 1 AND NR 2. | 119DJ | 22 | DISPLAY | | MALFUNCTIONED | 119 |
| WGEA200700002 | TAXI/GRND HDL | BLANKING | DURING TAXI FOR TAKEOFF, SMELLED SMOKE, MFD STARTED TO DIM, SMOKE BEGAN TO POUR OUT FROM UNDER PANEL, SHUT DOWN ENGINE A ND TURNED OFF ALL ELECTRICS. SUP REMOVED AND REPLACED MFD WITH A NEW UNIT PER EA 500 AMM 31-10-15. INSPECTED ALL AREAS FORWARD OF MFD AND PFD'S TO INCLUDE HARNESSESS AND CONNECTORS NO DEFECTS OR DAMAGE NOTED. PERFORMED ALL FUNCTIONAL CHE CKS IAW AMM 31-10-00. ALL CHECKS GOOD. | 131DJ | 33 | DISPLAY | COCKPIT | MALFUNCTIONED | 15 |
| WGEA200800016 | LANDING | BRAKES | MAX PEDAL DEFLECTION REQUIRED TO STOP, SPONGY FEEL ON BRAKES. SERVICED BRAKE RESERVOIR AND BLED BRAKES, NO DEFECTS NOTE D, IAW EA 500 MM 32-40-00. | 141DJ | 55 | BRAKE | MLG | WEAK | |
| WGEA200700020 | LANDING | BRAKES | LT BRAKE PEDAL WENT TO THE FLOOR ON LANDING. RAPID PUMPING RESULTED IN SLIGHT BRAKE EFFECTIVENESS. DID NOT TO FULL PED AL UNTIL ON RAMP. SUPPLEMENTAL INFORMATION, REPLACED LT BRAKE WITH NEW BRAKE. PERFORMED SATISFACTORY BLEED, LEAK, AND O P'S CHECK. SERVICED BRAKE RESERVOIR I/AW EA 500 M/M 32-41-15 AND EA SEM 500-0063 REV A. | 145DJ | 57 | BRAKE | MLG | WEAK | 14 |
| WGEA200800014 | TAXI/GRND HDL | BRAKES | LEFT BRAKE FEELS SPONGY ON BOTH PILOTS PEDALS. PUMPING THE PEDAL DOES NOT BRING THE PRESSURE BACK. ACCESSED ALL TUBIN G CONNECTIONS TO ALL LEFT BRAKE COMPONENTS, ALL TUBING RUNS CHECKED FOR SECURITY AND LEAKAGE, ALL CHECKED GOOD. VERIFIE D PROPER RESERVOIR SERVICE, REPLACED LEFT BRAKE WITH NEW UNIT AND PERFORMED A SATISFACTORY BLEED, LEAK AND OPS CHECK IAW EA500 MM 32-41-15. | 161DJ | 78 | BRAKE | MLG | MALFUNCTIONED | 31 |
| WGEA20070017 | LANDING | BRAKES | VERY LITTLE LEFT BRAKE ON LANDING, PEDAL TO THE FLOOR, RIGHT BRAKE IS NORMAL. PERFORMED BRAKE BLEEDING ON BOTH BRAKES I AW 32-40-00. BRAKES OPERATE WITH NO DEFECTS NOTED IAW EA500 M/M 32-40-00. | 145DJ | 57 | BRAKE | LEFT | RESTRICTED | |
| WGEA200800009 | NOT REPORTED | BRAKES | LEFT BRAKE SPONGY ON BOTH PILOT AND COPILOT POSITIONS. REMOVED AND REPLACED CO-PILOTS LT MASTER CYLINDER WITH NEW MASTE R CYLINDER IAW EA500 AMM 32-41-11. BLED BRAKES IAW EA 500 AMM 32-40-00. OP'S CHECK AND LEAK CHECK GOOD. | 161DJ | 78 | MASTER CYLINDER | LT BRAKES | WEAK | 21 |

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| WGEA200700025 | LANDING | BRAKES | UPON LANDING IN BOCA, COPILOTS (RIGHT SIDE) LEFT BRAKE PEDAL HAD NO PRESSURE OR BRAKING, EVEN AFTER 2 OR 3 PUMPS. SOME BRAKING WAS RESTORED AFTER 5-7 PUMPS ON CAPTAINS LEFT BRAKE PEDAL. SUPPLEMENTAL INFORMATION, REPLACED COPILOTS LT MASTE R CYLINDER WITH A NEW CYLINDER. RETORQED PRESSURE B-NUT IN PEDESTAL FWD AREA. PERFORMED SATISFACTORY BLEED, LEAK, OP' S CHECK OF BRAKE SYSTEM IAW EA 500 M/M 32-41-11, 20-05-00, 32-40-00. | 145DJ | 57 | MASTER CYLINDER | COPILOT BRAKE | MALFUNCTIONED | |
| WGEA200700018 | LANDING | BRAKES | LEFT BRAKE INOP. REMOVED AND REPLACED PILOTS LEFT MASTER CYLINDER (LEAKING) WITH A NEW MASTER CYLINDER IAW EA500 AMM 32 -41-11. BLED AND SERVICED BRAKE SYSTEM IAW EA500 AMM 32-40-00. TAXI CHECK GOOD. | 145DJ | 57 | MASTER CYLINDER | ZONE 700 | LEAKING | 12 |
| WGEA200800008 | NOT REPORTED | BRAKES | LEFT BRAKE ON PILOT AND COPILOT FEELS SPONGY. SUPPLEMENTAL INFORMATION, REMOVED AND REPLACED PILOTS LT BRAKE MASTER CYL INDER WITH NEW MASTER CYLINDER IAW EA 500 M/M 32-40-00. OP'S CHECK GOOD. | 161DJ | 78 | MASTER CYLINDER | LT BRAKES | WEAK | 18 |
| WGEA200800021 | CRUISE | CABIN PRESSURE | PRESSURIZATION OVER PRESSURIZING AT 18,000 FEET. CABIN ALTITUDE READS +250 FEET AND 8.4 DIFFERENTIAL. ON DECK WITH DOO R OPEN CABIN PRESSURE READS 600 FEET. REFERENCE DAYJET WORK ORDER 1299, NRI 2. REMOVED AND REPLACED PRIMARY OUTFLOW VA LVE IAW EA500 AMM 21-30-12. PERFORMED CPCS OUTFLOW VALVE ADJUSTMENT/TEST IAW EA500 AMM 21-30-01. OPS CHECK GOOD. PERF ORMED PRIMARY AND SECONDARY OUTFLOW VALVE DELTA-P LIMITER TEST IAW EA500 AMM 21-30-03. OPS CHECK GOOD. | 139DJ | 54 | OUTFLOW VALVE | ZONE 100 | DEFECTIVE | 91 |
| WGEA200800020 | CRUISE | CABIN PRESSURE | AT ALTITUDE THE DOOR LIGHT CAME ON, FOLLOWED BY CABIN DP HIGH LIGHT DP NOTED AS 8.6 PSI W/CABIN ALTITUDE INDICATING MUCH LOWER THAN NORMAL. TURNED OFF THE AIR SOURCE SELECTOR AND DESCENDED. CABIN ALTITUDE INDICATED, 500 FEET, EVEN AFTER D UMPING THE CABIN ON FINAL APPROACH, AND ON THE GROUND W/THE CABIN DOOR OPEN. REFERENCE WORK ORDER 1296, NRI 1. REPLACE D SECONDARY OUTFLOW VALVE PER EA500 AMM 21-30-13. ADJUSTED DOOR SENSOR PER EA500 AMM 52-00-00. PERFORMED PRESSURIZATION TEST PER EA500 AMM 21-30-03. OPS CHECK GOOD, NO FAULTS OR DEFECTS FOUND. | 153DJ | 72 | OUTFLOW VALVE | ZONE 100 | DEFECTIVE | 42 |
| WGEA200800031 | LANDING | CABIN PRESSURE | FIELD ELEVATION SET AT 200 FT', AIRCRAFT LANDED PRESSURIZED (2.0) PSI. USED MAN/DUMP BUT COULD NOT DEPRESSURIZE EVEN AF TER ENGINE OF, FINALLY DEPRESSURIZED. REFERENCE DAYJET WORK ORDER 1425, NRI 1. REMOVED AND REPLACED PRIMARY AND SECOND ARY OUTFLOW VALVES IAW EA500 AMM 21-30-12 AND 21-38-13. OPS CHECK GOOD. | 153DJ | 72 | OUTFLOW VALVE | ZONE 100 | DEFECTIVE | 44 |
| WGEA200700008 | CLIMB | COMM - WIRING | NR 1 COMM WOULD NOT TRANSMIT OR RECEIVE DURING FLIGHT. HAPPENED DURING CLIMB FROM FL 090 TO 110. FOUND BAD COMM NR 1 C OAX CABLE. REMOVED AND REPLACED COMM NR 1 COAX CABLE IAW EA500 AMM 23-10-00. PERFORMED VOICE COMMUNICATION ADJUSTMENT TEST IAW EA500 AMM 23-10-00. CHECKED GOOD. RESECURED AND PERFORMED ADJUSTMENT TEST OF LEFT PFD IAW EA500 AMM 31-10-00. OPS CHECK GOOD. VERIFIED TRANSPONDER NR 1 AND NR 2 COMPLY WITH FAR 91.413 APPENDIX F. PERFORMED ALTITUDE CORRELATION TEST PER PARAGRAPH C OF FAR PART 43 APPENDIX E. NO DATA CORRESPONDENCE ERRORS FOUND FOR TRANSPONDERS NR 1 AND NR 2. | 135DJ | 36 | COAX | NR 1 COMM | DEFECTIVE | 43 |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200700026 | CLIMB | DOOR | PASSING THROUGH 18,000 FT, DOOR CAS MESSAGE CAME ON, DESCENDING THROUGH 9000 FT DOOR LIGHT WENT OUT. PRESSURIZATION NOR MAL. PERFORMED CABIN PRESSURIZATION TEST IAW EA500 AMM 21-30-03. FOUND PAX DOOR TO BE OUT OF ADJUSTMENT. ADJUSTED PAX DOOR IAW EA500 AMM 52-00-00. PERFORMED CABIN PRESSURIZATION TEST, NO UNSAFE DOOR CAS MESSAGE, NO OTHER DEFECTS NOTED I AW EA500 AMM 21-30-03. | 132DJ | 34 | DOOR | ZONE 800 | OUT OF ADJUST | 180 |
| WGEA200700005 | CLIMB | DOOR | DOOR WARNING LIGHT ILLUMINATED AT TOP OF CLIMB (FL260, CABIN ALT. 3800', ROC -0) 30 MINUTES LATER ON DESCENT UPON REACHI NG 10,000 FT, LIGHT WENT OUT (2500 CABIN ALT AP: 5.4, ROC 0). ADJUSTED AFT DOOR LOCK PROX SWITCH AND COMPLIED WITH DOOR TEST IAW EA500 AMM 52-00-00-071-011. | 119DJ | 22 | PROXIMITY SWITCH | DOOR | OUT OF ADJUST | |
| WGEA200800052 | CRUISE | DOOR | DURING CRUISE FLIGHT PASSENGER DOOR WARNING LIGHT CAS MESSAGE POSTED. ADJUSTED FWD DOORS SWITCH LAW EA 500 AMM 52-00-00 . OPS CHECK GOOD LAW EA 500 AMM 21-30-03, CABIN PRESSURE VESSEL ADJ/TEST. | 158DJ | 71 | SWITCH | PAX DOOR | OUT OF ADJUST | |
| WGEA200800042 | CRUISE | DOOR | CLIMBING THROUGH FL 230, GOT DOOR WARNING CAS. VISUALLY INSPECTED THE DOOR LOCKS (5 GREEN). CAS CLEARED BELOW 10,000 F T, LANDING IN GNV. INSPECTED DOOR PROX SENSOR. FOUND SENSOR TO BE OUT OF ADJUSTMENT. ADJUSTED SENSOR AND PERFORMED SE NSOR TEST. NO UNSAFE DOOR CAS MESSAGES NOTED. TEST CHECKED GOOD IAW EA500 AMM 52-00-00. | 161DJ | 78 | PROXIMITY SENSOR | DOOR | OUT OF ADJUST | |
| WGEA200800023 | CRUISE | DOOR | DOOR CAS MESSAGE ON AT 17,200 FEET ALTITUDE, DP 6.2, CABIN ALTITUDE 1750 FEET. CAS MESSAGE OFF AT 10,000 FEET ALTITUDE, 1,000 FEET CABIN ALTITUDE AND 4 DP. ADJUSTED FORWARD DOOR SENSOR, AND PRESSURIZED AIRCRAFT IAW EA500 AMM 52-00-00 AND 21-30-03. NO CAS MESSAGE. ALL CHECKS GOOD. | 163DJ | 81 | PROXIMITY SWITCH | PAX DOOR | OUT OF ADJUST | 19 |
| WGEA200800033 | TAKEOFF | ENGINE OIL SYSTEM | DURING T/O ROLL, NR 1 ENGINE OIL PRESSURE 8.2 PSI, AMBER, DISCONTINUED T/O. PERFORMED ENGINE RUN OIL PRESSURE GOOD AT I DLE AND MAX POWER. AT MAX POWER READ 5.2 ON LEFT ENGINE AND 4.9 ON RIGHT ENGINE. OPS CHECK GOOD IAW EA500 AMM 71-00-00 . | 163DJ | 81 | UNKNOWN | NR 1 ENGINE | UNKNOWN | |
| WGEA200700015 | CRUISE | ENGINE OIL SYSTEM | SHUT DOWN RIGHT ENGINE, ACCT LOW OIL PRESSURE WARNING. RIGHT ENGINE OPERATED AT WINDMILL RPM FOR APPROXIMATE 20 MINUTES . RIGHT ENGINE PARAMETERS OTHER THAN OIL PRESSURE WERE NORMAL. REMOVED AND REPLACED RIGHT ENGINE MOP/MOT SENSOR IAW P& WC EMM 79-30-04, AND RIGHT ENGINE ACS WIRING HARNESS IAW P&WC EMM 73-20-02. | 131DJ | 33 | SENSOR | RT ENGINE | MALFUNCTIONED | 6 |
| 2007FA0000680 | TAXI/GRND HDL | ENGINE OIL SYSTEM | RT ENG HIGH OIL TEMPERATURE CAS MESSAGE UPON LANDING. EXCEEDANCE (OIL TEMP) AFTER LANDING-ENGINE SHUTDOWN DURING TAXI. F OUND FAULTY MOT/MOP SENSOR REPLACED WITH NEW UNIT AND OPERATIONALLY CHECKED SATISFACTORY IAW EMM 79-30-04. | 116DJ | 21 | SENSOR | OIL TEMP | FAULTY | 32 |
| WGEA200700024 | TAXI/GRND HDL | EXTINGUISHING SYSTEM | EVIDENCE OF FIRE SUPPRESSION AGENT LEAKING INTO RIGHT ENGINE. SUPPLEMENTAL INFORMATION, CLEANED ENGINE IAW PWC EMM 71-0 0-00-108-808 AND PWC FSR RECOMMENDATION LETTER. | 115DJ | 20 | FIRE BOTTLE | RT NACELLE | LEAKING | 190 |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200800029 | INSP/MAINT | EXTINGUISHING SYSTEM | NR 2 ENGINE FIRE BOTTLE IS LEAKING, IT WAS LEAKING WHEN DISCONNECTED FOR 300 HOUR, NO EXTERNAL LEAK ON ENGINE. REMOVED AND REPLACED WITH NEW RIGHT PHOSTREX BOTTLE IAW EA500 AMM 26-20-10. INSPECTED ENGINE AND UPPER AND LOWER COWL FOR ANY P HOSTREX RESIDUE AND CLEANED AS REQUIRED. FOLLOWING CLEANUP PROCEDURES IAW EA500 AMM 26-20-00. SUPPRESSION AGENT CLEANU P PROCEDURES AND EMM 05-50-00-210-811, 05-50-16-021-801, AND 71-00-00. | 115DJ | 20 | FIRE BOTTLE | NR 2 NACELLE | LEAKING | 152 |
| WGEA200800035 | INSP/MAINT | EXTINGUISHING SYSTEM | RIGHT ENGINE FIRE BOTTLE LEAKING. REMOVED ENGINE COWLINGS AND PYLON PANELS, RIGHT SIDE FOR ACCESS. REMOVED RIGHT FIRE BOTTLE IAW EA500 AMM 26-20-10. INSTALLED A NEW RIGHT ENGINE FIRE BOTTLE IAW EA500 AMM 26-20-10. RE INSTALLED ENGINE CO WLINGS AND PYLON PANELS AS REQUIRED IAW EA500 AMM 26-20-10. | 136DJ | 37 | FIRE BOTTLE | RT NACELLE | LEAKING | 170 |
| WGEA200800004 | INSP/MAINT | EXTINGUISHING SYSTEM | LT ENGINE FIRE EXTINGUISHER CARTRIDGE PRESSURE IN RED BAND. EVIDENCE OF LEAKAGE INSIDE COWLINGS AND ON NUMEROUS PARTS OF THE ENGINE. SUPPLEMENTAL INFORMATION- REMOVED AND REPLACED LT ENGINE PYLON FIRE EXTINGUISHER CARTRIDGE IAW MM 26-20-00 REV NR 11 FIRE SUPPRESSION AGENT CLEANUP PROCEDURES AND EMM 05-50-00 AND 71-00-00. | 147DJ | 59 | CARTRIDGE | LT EXTINGUISHE R | LEAKING | 70 |
| WGEA200700001 | DESCENT | FLAP-ACTUATOR | FLAP FAIL CAS MESSAGE IN FLIGHT. REMOVED AND REPLACED LT AND RT INBOARD FLAP ACTUATORS PER EA 500 AM CH 27-51-11. RIGG ED FLAP'S AND COMPLIED WITH SATISFACTORY FUNCTIONAL/OPERATIONAL CHECKS. | 109DJ | 6 | ACTUATOR | T/E FLAPS | MALFUNCTIONED | 205 |
| WGEA200800028 | TAXI/GRND HDL | FUEL SYSTEM | FUEL VENTING OVERBOARD ON RIGHT WING AFTER ENGINE START. TOTALIZER READ 1,470 LBS, RIGHT WING INDICATED 680 LBS, LEFT W ING 750 LBS. VISUALLY JET WAS TOPPED OFF. AFTER START JET AUTO TRANSFER FUEL FROM LEFT TO RIGHT. DEFUELED AND SUMPED PER EA500 AMM 12-10-01. PERFORMED FUEL PROBE CALIBRATION AND FUEL GAUGING TEST IAW EA500 AMM 28-40-00. RIGHT SIDE FAIL ED TEST. FOUND BAD PROBE IN BAY 9 AND 12. REMOVED AND REPLACED BAD PROBE IAW EA500 AMM 57-10-11. PERFORMED ATP DATA EN TRY FOR NEW PROBES, DRY CALIBRATION AND WET CALIBRATION TEST PER EA500 AMM 28-40-00. CHECKED GOOD. | 132DJ | 34 | PROBE | ZONE 600 | DEFECTIVE | 208 |
| WGEA200800024 | TAXI/GRND HDL | FUEL SYSTEM | FUEL IMBALANCE CAS MESSAGE, AUTO TRANSFER LEFT TO RIGHT RESULTED IN FUEL BEING PUMPED OVERBOARD THROUGH RIGHT WING VENT DURING TAXI. COMPLIED WITH WALK AROUND INSPECTION TO CHECK VENTS AND TANKS. CONNECTED AMC TO AIRCRAFT IAW EA500 AMM 25 -40-00 FOR GAUGING WET TEST ALL PROBES, CHECKED GOOD, ALSO COMPLIED WITH MFD FUEL SYNOPTIC TEST PAGE CHECK IAW EA500 AMM 31-10-00. WITH ENGINES RUNNING COMPLIED WITH EA500 AMM FUEL SYSTEM CHECK 28-00-00, CHECKED GOOD. | 132DJ | 34 | INDICATION SYS | FUEL | MALFUNCTIONED | 208 |
| WGEA200800036 | CRUISE | FUEL SYSTEM | FUEL GAUGING FAULT CAS MESSAGE. ASSIGNED TO MDDR CONTROL NR 421. A/C RELEASED PER MEL 28-01. OK FOR SERVICE. REFERENC E DAYJET WORK ORDER 1396, NR-00001. TROUBLE SHOT FUEL GAUGING FAULT, FOUND HARNESS 39A01P05 OFF THE LEFT APC CHAFED AND TO BE DEFECTIVE. REMOVED AND REPLACED HARNESS IAW EA500 WRM. PERFORMED OPERATIONAL CHECKS IAW EA500 AMM 28-40-00, 71-0 0-00, AND 31-10-00, NO DEFECTS WERE NOTED. FUEL GAUGING SYSTEM FUNCTION WITH NO DEFECTS NOTED. | 145DJ | 57 | WIRE HARNESS | APC | CHAFED | 121 |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200800039 | CRUISE | GPS | DME AND GS INDICATIONS FAILED IN FLIGHT. TRIED GNV, OCF, LAL BUT NO DME. DURING RTB, DME AND GS CAME BACK INTERMITTENT . SUPPLEMENTAL INFORMATION, PERFORMED GPS ADJUSTMENT TEST IAW EA 500 AMM 34-50-10. NO DEFECTS NOTED AT THIS TIME. PER FORMED A/C TAXI AND VERIFIED GROUND SPEED INDICATION ON BOTH PFD'S IAW EA500 AMM 9-20-00. | 153DJ | 72 | GPS | | MALFUNCTIONED | |
| WGEA200700023 | CRUISE | LANDING GEAR | DURING EVALUATION FLIGHT, RIGHT MAIN GEAR INDICATED UNSAFE IN TRANSITION-TOOK APPROXIMATELY 20 SECONDS TO INDICATE GREEN . FIRST EXTENSION NORMAL, SECOND EXTENSION WAS WHEN GEAR INDICATED UNSAFE AND 20 SECONDS TO GREEN, DOWN AND LOCKED. PE RFORMED EXTENSION AND RETRACTION TEST OF MLG SYSTEM IAW EA500 AMM 32-30-00, NO DEFECTS NOTED WITH GREEN INDICATIONS AND TIMING. | 110DJ | 7 | LANDING GEAR | RIGHT | MALFUNCTIONED | |
| WGEA200700022 | LANDING | LANDING GEAR | UPON EXTENSION, LEFT MAIN LANDING GEAR REMAINS IN TRANSIT 15 SECONDS AFTER EXTENSION ( LONGER THAN OTHER TWO GEAR). PER FORMED 10 GEAR CYCLES IAW EA500 AMM 32-30-00. SYSTEM OPERATES SATISFACTORY WITH NO DEFECTS NOTED. ALSO TIMED GEAR DURIN G 10 CYCLES AND AVERAGED 9.5 SECONDS ON DOWN TRAVEL. PERFORMED ADJUSTMENT TEST OF MAIN GEAR/DOORS IAW EA500 AMM 32-10-0 0 ALL CLEARANCES AND ADJUSTMENT FOUND TO BE WITH IN LIMITS. | 110DJ | 7 | LANDING GEAR | LEFT | MALFUNCTIONED | |
| WGEA200700019 | TAXI/GRND HDL | LANDING GEAR | LANDING GEAR FAIL AMBER CAS MESSAGE ILLUMINATED ON TAXI IN. FLASHED NUMEROUS TIMES AND CUTOUT NUMEROUS TIMES. REMOVED AND REPLACED RIGHT MLG ACTUATOR WITH A NEW UNIT IAW EA500 AMM 32-30-20. PERFORMED NORMAL EXTENSION AND RETRACTION CHECK , AND EMERGENCY EXTENSION CHECK, ALL CHECKED GOOD IAW EA500 AMM 32-30-00. | 109DJ | 6 | ACTUATOR | MLG | MALFUNCTIONED | 292 |
| WGEA200700014 | LANDING | LANDING GEAR | LANDED WITH LANDING GEAR FAIL CAS. RIGHT MAIN GEAR NOT DOWN AND LOCKED. REMOVED AND REPLACED RIGHT MAIN LANDING GEAR A CTUATOR, OPS CHECK GOOD IAW EA500 AMM 32-30-20. | 135DJ | 36 | ACTUATOR | ZONE 700 | FAILED | 54 |
| WGEA200800012 | CLIMB | LANDING GEAR | "LANDING GEAR FAIL" CAS MESSAGE DISPLAYED IN FLIGHT AFTER GEAR RETRACTION. LEFT MAIN GEAR INDICATED UNSAFE AFTER SELECT ING GEAR HANDLE DOWN, THREE GREEN INDICATED (GEAR DOWN), LANDING UNEVENTFUL. DAYJET WORK ORDER 1218, NRI 1. TROUBLESHO T LANDING GEAR FOUND LEFT MLG ACTUATOR DEFECTIVE. REMOVED AND REPLACED LEFT MLG ACTUATOR WITH NEW UNIT IAW EA 500 AMM 3 2-30-20. PERFORMED ALL OPERATIONAL CHECKS OF LANDING GEAR SYSTEM IAW EA 500 AMM 32-30-00. ALL SYSTEM CHECK WERE SATISF ACTORY WITH NO DEFECTS NOTED. | 153DJ | 72 | ACTUATOR | LT MLG | DEFECTIVE | 31 |
| WGEA200800049 | TAXI/GRND HDL | LANDING GEAR | TAKING THE RUNWAY AT A SLOW SPEED, AND STEERING DISPLACEMENT AT 10 PERCENT TO 15 PERCENT RATE OF TURN. AIRCRAFT LOST ST EERING CAPABILITY (CASTERED), TRY TO REENGAGE 2 TIMES, RETURN TO GATE. REMOVED NOSE GEAR ASSEMBLY AND INSTALLED NEW ASS EMBLY IAW EA500 AMM 32-20-10 AND TSR 32-031708G. PERFORMED NOSE GEAR AND DOORS ADJUSTMENT/TEST IAW EA500 AMM 32-20-00. PERFORMED STEERING ADJUSTMENT/TEST IAW EA500 AMM 32-50-00. ALL CHECKS GOOD. | 146DJ | 58 | STEERING SYS | NLG | MALFUNCTIONED | 139 |
| WGEA200700006 | UNKNOWN | MISC | VERTICAL STABILIZER LEADING EDGE PANEL HAS NUMEROUS DINGS THROUGH PAINT AND INTO COMPOSITE. REPAIRED VERTICAL STABILIZE R LEADING EDGE IAW EA500 AMM 20-09-00 AND SRM 51-70-01. REFERENCE ECLIPSE AVIATION TECHNICAL SERVICE REGUEST FSR CASE 5 3-090507. | 109DJ | 6 | SKIN PANEL | VERTICAL STAB | DAMAGED | 250 |

| SDR Report Number | Phase of Flight | SME Catogories | Narrative | Registration No. | Serial Number | Part Name | Part Location | Part Condition | Part Total Time |
|---|---|---|---|---|---|---|---|---|---|
| WGEA200700007 | CLIMB | PFD | INTERMITTENT COM 1 TRANSMIT PROBLEM ON CLIMB OUT. ON COM 2 DISPLAY ON L PFD, R PFD/COM. WORKED NORMALLY UNTIL LEVEL AT CRUISE. THEN UNABLE TO TR/RX ON COM 1 ON EITHER SIDE. COM 2 FUNCTIONED NORMALLY, BUT THEN STUCK ON 121.8 (LAST FREQ I N ACTIVE). ACTIVE (WINDOW) AND UNABLE TO SWAP FREQUENCY OR CHANGE STBY MORE THAN 1 MBZ 5 MINUTES LATER L PFD COM1/COM2 BUTTON CONTROLLED COM1/COM 2SELECTION ON R PFD. MINUTES LATER L PFD NAV FUNCTIONS FAILED INCLUDING NAV1,NAV2 WORKED BUT WAS UNCHANGEABLE IN FREQUENCY FIELDS. LANDING WHITE ADVISORY CAS "AVIONICS DATA BUSS FAIL". REMOVED AND REPLACED LEFT P FD WITH A REPAIRED UNIT IAW EA500 AMM 31-10-16. PERFORMED OPERATIONAL CHECKS OF LEFT PFD IAW EA500 AMM 31-00-00, NO DEF | 135DJ | 36 | DISPLAY | COCKPIT | MALFUNCTIONED | 42 |
| WGEA200800038 | CRUISE | RIGGING-AILERON | AILERONS STIFF, A/P HAS DIFFICULTY RESPONDING TO FD COMMANDS ALSO. INSTALLED A NEW LEFT AILERON BELLCRANK IAW EA500 AMM 27-11-17. INSTALLED A NEW LEFT AILERON JOINT ASSEMBLY IAW EA500 AMM 27-11-18. C/W FLIGHT CONTROLS ADJUSTMENT/TEST (FU NCTIONAL CHECK) IAW EA500 AMM 27-00-00-071-801-B. | 139DJ | 54 | BELLCRANK | AILERONS | BINDING | 112 |
| WGEA200800037 | INSP/MAINT | RIGGING-AILERON | INSPECT LEFT AND RIGHT AILERON BELLCRANKS FOR CONDITION AND SECURITY. INSPECTED AILERON CONTROLS FROM AFT SECTOR TO BEL LCRANK AND FOUND RIGHT BELLCRANK WITH EXCESSIVE FRICTION SEE NR-00002. REMOVED RIGHT AILERON TO GAIN ACCESS. REPLACED A ILERON JOINT FITTING ASSEMBLY WITH NEW UNIT IAW EA500 AMM 27-11-18. INSTALLED AILERON AND CHECKED FOR PROPER RIGGING IA W EA500 AMM 27-11-21. CHECKED AILERON SYSTEM FOR FRICTION, NO DEFECTS NOTED. | 141DJ | 55 | BELLCRANK | AILERONS | BINDING | 59 |
| WGEA200800045 | CRUISE | RIGGING-AILERON | COMPLIED WITH ECLIPSE TSR 27-030508G REV C. NO DEFECTS NOTED. PERFORMED AILERON FRICTION TEST, AILERON TENSION TEST AS PRESENTED IN SEC 12.3, PAGE 35 OF FLT CONTROL RIGGING SPEC. 27-109846 REV. 5, PERFORMED MEASUREMENT OF AILERON SKIN CON TOUR EAC AERO 07-500 015 SDR REV C. REFERENCE LOGBOOK PAGE 0901 ITEM 1. EVAL FLIGHT UNSATISFACTORY, AIRCRAFT STILL REQ UIRES EXCESSIVE AILERON TRIM. | 142DJ | 56 | AILERON | | OUT OF RIG | |
| WGEA200800051 | CRUISE | RIGGING-AILERON | FOUND LT AILERON JOINT AND BELLCRANK BINDING. REMOVED LT AILERON, REPLACED LT BELLCRANK AND JOINT ASSY WITH NEW. REINS TALLED LT AILERON. VERIFIED RT AILERON DOES NOT HAVE ANY BINDING. COMPLIED WITH SATISFACTORY OP'S CHECK OF LT BELLCRAN K AND JOINT. COMPLIED WITH TRAVEL CHECKS OF LT AND RT AILERONS. NO DEFECTS NOTED. ALL WORK DONE IAW EA500 MM 27-11-21 , 27-11-17, TR 27-3, 27-11-18, AND 27-00-00. | 148DJ | 61 | BELLCRANK | AILERON SYS | BINDING | 156 |
| WGEA200800050 | CRUISE | RIGGING-AILERON | IN FLIGHT AILERON FLIGHT CONTROL SIDE STICK FEELS VERY NOTCHY WHEN ROLLING LEFT OR RIGHT. SUPPLEMENTAL INFORMATION-GAIN ED ACCESS TO RT AILERON JOINT, FOUND IT TO BE BINDING. REPLACED JOINT AND BELLCRANK WITH NEW. CHECKED LT AILERON JOINT AND FOUND IT TO BE FREE MOVING. ALL WORK DONE IAW EA500 MM TR 27-1, 27-11-18 AND 27-11-17. LT AND RT AILERON POS 4 PU SH RODS ARE BOTH SECURED AND SAFETIES IAW EA500 MM 27-11-16. NO ROD ADJUSTMENTS WERE DONE. ACCESS PANELS REINSTALLED I AW EA500 MM 06-50-00. REMOVAL AND INSTALLATION OF RT AILERON DONE IAW EA500 MM 27-11-21. PERFORMED FUNCTIONAL TEST (TR AVEL CHECKS) IAW EA500 MM 27-00-00-071-8-701-001. NO DEFECTS NOTED. | 162DJ | 79 | BELLCRANK | AILERON SYS | BINDING | 99 |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200800044 | CRUISE | RIGGING-AILERON | REPLACED AILERON TRIM SPRING WITH NEW TRIM SPRING IAW AMM 27-11-20. PERFORMED AILERON TRIM SYSTEM ADJUSTMENT/TES IAW AM M 27-00-01. SYSTEM TEST AND CHECKS GOOD, NO DEFECTS NOTED. ITEM 1. FLIGHT WAS UNSATISFACTORY. AT 220KTS 82 PERCENT OF TRIM WAS REQUIRED TO MAINTAIN STRAIGHT AND LEVEL FLIGHT. AT 160 KTS 30 PERCENT TRIM (AILERON TRIM) WAS REQUIRED. P ERFORMED FLAP RIGGING IAW AMM 27-50-00 AND EA TSR 27-030408G. RIG CHECKED GOOD. VERIFIED FLAPS ARE AT 0 PERCENT. EVAL UATION FLIGHT UNSATISFACTORY. AT 250 KTS REQUIRES AILERON TRIM IN EXCESS OF 101 PERCENT LWD. AT 220 KTS, 37 PERCENT L WD. AT 160 KTS, 23 PERCENT LWD. FOUND RT FLAP TO HAVE EXCESSIVE PLAY, ADJUSTED FLAP IAW AMM 27-50-00. FLAPS OPERATE | 142DJ | 56 | SPRING | AILERON TRIM | DAMAGED | 78 |
| WGEA200800043 | CRUISE | RIGGING-AILERON | FOUND RIGHT FLAP, OUTBOARD END TO BE .5 DEGREE HIGHER THAN THE INBOARD END AND THE WHOLE LEFT FLAP. THIS IS WITHIN LIMI TS, ADJUSTED TO MATCH THE INBOARD END AND THE LEFT FLAP IAW EA500 AMM 27-50-00. RIG CHECKED BOTH AILERONS AND FOUND THE M TO BE THE SAME AND WITHIN AMM LIMITATIONS. RIG CHECKED THE ELEVATOR AND ELEVATOR TRIM TABS AND FOUND THEM TO BE THE S AME AND TO BE WITHIN AMM LIMITS, PERFORMED ALL RIG CHECKS AND ADJUSTMENTS IAW EA500 AMM 27-00-00. REFERENCE LOGBOOK PAG E 0897, ITEM 3. EVALUATION FLIGHT UNSATISFACTORY. IN CRUISE, FLAPS UP, 220 KNOTS, AILERON TRIM REQUIRED 41 PERCENT LWD . WITH FLAPS LDG, 105 KTS, REQUIRED 37 PERCENT LWD. PITCH TRIM NORMAL. REFERENCE LOGBOOK PAGE 0898, ITEM 1, AND DAYJE | 142DJ | 56 | FLAP | RIGHT | OUT OF ADJUST | 77 |
| WGEA200800003 | CRUISE | RIGGING-AILERON | MX LOG PG. NR 0829 DISC NR 3 STICK BINDS TOP CENTER 3 DEGREES TO EITHER SIDE OF CENTER WHEN INITIATING ROLL. NOTED IN FL IGHT, BOTH LT AND RT STICKS. WO 1098, NRI 1. REMOVED AND REPLACED RT AILERON BELLCRANK AND JOINT ASSEMBLY IAW AMM 27-11 -17. PERFORMED RIG CHECK IAW AMM 27-00-00. CHECKED WITHIN LIMITS. | 141DJ | 55 | BELLCRANK | AILERONS | BINDING | 95 |
| WGEA200800048 | CRUISE | RIGGING-FLAP | AIRCRAFT REQUIRES 12 PERCENT LWD WITH 7 PERCENT RUDDER AT 160 KTS, 88 PERCENT LWD WITH 0 PERCENT RUDDER AT 160 KTS. REF ERENCE DAYJET WORK ORDER 1600, NR-00001. TEMPORARILY INSTALLED 2 EACH GURNEY TABS ON THE RT WING FLAP IAW SEM 500-0096 REVISION B DATED 3/20/2008. UPON COMPLETION OF TEST FLIGHT, IF PROBLEM IS CORRECTED, RETURN AIRCRAFT TO GNV SERVICE CEN TER FOR PERMANENT ATTACHMENT OF GURNEY TABS IAW SEM 500-0096 REVISION B DATED MARCH 20, 2008. REFERENCE LOGBOOK PAGE 09 02, ITEM 1. EVALUATION FLT COMPLETED, DATA FORWARDED TO MAINTENANCE ENGINEERING FOR REVIEW. REFERENCE WORK ORDER 1676, NR-00001. INSTALLED 2 GURNEY TABS ON RIGHT OUTBOARD FLAP TRAILING EDGE IAW SEM 500-0096 REVISION B. | 142DJ | 56 | FLAP SYSTEM | TE FLAPS | OUT OF ADJUST | |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200800011 | CLIMB | STALL | AFTER LIFT OFF, ON GEAR RETRACTION, GOT FOLLOWING INDICATIONS: FULL STALL WARNING, AIRSPEED MISCOMPARE, STICK PUSHER FAI L, CAPT'S AIRSPEED APPEARED NORMAL, F/O'S AIRSPEED WAS INDICATING 10-15 KTS SLOWER AND MATCHED NR 3 AIRSPEED. STALL WAR NING CONTINUED TO TOUCHDOWN. AS PER PILOT THE 1ST OFFICERS DIGITAL READOUT WAS IN "RED" AND VARIED BETWEEN 120-115 KTS, AND STALL TAPE INDICATED UP TO 120 KTS, ALSO IN RED. SUPPLEMENTAL INFORMATION, INSPECTED CENTER SWITCH PANEL IAW EA 50 0 AMM 31-10-11. TIGHTENED CSP LT CONNECTOR 91A01P01 IAW EA 500 AMM 31-10-11. PERFORMED CSP TEST IAW EA 500 AMM 31-10-0 0. OP'S CHECK GOOD, NO DEFECTS NOTED. | 139DJ | 54 | CONNECTOR | CSP | LOOSE | |
| WGEA200800018 | CLIMB | STALL | AT ABOUT 300 FT AGL ON T/O EXPERIENCED STALL WARNING CAS MESSAGE, AND AURAL WARNING PFD NR 1 A/S WAS 120KTS, PFD NR 2 A/ S 145KTS AND MFD AS 145KTS, FOLLOWED BY A/S DISAGREE, STICK PUSHER CAS MESSAGE. DAYJET WO NR 1283 NRI 1. TROUBLESHOT S YSTEM FOUND BAD LEFT AND RIGHT PITOT. AOA PROBES IAW EA500 AMM 34-00-00. REPLACED PROBES IAW EA500 AMM 34-10-10. PERFO RMED LEAK CHECK AND STATIC VERIFICATION CHECK IAW EA500 AMM 34-00-00. ALL SYSTEMS CHECKED GOOD. | 145DJ | 57 | PITOT HEAD | ZONE 200 | FAILED | 106 |
| WGEA200800057 | LANDING | TIRE | RIGHT MAIN TIRE BLEW ON FIRST APPLICATION AT 82 KTS, 3 WHEELS ON RUNWAY, STICK FWD AND INTO WIND. REMOVED RT MLG WHEEL ASSY, INSPECTED BRAKE ASSEMBLY, GEAR DOOR, WING AND FLAP SURFACE FOR DAMAGE. NO DEFECTS NOTED. INSTALLED SERVICEABLE W HEEL AND TIRE ASSEMBLY IAW EA 500 AMM 32-42-00. | 139DJ | 54 | TIRE | RT MLG | FAILED | |
| WGEA200800001 | LANDING | TIRE | NR 1 RT MAIN GEAR TIRE BLEW AT 60 KTS ON ROLLOUT ON LANDING, NO GRAB, NORMAL TOUCHDOWN. NR 1 REMOVED RIGHT MAIN WHEEL A SSY. INSPECTED AXLE, BRAKE ASSY AND HARD LANDING INDICATOR. PERFORMED A GENERAL VISUAL INSPECTION OF GEAR ASSY. INSTA LLED A SERVICEABLE WHEEL ASSY IAW AMM 32-42-00. NO DEFECTS AT THIS TIME. | 141DJ | 55 | TIRE | NR 1 MLG | FAILED | 20 |
| WGEA200800022 | LANDING | TIRE | AFTER TOUCHDOWN, BOTH MAIN TIRES FAILED. REMOVED UNSERVICEABLE WHEEL AND BRAKE ASSEMBLIES ON BOTH LEFT AND RIGHT LANDIN G GEAR. INSPECTED LANDING GEAR, UNDER WINGS, FLAPS, AIRCRAFT, AND ENGINES BOTH LEFT AND RIGHT ON AIRCRAFT. NO DEFECTS N OTED. INSTALLED NEW SERVICEABLE BRAKE ASSEMBLIES AND INSTALL REPAIRED SERVICEABLE WHEEL ASSEMBLIES, BOTH LEFT AND RIGHT. SERVICED AND BLED BRAKES. WORK COMPLETED IAW EA500 AMM CHAPTER 32 PER 40, 41, 42. | 145DJ | 57 | TIRE | ZONE 700 | FAILED | 48 |
| WGEA200800017 | TAXI/GRND HDL | TIRE | DURING ROLLOUT, LEFT MAIN TIRE WENT FLAT. SUPPLEMENTAL INFORMATION, REMOVED AND REPLACED LEFT MAIN WHEEL ASSY, INSPECTE D FLAPS, ENGINE AND UNDERWING. NO DAMAGE FOUND IAW EA 500 M/M 32-42-00. | 146DJ | 58 | TIRE | LT MLG | FLAT | 40 |
| WGEA200800007 | LANDING | TIRE | DISC NR 2-RT MAIN TIRE FAILED ON LANDING. SUPPLEMENTAL INFORMATION-REMOVED FAILED TIRE. INSPECTED RT AXLE, GEARDOOR,UNDE R WING, FUSELAGE AND RT ENGINE. NO DEFECTS NOTED. INSTALLED SERVICEABLE WHEEL ASSY IAW MM 32-42-00. OK FOR SERVICE. | 158DJ | 74 | TIRE | MLG | FAILED | 13 |
| WGEA200800026 | LANDING | TIRE | NUMBER 1 TIRE FLAT ON LANDING. REMOVED NR 1 WHEEL ASSEMBLY AND INSTALLED A SERVICEABLE WHEEL ASSEMBLY IAW EA500 AMM 32-42-00. | 162DJ | 79 | TIRE | MLG | FAILED | 50 |

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|---|---|---|---|---|---|---|---|---|---|
| WGEA200800041 | CRUISE | TRIM | ON FLIGHT FROM SAV TO GNV DURING CRUISE, AUTO PILOT TRIMMED 79 PERCENT LWD. AIRPLANE FLEW NORMALLY WITH A/P DISCONNECTE D, 79 PERCENT LWD EARLIER LEGS, AILERON TRIM 0 TO 10 PERCENT LWD. PERFORMED FLIGHT CONTROL CHECKS IAW EA500 AMM 27-00-0 0. NO DEFECTS NOTED. | 160DJ | 77 | AUTOPILOT SYS | | MALFUNCTIONED | |
| WGEA200800040 | CRUISE | TRIM | WHILE HAND FLYING, AILERON TRIM DOES NOT SEEM TO WORK TO THE RIGHT EVEN WITH FULL DEFLECTION. OK TO THE LEFT. TRIM IND ICATION MOVES OK. SUPPLEMENTAL INFORMATION, PERFORMED AILERON TRIM FUNCTIONAL TEST IAW EA500 AMM 27-00-00 SUB TASK 27-0 0-00-071. ALL CHECKS GOOD. PERFORMED AILERON FRICTION CHECK IAW ECLIPSE TSR NR 27-030308G REV A DATED 03-03-08 ALL CHE CKS GOOD. SUPPLEMENTAL INFORMATION, REFERENCE LOGBOOK PAGE 1762, ITEM 2. EVALUATION FLIGHT UNSATISFACTORY, LOGBOOK PAG E 1762, ITEM 3. REQUIRES RWD AILERON TRIM AT HIGH AIRSPEEDS 250 KTS - 101 PERCENT RWD, 220 KTS - 84 PERCENT RWD, 200 KT S - 47 PERCENT RWD, 180 KTS AND BELOW, NO AILERON TRIM REQUIRED. REFERENCE DAYJET WORK ORDER 1540, NR-00001,2,3. COMPL | 163DJ | 81 | TRIM SYSTEM | AILERONS | MALFUNCTIONED | |
| WGEA200800025 | CRUISE | TRIM | UNCOMMANDED TRIM IN FLIGHT, ON GROUND. ELEVATOR TRIM GOING UP AND DOWN AND SPLIT. REFERENCE DAYJET WORK ORDER 1299, NR I 1 AND 3. REFERENCE TSR 22-020608G AND NRI 1 FOR RUDDER TRIM ACTUATOR REPLACEMENT. REMOVED AND REPLACED RUDDER TRIM A CTUATOR WITH NEW ACTUATOR IAW EA500 AMM 27-23-16. PERFORMED OPERATIONAL CHECK OF RUDDER TRIM ACTUATOR IAW EA500 27-00-0 1. OPS CHECK GOOD. | 139DJ | 54 | ACTUATOR | RUDDER TRIM | DEFECTIVE | 91 |
| WGEA200800055 | CRUISE | TRIM | MOMENTARY APPLICATION OF RIGHT RUDDER TRIM RESULTED IN TRIM RUNNING AWAY FULL RIGHT. UNABLE TO GET ANY FURTHER TRIM MOV EMENT. REMOVED AND INSTALLED NEW RUDDER TRIM ACTUATOR IAW EA500 AMM 27-23-16. RIGGED AND OP'S CHECKED RUDDER IAW EA500 AMM 27-00-01 AND 27-00-00. NO DEFECTS NOTED. | 150DJ | 62 | ACTUATOR | RUDDER TRIM | MALFUNCTIONED | 193 |
| WGEA200800046 | CRUISE | TRIM | ELEVATOR TRIM SPLIT - LEFT TAB FROZEN AT 7 PERCENT. REMOVED AND REPLACED CENTER SWITCH PANEL WITH NEW UNIT. PERFORMED TEST IAW EA500 AMM 31-10-00. CSP TEST GOOD. | 163DJ | 81 | SELECTOR SWITCH | ELEVATOR TRIM | DEFECTIVE | 26 |
| WGEA200700016 | TAXI/GRND HDL | TRIM | ON PREFLIGHT CAS MESSAGE UNCOMMANDED TRIM, ELEVATOR SPLIT TRIM DISPLAYED. REMOVED AND REPLACED RIGHT ELEVATOR PITCH TRI M ACTUATOR. OPS CHECK GOOD IAW EA500 AMM 23-33-15. | 134DJ | 35 | ACTUATOR | ZONE 300 | INOPERATIVE | 101 |
| WGEA200700021 | CLIMB | TRIM | NORMAL TAKEOFF GNV, ELECTRIC PITCH TRIM INOP ON CLIMB-OUT ( NO CAS MESSAGE). USED ALTERNATE PITCH TRIM FOR LANDING (FLAP S T/O POSITION). PERFORMED FLIGHT CONTROLS ADJUSTMENT. TEST FOR ELEVATOR AND ELEVATOR TRIM IAW EA 500 MM 27-00-00. AL L TEST CHECK GOOD. PERFORMED MFD (FLCS) FLIGHT CONTROL SYNOPTIC PAGE TRIM SYSTEM TEST IAW EA500 AMM 31-10-00 WITH PILOT S AND COPILOTS SIDE STICK WITH FLAPS AT TAKEOFF, LANDING, AND THROTTLES AT MAX. SYSTEM CHECK GOOD. NO DEFECTS NOTED. | 135DJ | 36 | TRIM SYSTEM | PITCH | MALFUNCTIONED | |
| WGEA200800034 | CLIMB | TRIM | ELEVATOR TRIM TAB SPLIT, UNABLE TO TRIM OFF PRESSURE DURING NORMAL FLIGHT THROUGH HAT SWITCH AND FLCS PAGE. SUPPLEMENTA L INFORMATION, VERIFIED DISCREPANCY AND TROUBLESHOT A BAD LT ELEVATOR TRIM ACTUATOR. REMOVED AND REPLACED LT ELEVATOR T RIM ACTUATOR. ALL OP'S CHECKS SATISFACTORY IAW EA 500 AMM 27-33-15. | 146DJ | 58 | MOTOR | ELEVATOR TRIM | FAILED | 129 |

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|---|---|---|---|---|---|---|---|---|---|
| 2008FA0000230 | TAKEOFF | TRIM | AC EXPERIENCED A PITCH TRIM MALFUNCTION ON TAKEOFF ACCOMPANIED BY A WARNING MESSAGE. AN EMERGENCY WAS DECLARED AND THE AC WAS RETURNED TO BASE. PROBLEM WAS DUPLICATED ON THE GROUND. AFTER TROUBLESHOOTING, IT WAS DETERMINED THAT A REPLACE MENT ACTUATOR SHOULD BE INSTALLED. AFTER INSTALLING NEW PART, DEFECT STILL EXISTED. FURTHER TROUBLESHOOTING REVEALED T HAT THE CONTROL TUBES CONNECTED THE ACTUATOR TO THE CONTROL SURFACE WERE NOT SIMILARLY ADJUSTED. THIS CONDITION CAUSED A BINDING OF THE SYS MECHANICS AND THE SUBSEQUENT FAILURE. WHEN THE CONTROL TUBES WERE SIMILARLY ADJUSTED, THE SYSTEM O PERATED CORRECTLY ON GROUND AND IN SUBSEQUENT OPERATIONAL CHECK FLIGHT. (K) | 875NA | 18 | CONTROL TUBE | PITCH TRIM | OUT OF ADJUST | |
| WGEA200700013 | CLIMB | TRIM | AFTER TAKEOFF "ELEVATOR TRIM TAB SPLIT " ADVISORY CAS APPEARED. LT TAB MOVEMENT WAS NORMAL AND RT TAB WAS STUCK AT 10 PERCENT NOSE DOWN. REMOVED AND REPLACED R/H ELEVATOR TRIM ACTUATOR I/A/W EA500 M/M 27-33-15. CHECKED ELEVATOR AND ELEVA TOR TRIM RIG I/A/W EA500 M/M 27-00-01, RIG CHECK GOOD. | 131DJ | 33 | ACTUATOR | ELEVATOR TRIM | STUCK | 70 |
| WGEA200800047 | CRUISE | TRIM | AIRCRAFT REQUIRES 100 PERCENT RWD AT 252 KTS, WITH 16 PERCENT LEFT RUDDER. REFERENCE WORK ORDER 1602, NR-00001. PER TS R 27-030508G, REV C. AIRCRAFT IS WITHIN SPECIFICATION AND NO FURTHER MAINTENANCE ACTION IS REQUIRED AT THIS TIME ON STA TED CONDITION. | 163DJ | 81 | RUDDER | | OUT OF ADJUST | |
| WGEA200700004 | INSP/MAINT | WINDSHIELD | REPAIR OF FORWARD UPPER RIGHT WINDSHIELD BEAM PART NUMBER 53-111681-2005. REPAIRED IAW ECLIPSE AVIATION SERVICE ENGINEE RING MEMO, MEMO SEM 500-0076 REV A. | 119DJ | 22 | BEAM | COCKPIT | DAMAGED | 72 |
| 2008F00003 | INSP/MAINT | WINDSHIELD | PART WAS DAMAGED IN MAINTENANCE, DURING WINDSHIELD REPLACEMENT | 152DJ | 62 | WINDOW FRAME | COCKPIT | DAMAGED | 90 |
| 2008F00005 | INSP/MAINT | WINDSHIELD | DAMAGED IN MAINT DURING WINDSHIELD REPLACEMENT. | 152DJ | 62 | WINDOW FRAME | FUSELAGE | DAMAGED | 90 |

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|---|---|---|---|---|---|---|---|---|---|
| New Reports Received During SCR Review | | | | | | | | | |
| RMX2008F00001 | NOT REPORTED | AIRFRAME | DURING ROUTINE INSPECTIO TECHNICIAN DISCOVERED UPPER LEFT TAILBOOM ATTACH FITTING CRACKED. (K) | | 122 | FITTING | TAILBOOM | CRACKED | |
| L412008F00000 | NOT REPORTED | CABIN HEATER | PILOT REPORTED A BLEED AIR TEMP OVERHEAT CAS MESSAGE DURING NORMAL FLIGHT. DURING GROUND TESTING, FOUND THE VORE WOULD NOT ACTUATE. THE ACTUATOR APPEARED TO BE MISADJUSTED. A POSSIBLE CAUSE WAS A MISADJUSTED VORE DOOR ACTUATOR. VERIFYING PROPER CALIBRATION OF ACTUATOR COULD PROLONG LONGEVITY. THERE WAS ALSO MOISTURE COLLECTING IN FAIRING BELOW THE ACTUAT OR MOTOR. THIS COULD CONTRIBUTE TO MOISTURE COLLECTING IN THE ACTURATOR. IT APPEARED THAT SOME MOISTURE HAD COLLECTED AROUND THE END SHAFT OF THE ACTUATOR AND THE LOWER MOTOR BODY SCREWS. RECOMMEND HAVING A METHOD OF DRAINING MOISTURE FR O COLLECTING IN FAIRING. (K) | | 168 | ACTUATOR | CABIN HEATER | OUT OF ADJUST | |
| 110DJ0507 | INSP/MAINT | ELEVATOR | DURING REMOVAL OF THE ELEVATORS, A SMALL CRACK WAS DISCOVERED ON RT ELEVATOR SKIN BY OB MOST HINGE BRACKET ATTACH POINT. | | 7 | SKIN | RT ELEVATOR | CRACKED | 117 |
| WGEA200800058 | TAXI/GRND HDL | BRAKES | NR 1-COPILOT RIGHT BRAKE PEDAL STICKY. SUPPLEMENTAL INFORMATION - REMOVED AND REPLACED COPILOTS RIGHT BRAKE MASTER CYLI NDER WITH NEW IAW EA500 M/M 32-41-11. BLEED BRAKES IAW EA500 M/M 32-40-00. OP'S CHECK GOOD. | | 72 | MASTER CYLINDER | NR 1 | STICKS | |
| WGE2008F00000 | NOT REPORTED | AIR CONDITIONING | MX LOG PAGE NR 1832 DISCREPANCY 3 "BURNING SMELL COMING FROM A/C CONDENSER COOLING FAN" WO 2349 NR 00001 REMOVED REPLACE D INTEGRAGED TWIN PACK COMPRESSOR PALLET IAW EA500 AMM 21-10-11. SERVICED A/C SYSTEM IAW EA500 AMM 21-00-00. PERFORMED A/C SYSTEM ADJ./TEST IAW EA500 AMM 21-00-00. OPS AND LEAK CHECKED GOOD. (K) | | 79 | COMPRESSOR | A/C PACK | FAILED | 232 |
| MDR041607 | TAXI/GRND HDL | TIRE | LT MAIN LANDING GEAR WHEEL AND TIRE ASSEMBLY BLEW OUT DURING TAXI. WHEEL HAS BEEN QUARANTINED AND WILL BE FORWARDED TO A N INDEPENDENT INSPECTION LAB FOR FURTHER REVIEW. | | 7 | TIRE | LT MLG | FAILED | 41 |
| WGEA200800060 | NOT REPORTED | EXTINGUISHING SYSTEM | NR 1 ENG PHOSTREX BOTTLE LEAKING. CLEANED ENG AND AIRFRAME OF ALL PHOSTREX AFTER REMOVING FIRE BOTTLE. INSTALLED SERVI CEABLE FIRE BOTTLE REMOVED FROM ACFT N156DJ. (S) | | 79 | FIRE BOTTLE | NR 1 | LEAKING | 150 |
| WGEA200800059 | LANDING | TIRE | LEFT TIRE BLEW ON ROLL OUT AFTER LANDING ON PANAMA CITY. "SUPPLEMENTAL" REMOVED AND REPLACED LEFT MAIN LANDING GEAR WH EEL ASSY WITH SERVICEABLE ASSY IAW EA 500 MM CH 32-42-00. NO VISIBLE DAMAGE NOTED TO BRAKE OR MLG ASSY. | | 79 | TIRE | MLG | BLOWN | 16 |
| WGEA200800061 | NOT REPORTED | EXTINGUISHING SYSTEM | NR 1 ENG FIRE EXTINGUISHING AGENT LEAKING OUT OF COWLING AND GAUGE SHOWS 0. (S) | | 23 | FIRE BOTTLE | NR 1 NACELLE | LEAKING | |
| DJS041707 | CRUISE | ENGINE OIL SYSTEM | INFLIGHT SHUTDOWN IAW AFM DUE TO LOSS OF OIL TEMPERATURE. TROUBLESHOT TO A FAULTY MOT/MOP SENSOR. | | 7 | SENSOR | ENGINE | FAULTY | 42 |
| DJS110DJ | TAXI/GRND HDL | TIRE | LT MAIN WHEEL AND TIRE ASSEMBLY BLEW OUT DURING TAXI. | | 7 | TIRE | LT MLG | BLOWN | 41 |