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Flight Standardization Board Report

Revision: 3
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Manufacturer
Dassault Aviation

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
A46EU	Mystere-Falcon 50	Falcon 50	DA-50
A46EU	Mystere-Falcon 900	Falcon 900	DA-50
A46EU	Falcon 900EX	Falcon 900EX	DA-50

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TABLE OF CONTENTS

1. RECORD OF REVISIONS

Revision Number	Section(s)	Date
Original	All	10/08/2003
1	All	11/20/2006
2	All	10/05/2012
3	All	XX/XX/XXX

2. INTRODUCTION

The Aircraft Evaluation Division (AED) branches is responsible for working with aircraft manufacturers and modifiers during the development and Federal Aviation Administration (FAA) certification of new and modified aircraft to determine:

1) The pilot type rating,
2) Flightcrew member training, checking, and currency requirements, and
3) Operational suitability.

This report lists those determinations for use by:

1) FAA employees who approve training programs,
2) FAA employees and designees who certify airmen, and
3) Aircraft operators and training providers, to assist them in developing their flightcrew member training, checking and currency.

3. HIGHLIGHTS OF CHANGE

The purpose of this revision is to update the appendices. Appendix 6, Universal Avionics Insight Flight Display Installations, incorporates evaluations done for aircraft modified with installations of Universal Avionics Corporation's InSight electronic flight instrument (EFI) displays.

This revision converts this document to the new Flight Standardization Board Report (FSBR) format and complies with Section 508. Change bars are not included in this document because the entire report is revised and updated. It is recommended to review the entire document.

For clarification, the pilot type rating label "DA-50" is used where information applies to all variants. For elements that apply to a specific variant, the appropriate marketing name(s), (e.g., Falcon 50 or Falcon 900), will be used.

Although included in the A46EU Type Certificate Data Sheet (TCDS), this Flight Standardization Board Report (FSBR) does not include Falcon 900EX aircraft equipped with the Honeywell Primus Epic Enhanced Avionics System (EASy) as defined by modification M3083. Information for those variants can be found in the DA-EASY FSBR.

4. BACKGROUND

The Air Carrier Branch, AED formed Flight Standardization Boards (FSB) that evaluated the Mystere-Falcon 50, Mystere-Falcon 900 and the Falcon 900EX as defined in FAA TCDS No. A46EU. The evaluations were conducted using the methods described in FAA Advisory Circular (AC) 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations.

An FSB was convened in October 2011, and January 2012, to evaluate operational suitability and to determine training, checking, and currency requirements for conducting steep approach landing operations in the Mystere-Falcon 900 and Falcon 900EX. These evaluations were conducted using the methods described in FAA AC 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations. The results and recommendations stemming from these evaluations can be found in Appendix 4, Steep Approach Landing Conditions, of this report.

Beginning September 2021, the Air Carrier Branch, AED, evaluated several DA-50 variants modified by Supplemental Type Certificate (STC) to replace the original electromechanical flight instrumentation with Universal Avionics EFI 1040P InSight display systems. These evaluations were conducted using the methods described in AC 120-53B, Guidance for Conducting and Use of Flight Standardization Board Evaluations. The results and recommendations stemming from these evaluations can be found in Appendix 6, Universal Avionics Insight Flight Display Installations, of this report.

5. ACRONYMS

- 14 CFR Title 14 of the Code of Federal Regulations
- AAL Above Aerodrome Level
- AC Advisory Circular
- ACS Airman Certification Standards
- ACFT Aircraft
- AED Aircraft Evaluation Division
- AEG Aircraft Evaluation Group
- AFM Airplane Flight Manual
- AFMS Airplane Flight Manual Supplement
- ANK Alphanumeric Keyboard
- ATP Airline Transport Pilot
- AV Audiovisual Presentation
- CCP Cursor Control Panel
- CFR Code of Federal Regulations
- CG Center of Gravity
- CODDE Crew Operational Documentation for Dassault EASy (or non-EASy)
- CPDLC Controller/Pilot Data Link Communications
- CPT Cockpit Procedures Trainer
- CVR Cockpit Voice Recorder
- DA Decision Altitude

- EASy Enhanced Avionics System
- ECDU EFIS Control Display Unit
- EFI Electronic Flight Instrument
- EFIS Electronic Flight Instrument System
- EID Electronic Instrument Display
- EIED Engine Instrument Electronic Display
- FAA Federal Aviation Administration
- FD Flight Director
- FFS Full Flight Simulator
- FMS Flight Management System
- FSB Flight Standardization Board
- FSBR Flight Standardization Board Report
- FSTD Flight Simulation Training Device
- FTD Flight Training Device
- HO Handout
- HUD Head-Up Display
- ICBI Interactive Computer-Based Instruction
- IP Issue Paper
- LED Light Emitting Diode
- LNAV Lateral Navigation
- LPV Localizer Performance with Vertical guidance
- MDR Master Differences Requirements
- MFD Multi-Function Display
- MFF Mixed Fleet Flying
- NADP Noise Abatement Departure Procedure
- NAS National Airspace System
- OM-P Operating Manual – Procedures
- PFD Primary Flight Display
- PIC Pilot In Command
- POI Principal Operations Inspector
- PTT Part Task Trainers
- RSP Reference Select Panel
- RTU Remote Tuning Unit
- SIC Second In Command
- SID Standard Instrument Departure
- SPR Speaker
- STAR Standard Terminal Arrival Route
- STC Supplemental Type Certificate
- SU Stand-Up Instruction
- SVS Synthetic Vision System
- TC Type Certificate
- TCBI Tutorial Computer-Based Instruction
- TCDS Type Certificate Data Sheet
- VNAV Vertical Navigation

6. DEFINITIONS

These definitions are for the purposes of this report only.

6.1 Base Aircraft. An aircraft identified for use as a reference to compare differences with another aircraft.

6.2 Current. A crewmember meets all requirements to operate the aircraft under the applicable operating part.

6.3 Differences Tables. Describe the differences between a pair of related aircraft, and the minimum levels operators must use to conduct differences training and checking of flightcrew members. Differences levels range from A to E.

6.4 Master Differences Requirements (MDR). Specifies the minimum levels of training and checking required between a pair of related aircraft, derived from the highest level in the Differences Tables.

6.5 Mixed Fleet Flying (MFF). The operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and currency events.

6.6 Operational Evaluation. The AED process to determine pilot type rating, minimum flightcrew member training, checking and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics, no-flap landing).

6.7 Operational Suitability. The AED determination that an aircraft or system may be used in the National Airspace System (NAS) and meets the applicable operational regulations (e.g., Title 14 of the Code of the Federal Regulations (14 CFR) parts 91, 121, 133, and 135).

6.8 Qualified. A flightcrew member holds the appropriate airman certificate and ratings as required by the applicable operating part.

6.9 Related Aircraft. Any two or more aircraft of the same make with either the same or different type certificates (TC) that have been demonstrated and determined by the Administrator to have commonality.

6.10 Seat-Dependent Tasks. Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.

6.11 Special Emphasis Area. A training requirement unique to the aircraft, based on a system, procedure, or maneuver, which requires additional highlighting during training. It may also require additional training time, specialized flight simulation training devices (FSTD) or training equipment.

6.12 Specific Flight Characteristics. A maneuver or procedure with unique handling or performance characteristics that the FSB has determined must be checked.

7. PILOT TYPE RATING

7.1 Type Rating. The Mystere-Falcon 50, Mystere-Falcon 900, and Falcon 900EX type rating designation is DA-50.

NOTE: The FSB has determined that Falcon 900EX aircraft equipped with the Honeywell Primus Epic "EASy" cockpit (modification M3083) and marketed as Falcon 900EX EASy, Falcon 900LX, or Falcon 900DX have a different pilot type rating. Refer to the "DA-EASY" FSB report for those aircraft. Falcon 900 aircraft equipped with the Honeywell Primus Epic Control Display System for Retrofit (CSD/R) retain the "DA-50" pilot type rating.

7.2 Common Type Ratings. Not applicable.

7.3 Military Equivalent Designations. Military aircraft that qualify for the [type rating designation] type rating can be found at www.faa.gov under "Licenses & Certificates," "Airmen Certification," "Online Services," "Aircraft Type Rating Designators." This webpage is kept up-to-date and can be found at: https://www.faa.gov/licenses_certificates/airmen_certification/.

8. RELATED AIRCRAFT

8.1 Related Aircraft on Same TCDS. The Mystere-Falcon 50, Mystere-Falcon 900, and Falcon 900EX are related.

8.2 Related Aircraft on Different TCDS. Not applicable.

9. PILOT TRAINING

9.1 Airman Experience.

The FSB evaluated DA-50 aircraft using pilots with the following qualifications:

Position	Licensing Level	Licensing Country	Experience
PIC	ATP	United States	Unrestricted ATP minimums or greater
SIC	ATP	United States	Unrestricted ATP minimums or greater

Airmen receiving initial DA-50 training should have previous multi-engine transport turbojet aircraft and Flight Management System (FMS) experience. Pilots without this experience may require additional training.

Airmen receiving differences, upgrade, or transition DA-50 training are assumed to have previous experience in multi-engine transport turbojet aircraft and FMS experience. Pilots without this experience may require additional training.

9.2 Special Emphasis Areas.

9.2.1 Pilots must receive special emphasis on the following areas during ground training:

a) EFIS/EIED/EID/RTU Displays and Controls.

b) FMS.

c) Hazardous Weather / Winter Operations.

d) S-Duct Anti-icing.

e) HUD (if installed), initial, transition, differences, upgrade training.

9.2.2 Pilots must receive special emphasis on, and perform the following areas during flight training:

a) Flight Control Malfunctions, initial, transition, differences, upgrade, recurrent training.

b) No Flap Landing Procedures, initial, transition, differences, upgrade training.

c) HUD (if installed), initial, transition, differences, upgrade training.

d) Take-off with forward CG in heavy configuration (900 and 900EX).

9.3 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the Airline Transport Pilot (ATP) and Type Rating for Airplane Airman Certification Standards (ACS) and/or Appendix F of 14 CFR part 121. There are no specific flight characteristics.

9.4 Seat-Dependent Tasks. Pilots must receive training in these seat-dependent tasks:

a) Head-Up Display (HUD) (left seat); initial, differences, upgrade, and recurrent training.
b) Rejected takeoffs; initial, transition, upgrade, and recurrent training.
c) Nosewheel steering (left seat); initial, transition, and upgrade training.
d) Crosswind takeoffs and landings; initial, transition, upgrade, and recurrent training.
e) Loss of all generators; initial, transition, differences, upgrade, and recurrent training.
f) Operation on emergency power; initial, transition, differences, upgrade, and recurrent training.

9.5 Regulatory Training Requirements Which Are Not Applicable to the DA-50. None.

9.6 Flight Simulation Training Devices (FSTD). There are no specific systems, procedures, or maneuvers that are unique to the DA-50 that require a specific FSTD for training.

9.7 Training Equipment. There are no specific systems or procedures that are unique to the DA-50 that require specific training equipment.

9.8 Differences Training Between Related Aircraft. Pilots must receive differences training between any of the DA-50 variants. The level of training is specified in Appendix 2, Master Differences Requirements (MDR) Table.

10. PILOT CHECKING

10.1 Landing from a No-Flap or Nonstandard Flap Approach. The probability of flap extension failure on the DA-50 is not extremely remote due to system design. Therefore, demonstration of a no-flap approach and landing during pilot certification is required. During a 14 CFR §§ 61.58 proficiency check, 91.1065 competency check, 125.287 competency check, or 135.293 competency check, this task may be required. Refer to Order 8900.1, Volume 5, Airman Certification, when the test or check is conducted in an aircraft versus an FFS.

10.2 Specific Flight Characteristics. There are no specific flight characteristics.

10.3 Seat-Dependent Tasks. Pilots must be checked in these seat-dependent tasks:

a) Head-Up Display (HUD) (left seat); initial, differences, upgrade, and recurrent checking.
b) Rejected takeoffs; initial, transition, upgrade, and recurrent checking.
c) Nosewheel steering (left seat); initial, transition, and upgrade checking.
d) Crosswind takeoffs and landings; initial, transition, upgrade, and recurrent checking.
e) Loss of all generators; initial, transition, differences, upgrade, and recurrent checking.
f) Operation on emergency power; initial, transition, differences, upgrade, and recurrent checking.

10.4 Other Checking Items. Not applicable.

10.5 Flight Simulation Training Devices (FSTD). There are no specific systems, procedures, or maneuvers that are unique to the DA-50 that require a specific FSTD for checking.

10.6 Equipment. There are no specific systems or procedures that are unique to the DA-50 that require specific equipment.

10.7 Differences Checking Between Related Aircraft. Pilots must receive differences checking between any of the DA-50 related aircraft. The level of checking is specified in Appendix 2, Master Differences Requirements (MDR) Table.

11. PILOT CURRENCY

There are no additional currency requirements for DA-50 other than those already specified in 14 CFR parts 61, 121, and 135.

11.1 Differences Currency Between Related Aircraft. Not applicable.

12. OPERATIONAL SUITABILITY

The DA-50 is operationally suitable for operations under 14 CFR parts 91 and 135.

13. MISCELLANEOUS

13.1 Forward Observer Seat. The DA-50 observer seat as installed by type certificate A46EU has been evaluated and determined to meet requirements of 14 CFR § 135.75(b) and AC 120-83, Flight Deck Observer Seat and Associated Equipment.

13.2 Aircraft Approach Category. The DA-50 is considered a Category C aircraft for the purposes of determining the appropriate straight-in instrument approach procedure category in accordance with 14 CFR § 97.3.

13.3 Normal Landing Flaps. The Falcon 50 normal "final flap setting" per 14 CFR § 91.126(c) is Flaps 48+Slats. The Falcon 900 and 900EX normal "final flap setting per 14 CFR § 91.126(c) is Flaps 40+Slats.

APPENDIX 1. DIFFERENCES LEGEND

Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	• Operating manual revision (handout (HO)) • Flightcrew operating bulletin (HO)	• Crew has already demonstrated understanding on base aircraft (e.g., updated version of engine). • Minor or no procedural changes required. • No safety impact if information is not reviewed or is forgotten (e.g., different engine vibration damping mount). • Once called to attention of crew, the difference is self-evident.
B	Aided Instruction	• Audiovisual presentation (AV) • Tutorial computer-based instruction (TCBI) • Stand-up instruction (SU)	• Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	• Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4-5)	• Training can only be accomplished through systems training devices. • Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations. • Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.
D	Maneuvers Devices	• Level 6 or 7 flight training device (FTD 6-7) • Level A or B full flight simulator (FFS A-B)	• Training can only be accomplished in flight maneuver devices in a real-time environment. • Training requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	Level C/D FFS or Aircraft	• Level C or D full flight simulator (FFS C-D) • Aircraft (ACFT)	• Motion, visual, control-loading, audio, and specific environmental conditions are required. • Significant full-task differences that require a high fidelity environment. • Usually correlates with significant differences in handling qualities.

Checking Differences Legend

Differences Level	Checking Method Examples	Conditions
A	None	None
B	• Oral or written exam • Tutorial computer-based instruction (TCBI) self-test	Individual systems or related groups of systems.
C	• Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4-5)	• Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	• Level 6 or 7 flight training device (FTD 6-7) • Level A or B full flight simulator (FFS A-B)	• Checking can only be accomplished in flight maneuver devices in a real-time environment. • Checking requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	• Level C or D full flight simulator (FFS C-D) • Aircraft (ACFT)	Significant full-task differences that require a high fidelity environment.

APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE

These are the minimum levels of training and checking required, derived from the highest level in the Differences Tables in Appendix 3. Differences levels are arranged as training/checking.

To Related Aircraft ↓	**From Base Aircraft →**	**Falcon 50**	**Falcon 900**	**Falcon 900EX**
Falcon 50		Not applicable[1]	C/C	C/C
Falcon 900		C/C	Not applicable	C/C
Falcon 900EX		C/C	C/C	Not applicable

[1]If one aircraft has EFIS/EIED, training and checking are C/C.

APPENDIX 3. DIFFERENCES TABLES

Differences Tables are not available for the any of the aircraft in this report.

APPENDIX 4. STEEP APPROACH LANDING OPERATIONS

1. BACKGROUND:

An FSB was convened in October 2011 and January 2012 to evaluate operational suitability and to determine training, checking, and currency requirements for conducting steep approach landing operations in the Mystere-Falcon 900/Falcon 900EX. Supporting regulatory material is the FAA Issue Paper (IP) AEG-O-8 "Operational Suitability".

Steep approach landing operations have not been evaluated for the Falcon 50.

FSB members completed the simulator portion of the evaluation at CAE's Morristown, NJ and Dallas, TX locations along with FlightSafety International's Moonachie, NJ and Paris, France locations. The flight portion of the evaluation was done at Dassault Aviation's facilities in Istres, France. Certification activities were conducted together with FSB evaluation.

Steep approach landing operations in the Mystere-Falcon 900/Falcon 900EX are defined as those glide paths greater than 4.5 degrees. The maximum glide path is determined in the limitations of the applicable AFM for each specific model. Dassault Aviation modifications for steep approach landing operations are defined by M5649 for TCDS A46EU.

The FSB evaluation included numerous steep approach landing operations, both on the full flight simulator and on the actual aircraft. London City Airport (EGLC) was only flown on the full flight simulator, and Lugano Airport (LSZA) was flown both on the full motion simulator and with the actual aircraft. Some steep approach landing operations were also flown with the actual aircraft in Istres (LFMI).

Steep approach landing operations were conducted during day conditions using either 5.5 or 6.65 degree approach angles. Glide path abuse cases, up to 2.0 degree higher than the desired approach angle up to 8.65 degrees, were also conducted. Speed abuse cases (-5 knots of target speed) were also conducted but never in conjunction with the glide path abuse cases. All engines operative and one-engine inoperative steep approach landing operations were flown, terminating either with a landing, or execution of a missed approach or balked landing procedure. Inadvertent touchdown during balked landings were evaluated on all models. Although steep approach landing operations in all models of the Falcon must be conducted with all engines operative, the FSB evaluated piloting skills required to perform a one-engine inoperative extraction should an engine fail at or below decision altitude (DA).

2. PILOT TYPE RATING

Not applicable.

3. RELATED AIRCRAFT

Not applicable.

4. PILOT TRAINING

The FSB has determined that the conduct of steep approach landing operations requires no higher piloting skill level than that of normal (3.0-degree) approaches. However, since steep approach landing operations are often tailored to demanding airports – located in mountainous areas, short runways – the FSB requires academic and flight training for competency in conducting steep approach landing operations.

Unless Steep Approach training is integrated with or occurs sequentially preceding an initial qualification pilot proficiency check, a prerequisite to steep approach training is prior training, qualification, and currency in the Mystere-Falcon 900/Falcon 900EX.

Any pilot in command (PIC)/second in command (SIC) who has been properly qualified in the Mystere-Falcon 900/Falcon 900EX under 14 CFR parts 61.55, 135, or 91 subpart K (part 91K) may conduct steep approach landing operations provided the training, checking, and currency requirements of this appendix have been satisfactorily accomplished.

4.1 Ground Training. The following areas should be included in the training and is appropriate to any aircrew position:

- Airplane Flight Manual (AFM) Annex and Crew Operational Documentation for Dassault EASy (CODDE) 2 review to include: Limitations, Abnormal Procedures, Emergency Procedures, Normal Procedures, and Performance with special emphasis on increased landing distance.
- Stages of the steep approach to include: stabilized approach concept as a key success for steep approach landing, appropriate slats/flaps/airbrakes configuration, and approach speed.
- Comparison of the steep approach sight picture to that of 3.0-degree (normal) approach.
- Pilot techniques to include: avoidance of abrupt control inputs, ground rush illusion.
- Identification of airports with steep approaches to include: the specificity of airports with steep approach (e.g., the landing distance safety factor for EGLC).

4.2 Flight Training. Flight training for either aircrew position may be conducted in either a simulator or aircraft. Training must include steep approaches with and without the FD displayed. Include use of the HUD if equipped.

5. PILOT CHECKING

Pilot checking requirements are dependent upon the training program objectives and operational parts and will be defined by each training program. There is no requirement for knowledge checking or flight proficiency testing for the Mystere-Falcon 900/Falcon 900EX steep approach qualification. Proof of completion of steep approach training is sufficient for showing qualification.

6. PILOT RECURRENT TRAINING

The FSB recommends, regardless of the number of steep approaches completed, a review of all academic and flight training items be accomplished annually and documented in a manner acceptable to the Administrator.

7. STEEP APPROACH TRAINING CREDIT AMONG TYPES/MODELS

Mystere-Falcon 900/Falcon 900EX (A46EU) and Falcon 2000/Falcon 2000EX (A50NM) models are considered a common group for the purposes of steep approach training. Training in one of these models may be considered completed for the other models in this group provided level A training is conducted on the differences in the avionics as they relate to steep approach procedures.

Steep Approach Training in any one of the DA-900EX EASy (A46EU) or DA-2000EX EASy (A50NM) models may be considered completed for the other models in this group.

8. OPERATIONAL SUITABILITY

The Mystere-Falcon 900/Falcon 900EX is operationally suitable for steep approach operations under 14 CFR parts 91, 91K, 121, and 135 with aircrew trained in accordance with the requirements set in this appendix.

This FSB report does not constitute operational approval for the execution of steep approaches in the Mystere-Falcon 900/Falcon 900EX. Additionally, it is common that individual airport authorities have training and documentation requirements specific to their airfields with regard to steep approaches.

APPENDIX 5. CLOSE-IN NOISE ABATEMENT DEPARTURE PROCEDURE

1. BACKGROUND

The FSB has evaluated a close-in noise abatement departure procedure (NADP) developed by Dassault Aviation for the Dassault Mystere-Falcon 900/Falcon 900EX.

Close-in NADP has not been evaluated for the Mystere-Falcon 50.

The NADP evaluated by the FSB required a thrust reduction at 400 feet AAL after take-off. Refer to the applicable aircraft manual (Mystere-Falcon 900: OM-P; Falcon 900EX: CODDE2) for specific procedures.

2. PILOT TYPE RATING

Not applicable.

3. RELATED AIRCRAFT

Not applicable.

4. PILOT TRAINING

Refer to Dassault Aircraft Operational Suitability Manual – Flight Crew DGT148650 for manufacturer's recommended training elements.

5. PILOT CHECKING

Not applicable.

6. PILOT RECURRENT TRAINING

Refer to Dassault Aircraft Operational Suitability Manual – Flight Crew DGT148650 for manufacturer's recommended training elements.

7. OPERATIONAL SUITABILITY

This procedure has been found suitable by the FSB, for operations under 14 CFR parts 91K, 121, and 135, and does not contradict AC 91-53A, Noise Abatement Departure Profiles.

APPENDIX 6. UNIVERSAL AVIONICS INSIGHT FLIGHT DISPLAY INSTALLATIONS

The Dassault Aviation Mystere-Falcon 50s and 900s were originally equipped with a variety of electromechanical and electronic flight instrument (EFI) and flight management systems (FMS). Integrated flight display systems have since become available and are being utilized in various configurations in multiple Supplemental Type Certificates (STC).

Owing to the differences in base aircraft and final STC configurations, there are a range of possible configurations, and no single differences table will suffice.

At the time of this report, the AED has evaluated three DA-50 InSight STCs. While there were differences between them (e.g., retention or replacement of the original FMS), the evaluations consistently validated the training and checking recommendations in this appendix.

1. BACKGROUND

The AED has evaluated, either through completion of a T3 test or by analysis based on commonality and previous experience, the installation of InSight EFI 1040P display systems in two Mystere-Falcon 900s and a Mystere-Falcon 50. One Mystere-Falcon 900 retained the dual Honeywell FMZ-2000 FMS; the other Mystere-Falcon 900 and the Mystere-Falcon 50 installed dual Universal Avionics UNS-1Fw FMS with dual EFIS control display units (ECDU) and optional alphanumeric keyboards (ANK).

1.1 AED Evaluated Installations:

- Had four displays – a PFD and MFD on each side of the cockpit;
- Did not include engine instrument displays;
- Had dual FMS – two with dual UNS-1Fw FMS as part of the STC, one retained the original dual Honeywell FMS;
- Included other options, CPDLC datalink capability for example, that were not considered as part of this report;
- Included radio and navigation aid tuning capability. The impact on crew procedures was considered for this report; and
- Lacked compatibility with the aircraft angle of attack sensor. As a result, the low-speed awareness cuing does not take input from the angle of attack sensor and does not react to aerodynamic, environmental, or configuration changes; only providing alerting regarding proximity to a pre-chosen, phase-of-flight relative, low speed regime.

While these STCs often include the installation of other, possibly optional, equipment beyond that directly used for flight control and displays (e.g., an updated CVR), those applications would not necessarily merit inclusion in an FSBR and are not included in this appendix unless otherwise indicated.

1.2 STC ST04533CH Chicago Jet Group, LLC.

1.2.1 The AED evaluation of the Falcon InSight 900B was conducted from the Aurora Municipal Airport, (KARR) during September 2021. The aircraft utilized for this evaluation was N670JD S/N 45, a Legacy Falcon 900B with the following STC ST04533CH modifications:

1) Four (4) Universal Avionics InSight EFI-1040P EFIS displays,

2) Dual Universal Avionics UNS-1Fw FMS,

3) Universal Avionics UniLink 801 communications management unit,

4) Universal Avionics CVR120A with datalink recording,

5) Latitude Technologies DL150 Iridium SatCom for data link,

6) Midcontinent Instruments MD302 Standby Instrument,

7) Three (3) PS Engineering audio panels,

8) Aircraft Lighting International glareshield and cockpit lights LED conversion, and

9) Latitude Technologies Skynode S200 Iridium with cockpit dialer for Satellite Voice Safety.

1.2.2 Flight crewmembers interface the InSight system via:

1) Two (2) EFIS ECDU,

2) Two (2) alpha-numeric keypads (ANK),

3) Two (2) cursor control panels (CCP), and

4) Three (3) center pedestal mounted reference select panels (RSP) which consist of:

a) Two (2) course/heading panels, and

b) One (1) speed/altitude preselect.

The display configuration consists of two primary flight displays (PFD) and two multifunction displays (MFD). The above installed equipment provides functionality for Synthetic Vision System (SVS) on the PFD and ability to display Jeppesen approach, airport diagram, STAR and SID charts (Universal eChart) on the MFD.

The Autopilot/Flight Director systems did not change with this modification. This modification will allow the aircraft to fly coupled lateral navigation (LNAV), vertical

navigation (VNAV), and localizer performance with vertical guidance (LPV) approach types.

2. PILOT TYPE RATING

The type rating designation remains DA-50. The Mystere-Falcon 50EX and Mystere-Falcon 900B aircraft evaluated with the InSight display systems installed are suitable for use to conduct a practical test to obtain a DA-50 type rating. There are no recommended modifications to the DA-50 type rating practical test tasks as a result of this configuration.

3. RELATED AIRCRAFT

Not applicable.

4. PILOT TRAINING

In conducting this evaluation, the AED utilized factors considered the most likely scenario for operators of the Falcon InSight 900B. The pilot used for training evaluation had the following Falcon 900B experience, which for the purpose of this evaluation is considered typical:

- DA-50 type rating,
- Operation experience with flat panel (all glass) aircraft,
- Recent operational experience in the Legacy Falcon 900B,
- Current 142 training center recurrent and differences training for the Legacy Falcon 900B, and
- Demonstrated proficiency via a 14 CFR § 61.58 check in a DA-50 type aircraft with a UNS-1 series FMS within the preceding 24 calendar-months.

4.1 The differences training, evaluated by the AED, between the Legacy Falcon 900B to the Falcon InSight 900B consisted of the following training elements:

1) Fourteen (14) Planned Hours of Universal Avionics Systems Corporation web-based InSight curriculum,
2) Two (2) Planned Hours of aided instruction in the form of a PowerPoint presentation on Falcon InSight 900B interface, normal and non-normal procedures and special emphasis training items listed below. The PowerPoint presentation was provided by instructors with operational experience in Falcon InSight 900B, and
3) Three (3) Planned Hours of part task skill training utilizing the Falcon InSight 900B aircraft on the ground with ground power applied.

Operators must develop normal, abnormal, and emergency operating procedures from the Universal Avionics Systems Corporation InSight Operator's Manual and the Falcon InSight 900B Airplane Flight Manual Supplement (AFMS). These procedures must be included in the appropriate approved operator training course when required by 14 CFR.

Based on the evaluation, the AED recommends Level C differences training from the Legacy Falcon 900B to the Falcon InSight 900B. Differences training from Falcon InSight 900B to Legacy Falcon 900B was not evaluated.

Legacy Falcon 900B crewmembers not having previous flat panel (all-glass) experience or not having demonstrated proficiency with a UNS-1 series FMS within the preceding 24 calendar months may require increased or higher-level training. POIs may contact the AED for technical assistance in evaluating training and checking for individual operators that have unique issues not addressed in this report or with any other questions or concerns.

4.2 The AED recommends special emphasis flightcrew training for the following items associated with this STC:

1) Potential for inadvertently selecting the display reversion button instead of "HOME" button on ECDU, resulting in timer countdown to PFD screen blanking and reversion of PFD display to MFD,
2) Radio tuning procedures. ECDU "TUNE" button default or last tuned function may result in non-desired radio selected,
3) Taxi diagram and chart management on MFD during takeoff and approach,
4) Location operation of dedicated transponder ident button,
5) Awareness of the function and indexing of the low-speed awareness indications and operation,
6) Due to highly configurable display options, a standardized company display setup is highly recommended,
7) When using oxygen mask, intercom is only available over the headset, do not select speaker (SPR). Crew must restore headsets after oxygen masks are donned, and
8) Dual cue flight director roll sensitivity.

5. PILOT CHECKING

Based on the evaluation, the AED recommends Level B differences checking from the Legacy Falcon 900B to the Falcon InSight 900B.

6. PILOT RECURRENT TRAINING

There are no additional currency requirements for the Falcon InSight 900B other than those already specified in 14 CFR parts 61, 91, and 135.

7. OPERATIONAL SUITABILITY

The AED found the Falcon InSight 900B to be operationally suitable for 14 CFR parts 91 and 135 operations.

8. MISCELLANEOUS

None.