Flight Standardization Board (FSB) Report

Revision: 4
Date: 04/04/2016

Dassault Falcon 7X
DA-7X

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RECORD OF REVISIONS

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<thead>
<tr>
<th>Revision Number</th>
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Highlights of Change:

Revision 4:

Incorporated the new standard FSB template used by the Aircraft Evaluation Groups

Reformatted/outlined full report

Replaced “FAR” with “14 CFR” or “§” as appropriate

Section 1: revised and added sections 1.1 – 1.9

Section 2: added section 2.2

Section 3: reformatted master difference requirements, revised 3.1.1 “at maximum certificated gross weight” to meet AFS-200 policy decision SaFO 12005, added sections 3.1.4, 3.2.1 and 3.2.2

Section 4: reformatted operator difference requirements, added sections 4.1, 4.2, 4.3, and 4.4

Section 5: reformatted specifications for training, revised sections 5.1, 5.2, 5.3 5.4 5.5, 5.6, 5.7

Section 6: reformatted specifications for checking, revised sections 6.1, 6.2

Section 7: reformatted specifications for recency of experience, revised sections 7.1, 7.2

Section 8: reformatted aircraft regulatory compliance checklist, revised sections 8.1, 8.2

Section 9: reformatted specifications of devices and simulators, revised sections 9.1, 9.2, 9.3, 9.4

Section 10: reformatted application of FSB report
Section 11: reformatted alternate means of compliance, revised sections 11.1, 11.2, 11.3

Appendix 1: added MDR table

Appendix 3: added section 2

Appendix 4: removed compliance checklist

Appendix 5: updated guidance

Appendix 6: Addition of Rockwell Collins Head Up Display (HUD) and forward looking EVS guidance

Appendix 7: Addition of Flightcrew Sleeping Quarter modifications.

Appendix 8 and 9: Separation of Noise Abatement Departure Procedures from Steep Approach.

Appendix 10: added EASy II Avionics
  o Easy II initial course evaluated
  o Limited Functionality in EASy II simulator and EASy I crews
  o Easy II to EASy I course evaluated

Note: This revision incorporates the new Flight Standards FSB template and style. Revision bars will not be used to show formatting changes. Revision bars will only be used to address actual content revision or addition. Due to the new format it is recommended that operators and training providers review the entire document.
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1. **PURPOSE AND APPLICABILITY**

   **Note:** All regulatory references within this report are found in Title 14 of the Code of Federal Regulation (14 CFR) unless otherwise indicated.

1.1 This report specifies master training, checking, and currency requirements applicable to crews operating DA-7X aircraft under 14 CFR. Provisions of this report:

   a) Identify Pilot "type rating" requirements assigned to the DA-7X,

   b) Describe any unique requirement applicable to initial, transition, upgrade, or recurrent training,

   c) Describe Master Difference Requirements for flight crews requiring differences qualification for mixed-fleet-flying or transition,

   d) Provide examples of acceptable Operator Difference Requirements (ODR) tables,

   e) Describe acceptable training program and training device characteristics when necessary to establish compliance with applicable MDRs,

   f) Identify checking and currency standards to be applied by the Federal Aviation Administration (FAA) or operators, and

   g) Provide a listing of regulatory compliance status (compliance checklist) for the pertinent CFR, Advisory Circulars, and other operationally related criteria that was reviewed and evaluated by the Aircraft Evaluation Group (AEG).

1.2. This report addresses DA-7X series aircraft as specified in the FAA Type Certificate Data Sheet (TCDS A59NM).

1.3. The provisions of this Flight Standardization Board (FSB) report are effective until amended, superseded, or withdrawn by subsequent revisions to this report.

1.4. Determinations made in this report are based on the evaluations of specific DA-7X series aircraft equipped in a given configuration and in accordance with current regulations and guidance. Modifications and upgrades made to the models described herein, or introduction of new related aircraft, may require amendment of the findings in this report. The FSB reserves responsibility/authority to re-evaluate and modify sections of this report based on new or revised Advisory Circular material or the pertinent CFR, aircraft operating experience, or the testing of new or modified aircraft under the provisions of AC 120-53, as amended.

1.5. Relationship between this FSB report and an Advanced Qualification Program (AQP) program. Differences between this FSB report and an operator’s proposed training, checking, and currency requirements under an AQP, must be justified and documented as part of the
applicant's AQP approval process. Program approvals under AQP need to ensure the basic provisions and requirements of this report have been addressed and, where necessary, coordination with the appropriate Flight Standardization Board has been completed.

1.6. The term "must" is used in this FSB report and certain MDR footnotes even though it is recognized that this report (as well as AC 120-53, as amended, on which it’s based) provides one acceptable means, but not necessarily the only means of compliance with the pertinent CFR requirements. This terminology acknowledges the need for operators to fully comply with this FSB report and MDR and ODR provisions if AC 120-53, as amended, is to be used by the operator as the means of complying with the pertinent CFR. Operators who choose this method must comply with each applicable MDR provision, including any footnotes.

1.7. Unless otherwise specified, DA-7X means the Falcon 7X.

1.8. This report includes:

a) Minimum requirements for approval by FAA field offices, (e.g. MDRs, Type Rating designations, etc.),

b) General advisory information which may be approved for that operator (e.g. MDR footnotes, acceptable ODR tables), and

c) Information which is used to facilitate FAA review of an aircraft type or related aircraft that is proposed for use by an operator (e.g. compliance checklist).

Various sections of this report are qualified as to whether compliance (considering the provisions of FAA Advisory Circular 120-53, as amended) is required or is advisory in nature.

1.9 Common acronyms are defined as follows:

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AAL</td>
<td>Above Airport Level</td>
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<tr>
<td>AC</td>
<td>Advisory Circular</td>
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<tr>
<td>ADS-B</td>
<td>Automatic Dependent Surveillance-Broadcast</td>
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<tr>
<td>AFCS</td>
<td>Automatic Flight Control System</td>
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<tr>
<td>AFM</td>
<td>Airplane Flight Manual</td>
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<td>AFS</td>
<td>FAA Flight Standards Service</td>
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<tr>
<td>AGL</td>
<td>Above Ground Level</td>
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<tr>
<td>ANP</td>
<td>Actual Navigation Performance</td>
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<tr>
<td>AOA</td>
<td>Angle of Attack</td>
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<tr>
<td>AP</td>
<td>Autopilot</td>
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AQP  Advanced Qualification Program
AT   Autothrottle
ATP  Airline Transport Pilot
ATC  Air Traffic Control
ATN  Aeronautical Telecommunications Network
CAT  Category (e.g. CAT II ILS)
CBT  Computer Based Training
CPDLC Controller Pilot Data Link Communication
CPT  Cockpit Procedures Trainer
CCD  Cursor Control Device
CHDO Certificate Holding District Office
CRM  Crew Resource Management
DA   Decision Altitude
DH   Decision Height
EASy Enhanced Avionics System
EFB  Electronic Flight Bag
EFVS Enhanced Flight Vision System
EVS  Enhanced Vision System
FAA  Federal Aviation Administration
FAF  Final Approach Fix
FD   Flight Director
FL   Flight Level
FMS  Flight Management System
FMW  Flight Management Window
FPA  Flight Path Angle
FPV  Flight Path Vector
FSB  Flight Standardization Board
FSTD Flight Simulation Training Device
FTD  Flight Training Device
GPS  Global Positioning System
HGS  Head Up Guidance System
HUD  Head Up Display
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ILS</td>
<td>Instrument Landing System</td>
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<tr>
<td>IMC</td>
<td>Instrument Meteorological Conditions</td>
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<tr>
<td>I-NAV</td>
<td>Interactive Navigation Window</td>
</tr>
<tr>
<td>IR</td>
<td>Infra Red</td>
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<tr>
<td>LPV</td>
<td>Localizer Performance with Vertical Guidance</td>
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<tr>
<td>MMEL</td>
<td>Master Minimum Equipment List</td>
</tr>
<tr>
<td>MCDU</td>
<td>Multi-Function Control Display Unit</td>
</tr>
<tr>
<td>MDU</td>
<td>Multifunction Display Unit</td>
</tr>
<tr>
<td>MDR</td>
<td>Master Differences Requirements</td>
</tr>
<tr>
<td>MKB</td>
<td>Multifunction Keyboard</td>
</tr>
<tr>
<td>NSP</td>
<td>National Simulator Program</td>
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<tr>
<td>ODR</td>
<td>Operator Differences Requirements</td>
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<tr>
<td>OE</td>
<td>Operating Experience</td>
</tr>
<tr>
<td>PDU</td>
<td>Primary Display Unit</td>
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<tr>
<td>PF</td>
<td>Pilot Flying</td>
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<tr>
<td>PIC</td>
<td>Pilot in Command</td>
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<td>PM</td>
<td>Pilot Monitoring</td>
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<td>Phase of Flight</td>
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<td>POI</td>
<td>Principal Operations Inspector</td>
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<tr>
<td>QRH</td>
<td>Quick Reference Handbook</td>
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<tr>
<td>RAAS</td>
<td>Runway Awareness Advisory System</td>
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<tr>
<td>RMI</td>
<td>Radio Magnetic Indicator</td>
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<tr>
<td>RNP</td>
<td>Required Navigation Performance</td>
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<td>Rejected Takeoff</td>
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<td>RVSM</td>
<td>Reduced Vertical Separation Minimum</td>
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<tr>
<td>SBAS</td>
<td>Satellite-Based Augmentation System</td>
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<tr>
<td>SIC</td>
<td>Second in Command</td>
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<tr>
<td>SOE</td>
<td>Supervised Operating Experience</td>
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<td>SVS</td>
<td>Synthetic Vision System</td>
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<tr>
<td>TCAS</td>
<td>Traffic Alert and Collision Avoidance System</td>
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<tr>
<td>TCPM</td>
<td>Training Center Program Manager</td>
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2. PILOT TYPE RATING REQUIREMENTS

2.1 Type Rating. In accordance with the provisions of 14 CFR Parts 1, 61, 91, 121 and 135 the pilot type rating for the Falcon 7X aircraft is designated “DA-7X”.

2.2 Second-In-Command (SIC) Type Rating. In accordance with the provisions of § 61.55, FAA Order 8900.1 and AC 120-53, as amended, a SIC pilot type rating is assigned to the DA-7X aircraft and is designated "DA-7X" with Limitation for “DA-7X SIC Privileges Only”.

3. MASTER DIFFERENCE REQUIREMENTS (MDR)

3.1 Common Requirements for all DA-7X airplanes:

3.1.1 Landing Minima Categories, § 97.3. All operators should comply with § 97.3 and use an approach category appropriate to the speed of the Reference Landing Approach Speed (VREF) at maximum certificated gross weight. Air carriers may be further restricted by their operations specifications for circling approaches.

3.1.2 Normal “Final Landing Flap Setting”. The normal “final landing flap setting” is “SF3”.

3.1.3 No Flap Approach. Training and checking/testing applicable to DA-7X aircraft will be accomplished in accordance with 14 CFR Parts 61, 135, 121 requirements, and applicable 8900.1 guidance. Leading edge slats may be extended for this approach and landing.

3.1.4 Special/Unique Requirements. Due to Flight Control System (FCS) protections, training and checking provisions for stalls in the Falcon 7X are specified in section 5.2.5.3(f) and 6.1.4

3.2 Master Difference Requirements.
3.2.1 Requirements for particular DA-7X Related Aircraft Combinations. Master Difference Requirements (MDRs) for related aircraft of the DA-7X will be shown in Appendix 1. These provisions apply when differences between related aircraft exist which affect crew knowledge, skills, or abilities related to flight safety (e.g., Level A or greater differences). Currently the DA-7X has not been evaluated with any related aircraft.

3.2.2 MDR Footnotes. Footnotes to MDR requirements define acceptable "required means" or "alternate means" of compliance. A footnote can indicate requirements that are less restrictive than the basic designation, or more restrictive than the basic designation, depending on the significance of the differences between related aircraft.

4. ACCEPTABLE OPERATOR DIFFERENCE REQUIREMENTS

4.1 ODR Tables. ODR tables are used to show an operator's compliance method. ODR tables for operators conducting mixed fleet operations, using the DA-7X and other related aircraft. The ODR tables represent an acceptable means to comply with MDR provisions based on those differences and compliance methods shown. The tables do not necessarily represent the only acceptable means of compliance for operators with airplanes having other differences, where compliance methods (e.g., devices, simulators, etc.) are different.

4.2 Operator Preparation of ODR Tables. Operators flying a “mixed fleet” of DA-7X and other related aircraft must have approved ODR tables pertinent to their fleet.

4.3 ODR Table Coordination. Unless identical or equivalent ODR tables have been previously approved by the FAA, new ODR tables proposed by operators should be coordinated with the FSB prior to FAA approval and implementation. FSB coordination ensures consistent treatment of related DA-7X aircraft between various operators, and compatibility of each ODR table with MDR provisions.

4.4 ODR Table Distribution. Original FAA approved ODR tables are to be retained by the operator. Copies of FAA approved ODR tables are to be retained by the Certificate Holding District Office (CHDO) and should be provided to the DA-7X FSB Chairman at the Seattle Aircraft Evaluation Group (SEA-AEG).

5. FSB SPECIFICATIONS FOR TRAINING

5.1 General

5.1.1 Assumptions Regarding Airmen’s Previous Experience. The provisions of this Section apply to programs for airmen who have experience in 14 CFR Parts 121 and 135 air carrier operations and multi-engine transport turbojet aircraft including glass cockpit and Flight Management System (FMS) experience. For airmen not having this experience,
additional requirements may be appropriate as determined by the Principal Operations Inspector (POI), FSB, and/or AFS-200.

5.1.2 Training for Seat Dependent Tasks. Accomplishment of certain tasks, procedures, or maneuvers requires training of a crewmember for a particular crew position (e.g. PIC, SIC, international relief officer, check pilot, etc.). Training programs should recognize and address the necessary seat/position related tasks for the applicable crewmember. Accordingly, training programs should address seat dependent tasks or maneuvers to the extent necessary to satisfy crew qualification objectives and should be in accordance with ODR tables when applicable.

5.1.3 Second-In-Command Training Tasks. Flight Crews qualify to serve as SIC must accomplish certain tasks, procedures or maneuvers for the SIC crew position. Training programs should address all training elements of the 14 CFR Parts 61, 135, and 121 in accordance with FAA Order 8900.1. SIC Pilot Type Rating may be issued in accordance with 14 CFR Part 61 provided training required by the pertinent CFRs and FAA Order 8900.1, including tasks stipulated by this report, are completed.

5.1.4 Future Air Navigation Systems (FANS). Flight Crews operating aircraft equipped with FANS equipment should receive instruction on general operational functions, appropriate use of equipment in various areas of operation, international routes, and flight crew procedures in accordance with those described in ICAO Global Operational Data Link Document (GOLD), Chapter 5. Training should emphasize Required Navigation Performance (RNP), Actual Navigation Performance (ANP), Controller Pilot Data Link Communication (CPDLC) and Automatic Dependent Surveillance (ADS). Training must ensure adequate knowledge, skill, and proficiency for flight crews to operate the equipment in typical daily operations. Appendix 10 provides details for FANS 1/A and ATN B1.

5.2 Ground Training, Flight Training, Specialized Training

5.2.1 Minimum Acceptable Training Requirements for Integrated DA-7X Program. An acceptable ground training curriculum for a DA-7X program is specified in 5.2.2. For DA-7X programs already approved, reductions through provisions of § 135.323(d) or § 121.401(d), should be made within coordination with the FSB. Less comprehensive programs will only be approved if equivalence can clearly be established or other special factors apply. Examples of special factors that may be considered by the FSB include such factors as allowing credit for previous applicable experience (i.e. operators implementing fleets who have crews previously qualified) or increases in the quality or effectiveness of the training process (i.e. new types of training devices).

5.2.2 Ground Training (Academics) for the DA-7X.

5.2.2.1 Ground training in the following subjects for the DA-7X is required:
a) Aircraft General Description (Interior/Exterior)
b) Powerplants
c) Aircraft Systems (eg. Hydraulics, Electrical, etc.)
d) Displays and Controls
e) Flight Path Symbol (FPS)
f) FMS/Multifunction Keyboard (MKB) / Cursor Control Device (CCD)
g) Limitations
h) Performance
i) HUD (if installed)
j) Warnings and Cautions
k) Normal/Abnormal Procedures (including Operating Techniques)
l) Electronic Checklist (including Quick Reference Handbook (QRH)/Paper Checklist)
m) FCS Characteristics and functional lines

5.2.3 Flight Training for the DA-7X.

5.2.3.1 Flight Training should focus on the following events or maneuvers:

a) Exterior Preflight
b) Cockpit/Cabin Familiarization
c) Systems Tests and Checks
d) Flight Control protections and malfunctions, to include flight in alternate and direct laws
e) Displays and Controls
f) FMS/MKB/CCD use
g) Power Management Procedures
h) No Flap Landing Procedures
i) Normal/Abnormal/Operating Techniques/Emergency Procedures
j) HUD (if installed)
k) Taxiing with inoperative nose wheel steering
l) Application of emergency (parking) brake from both pilot seats
m) Stall training with flaps up in normal law
n) Stall training with flaps extended in direct law in the simulator (not in aircraft)
o) Noise abatement profiles
p) Proper use of FPS. The FPS provides airplane trajectory indication; it is now a primary flight parameter. The basic Flight Director FD mode is now a PATH mode, instead of pitch as on previous airplanes.

5.2.3.2 Minimum Acceptable Flight Training. The underlying objective in both flight and ground training is to train to proficiency.

5.2.4 Crewmember Emergency Training. Crewmember emergency training in the DA-7X should be conducted IAW § 135.331 and/or § 121.417, and the provisions of Order 8900.1, Volume 3, Chapter 19, Section 4.
5.2.4.1 Emergency training consists of instruction on the location, function, and operation of emergency equipment that is different in each related aircraft of the DA-7X and from other aircraft in the operator's fleet. Where emergency equipment is common, instruction may be adjusted for crewmembers qualified and current on this equipment, provided records are available which demonstrate that crewmembers meet the applicable CFR requirements. For example, if the fire extinguishers are common to fire extinguishers on other aircraft in the operator's fleet, training may be simultaneously credited for both aircraft. Conversely, for equipment that is unique to the DA-7X, training on the emergency equipment for each related aircraft is required.

Emergency training also consists of instruction in crewmember emergency assignments and procedures including crew coordination and communication, the handling of emergency or other unusual situations, and emergency performance and observation drills, that are specific to each related aircraft of the DA-7X.

In accordance with the § 121.417 or § 135.331 and FAA Order 8900.1, emergency training requirements refer to two types of training: "general" emergency training and "aircraft-specific" emergency training. General emergency training is instruction on those emergency items that are common to the DA-7X and all aircraft in the operator's fleet, e.g., instruction on fire extinguishers and firefighting procedures, if common to all aircraft. Aircraft-specific emergency training is training on those items that are specific to the DA-7X aircraft. An example of aircraft-specific emergency training is instruction on the location of emergency equipment for each related aircraft of the DA-7X aircraft.

As part of an approved training program, an operator may use many methods when conducting aircraft-specific emergency training, including classroom instruction, pictures, videotape, ground training devices, computer-based instruction, and static aircraft training.

There are no specified training program hours for Crewmember Emergency Training. A chart addressed in 8900.1 provides "national norms" for the approval of the general emergency training program hours. The complexity of the different related aircraft of the DA-7X and the complexity of the type of operation to be conducted should be considered when approving the DA-7X aircraft-specific emergency training.

5.2.5 Areas of Emphasis.

5.2.5.1 The following areas of emphasis should be addressed during ground and flight training:

a) Proficiency with manual and automatic flight in normal and non-normal situations must be demonstrated. For crews not experienced with Automatic Flight Control System (AFCS), emphasis is related to proper mode selection and use, crew
coordination when performing mode or data changes, and interpretation of announcements. For crews familiar with AFCS but not having recent experience with newer generation flight instruments; navigation, manual capture of altitudes, raw data approaches, tracking of VOR radials/NDB bearings using an Radio Magnetic Indicator (RMI) and other such systems or procedures may require additional practice or review in one or more of the above areas.

b) Controls and displays: proper setup, selection, and use of those displays should be demonstrated, particularly during instrument approaches.

c) Communication Radio Management: Clear understanding and use of the communication radio display should be demonstrated. This will be particularly important when flight training device (FTD) and simulator training sessions may not fully incorporate simulated Air Traffic Control (ATC).

d) "No Flap" Approach. Checking regarding "No Flap” Approach and Landings for DA-7X aircraft is conducted in accordance with the provisions of paragraph 3.1.3. "No Flap" and "Hydraulic System Abnormal" approaches may be combined and should be addressed during training.

e) Proper outside visual scan without prolonged fixation on cockpit displays or controls should be consistently demonstrated.

f) Proper speed management and control application during rotation and flare.

g) When noise abatement procedures other than as specified be AC 91-53 are used, proper performance of the alternate procedures should be addressed. Refer to Appendix 9 for close-in noise abatement departure procedure.

h) Checking in stalls should ensure pilots apply a stall recovery technique for an aural "stall" warning, red digital airspeed indication, or other aerodynamic indication of an impending stall, and not check stall recovery procedures for an "increase speed" warning.

Note: Crew should be aware of the 2 existing FCS and LGSCU software configurations (FCS 2.1.7/NWS4° and FCS 2.2.3/NWS7°), their associated limitations and procedures, through 7X pilot initial/recurrent training or a level B difference training course (this will not be necessary once all aircraft have been modified with FCS 2.2.3/NWS7°).

5.2.5.2 Takeoff Safety. Particular emphasis on certain takeoff safety related topics is appropriate during training. This includes emphasis on the following:

a) Meaning and proper use of V1
b) Importance of prompt and correct execution of a rejected takeoff (RTO), when necessary

c) Need to minimize exposure to high speed RTOs for minor difficulties unrelated to the ability of the aircraft to continue a safe takeoff

d) Proper lineup and use of available runway

e) Correct accountability for clutter and/or reduced braking friction

f) Engine out performance requirements (§ 135.379) or equivalent if operating under 14 CFR Part 91

g) Proper use of FPS. The FPS provides airplane trajectory indication; it is now a primary flight parameter. The basic FD mode is now a PATH mode, instead of pitch as on previous airplanes.

5.2.5.3 Specialized Training.

a) Training organizations and operators should insure that all crewmembers are familiar with the provisions of Advisory Circular 00-54 (Pilot Windshear Guide), as amended. This windshear training aid communicates key windshear information relevant to flightcrews. § 135.345 requires procedures for recognizing, avoiding and escaping from severe weather situations, to include low-altitude windshear.

b) For operators choosing to install or required by regulation to install Traffic Alert and Collision Avoidance System (TCAS) equipment, they should be familiar with the recommendations of AC 120-55, as amended, and § 91.221, § 135.180, and § 121.356.

c) The DA-7X cockpit features new displays and a new cockpit management. The EASY philosophy is a graphical interface through modular avionics architecture. Situational awareness, airplane automation awareness and airplane system awareness may initially require increased attention by crewmembers if unfamiliar with new cockpit format. If an airplane is used for the training process, it must be emphasized that as much training as possible should be accomplished in a static ground, “powered-up” aircraft to minimize exposure to a “heads down” environment while the aircraft is in flight.

d) Checklists. Use of normal/non-normal electronic checklists and use of Multi-Function Keypad should be addressed. Additionally, QRH/Paper Checklists should also be addressed.
e) Long range/overwater flights. Due to criticality of fuel computations, crews should be familiar with all aspects of fuel management to include normal and abnormal procedures and the manner in which fuel computations are made.

f) Stall training. Flight Control System (FCS) protections prevent the aircraft from stalling in normal law, however the aircraft can experience an aerodynamic buffet indicative of an impending stall in normal law with the flaps up. Pilots should be trained to stall recovery and recognition in normal law with the flaps up. The FCS will not permit stalls, or indication of impending stalls with the flaps extended. Consequently no training in normal law with the flaps extended is possible or required. The aircraft is capable of stalling in any flap configuration in direct law. Training providers should ensure pilots receive training in stall recognition and recovery in all flap configurations in the simulator in direct law.

Training and checking in the aircraft should be discontinued if the flight control system degrades out of normal law.

Training in all control laws should ensure pilots apply a stall recovery technique for an aural "stall" warning, or other aerodynamic indication of an impending stall, and not train stall recovery procedures for an "increase speed" warning.

g) Hazardous weather and winter operations. Proper precautions and procedures regarding hazardous weather/winter operations, which may be unique to DA-7X aircraft should be addressed. For example, topics such as proper use of wing/tail de-ice, antiskid braking characteristics when stopping on slippery runways, use of procedures described in the windshear training aid, hazards associated with rejecting takeoffs near V1 on slippery runways, and other such topics, are appropriate for emphasis in training programs.

h) Reduced Vertical Separation Minimum (RVSM). Operations training programs and operating practices and procedures. Practices and procedures in the following areas should be standardized using guidelines published in the “Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace” (AC 91-85), as amended. Flight planning, preflight procedures in the aircraft for each flight, procedures prior to RVSM airspace entry, inflight procedures, and flightcrew training procedures are found in Appendix 4 of the AC 91-85 document. Appendix 4, paragraph 7 contains special emphasis items for flightcrew training. Also pilots, and where applicable, dispatchers should be knowledgeable on contingency and other procedures unique to specific areas of operation. (See the appendices for guidance on such procedures.)

14 CFR Parts 135/121. Such operators should submit training syllabi and other appropriate material to the FAA to show that the operating practices and procedures and training items related to RVSM operations are incorporated in initial and, where
warranted, recurrent training programs. (Training for dispatchers should be included, where appropriate).

14 CFR Part 91 Operators. These operators should demonstrate to the FAA that pilot knowledge of RVSM operating practices and procedures will be adequate to warrant granting of approval to conduct RVSM operations. The operator must show the FAA that its pilots will have adequate knowledge of the RVSM operating practices and procedures contained in AC 91-85 document.

5.2.5.4 Selected event training. Selected event training is voluntary flight training in hazardous inflight situations, which are not specifically identified in FAA regulations or directives. Although there are many examples of selective event training, the training and recovery from high altitude upsets has received special attention from the National Transportation Safety Board (NTSB), the FAA and industry. In addressing these concerns, a consensus has been reached that the most valuable training would not necessarily be limited to recovery from an upset, but would also address prevention by providing pilots with the skills to recognize conditions that increase the likelihood of an upset event if not effectively managed.

An effective upset prevention and recovery training (UPRT) curriculum provides pilots with the knowledge and skills to prevent an upset, or if not prevented, to recover from one. Training should focus on preventing upsets rather than waiting to recover from one. Prevention training prepares pilots to avoid incidents, while recovery training intends to avoid an accident if an upset occurs.

Although not required, it is highly recommended that each operator or flight training provider develop an effective UPRT program. For those organizations that wish to include UPRT elements within their training program, AC 120-111, Upset Prevention and Recovery Training, provides recommended practices and guidance for academic and FSTD training for pilots to prevent developing upset conditions and ensure correct recovery responses to upsets. The AC also includes enhanced guidance for instructor training and standardization.

5.3 Initial, Upgrade, or Transition Training.

5.3.1 Pilots: Initial, Transition and Upgrade Ground Training, § 135.345 and/or § 121.419. Initial, transition or upgrade ground training for the DA-7X is accomplished in accordance with 14 CFR Part 135 Subparts E, G, and H or 14 CFR Part 121 Subparts N and O. Training program hours may be reduced as specified in Order 8900.1, but not in a manner or in areas that invalidate compliance with provisions of the MDR.

5.3.2 Pilots: Initial, Transition and Upgrade Flight Training, § 135.347 and/or § 121.424. Initial, transition or upgrade flight training for DA-7X is accomplished in accordance with 14 CFR Part 135 Subparts E, G, and H or 14 CFR Part 121 Subpart N and O.
Training program hours may be reduced as specified in Order 8900.1, but not in a manner or in areas that invalidate compliance with provisions of the MDR.

5.3.3 Training for DA-7X “Seat Dependent” Tasks. For 14 CFR Part 135 or 121 operations, proper accomplishment of certain DA-7X tasks, procedures, or maneuvers require training of a crewmember for a particular crew position (e.g. PIC, SIC, check pilot, etc.). Thus training programs including those programs leading to pilot certification for an Airline Transport Pilot (ATP) or pilot type rating, should recognize and address the necessary seat/position related tasks for the applicable crewmember or certification that is intended.

5.3.4 “Seat Dependent” Tasks. No seat dependent tasks were identified by the FSB; however, pilots should be trained in the simulator in applying the emergency (parking) brake from both seats. Operators who elect to install the optional Heads Up Device (HUD) must train and check seat dependent tasks associated with the HUD.

5.3.5 Second-In-Command Crew Training. SIC crew training is accomplished as specified in 14 CFR Parts 61, 121, or 135 as applicable. Training programs should address tasks stipulated in FSB Specifications for Training: Areas of Emphasis, Training for Seat Dependent Tasks and SIC Crew Training are accomplished.

5.4 Differences Training:

5.4.1 General. Unless an initial or transition program is completed, differences training is necessary as provided in MDR and ODR tables. Detailed generic sample Dassault ODR tables may be obtained through the Seattle AEG. Copies are available on request. These ODR tables are provided as generic, and therefore may not include items that are applicable to particular operators.

   a) A Differences Training Program prerequisite is that a trainee has completed initial, upgrade, or transition training in one related aircraft and will receive differences training for the other related aircraft.

   b) When a Differences Training Program involves related aircraft having the same Pilot Type Rating, coverage of differences may be completed either coincident with each phase of an initial, upgrade, or transition training course, or following completion of that training course. The differences training must be consistent with the provisions of the approved applicable MDR/ODR Tables.

   c) When a Differences Training Program involves related aircraft having different Pilot Type Ratings, coverage of a differences course must be completed in accordance with the prerequisites defined in 5.1.1, and applicable MDR/ODR provisions.
5.4.2 Differences Ground Training. Differences ground training is required on the topics applicable to the pertinent related aircraft and is shown by applicable ODR tables.

5.4.3 Differences Flight Training. Difference flight training is required in the topics and maneuvers applicable to the pertinent related aircraft that is shown by applicable ODR tables. For an Advanced Qualification Program (14 CFR Part 121 subpart Y), "flight qualification events" must be consistent with items specified by the applicable ODR tables.

5.5 Recurrent Training:

5.5.1 Recurrent Ground Training. Courses must include appropriate training in accordance with the § 121.427 or § 135.351 for each related DA-7X aircraft as specified by MDR and ODR tables for differences training.

5.5.2 Recurrent Flight Training. Courses require appropriate maneuvers and procedures identified in 14 CFR Part 121 Appendix F or Part 135 Subpart H as otherwise described in this report. Maneuvers and procedures must account for differences between each related DA-7X aircraft operated. The ODR table(s) must identify the differences.

5.5.3 Recurrent training consideration for Mixed Fleet Flying Operations. Not applicable.

5.5.4 Training program hours for Recurrent Training may be reduced as specified in § 121.405 or § 135.325 as appropriate.

5.6 Operating Experience:

5.6.1 Operating Experience Pertinent to Each Flight Crewmember. Operating experience must be obtained while serving in a primary crew position.

5.6.2 Separate Operating Experience for Single Fleet Operations. Operating experience for the DA-7X may be accomplished in any related DA-7X aircraft.

5.6.3 Operating experience for Mixed Fleet Flying Operations. Separate operating experience applies to the DA-7X and other related aircraft.

5.6.4 Supervised Operating Experience (SOE). SOE required for a Pilot in Command (PIC) Type Rating in accordance with 14 CFR section 61.64.

5.7 Other Training:

5.7.1 Instrument Approaches. When flight crews simultaneously qualify for use of Category (CAT) II approaches, credit, as permitted by ODR tables, may apply.
Note: Operators should assure that flight crews are familiar with appropriate use of the FMS, including modes to be used, for the types of instrument approaches to be flown, when using FMS in lieu of or in conjunction with NDB, VOR, localizer, or back course localizer procedures. This emphasis is also appropriate for aircraft that do not have certain navigation system sensors.

5.7.2 Aircraft Dispatchers. Initial and transition training should be conducted in accordance with § 121.422.

5.7.3 Flight Attendants. Initial and transition ground training should be conducted in accordance with § 121.421 or § 135.349. The objective of aircraft ground training is to provide flight attendants with an understanding of the DA-7X aircraft. This knowledge is necessary for the flight attendant to perform the duties and procedures required in normal, abnormal, and emergency situations. Due to the configuration of the cabin several unique training problems will need to be addressed.

   a) Normal Operations
   b) Control and stowage of passenger’s personal items
   c) Familiarity with emergency exits
   d) Use of emergency equipment (e.g. fire extinguishers, first aid kit, oxygen bottle, crew PBE and oxygen masks)

5.7.4 Aircraft ground training includes instruction in two distinct subject areas: DA-7X general operational subjects training and DA-7X aircraft-specific emergency subjects training. The DA-7X aircraft-specific emergency subjects training is addressed in Appendix 3.

5.7.5 DA-7X general operational subjects training consists of instruction in the general description of the aircraft, aircraft equipment, furnishings, and systems; routine crewmember communication and coordination procedures; routine crewmember duties and procedures during each phase of flight, and passenger handling responsibilities for DA-7X aircraft.

5.7.6 As part of an approved training program, an operator may use many methods when conducting aircraft ground training, including classroom instruction, pictures, videotape, ground training devices, computer-based instruction, and static aircraft training.

5.7.7 Initial and Transition Ground Training must include a competence check to determine flight attendant ability to perform assigned duties and procedures on the DA-7X aircraft. The competence check should cover each piece of emergency equipment and each emergency procedure unique to DA-7X aircraft.

5.7.8 Training program hours for Initial Ground Training may be reduced as specified in § 121.405 or § 135.325. There are no specified training program hours for Transition Ground Training. Specific design features of the DA-7X aircraft, combined with the various types of operations to be conducted should be considered when approving DA-7X Transition Ground Training.
5.7.9 Electronic Flight Bag (EFB): refer to the Operational Suitability Report (OSR) applicable to the EASy cockpit.

6. FSB SPECIFICATIONS FOR CHECKING

6.1 General.

6.1.1 Checking Items. Pertinent knowledge, procedures, and maneuvers specified by 14 CFR Parts 61, 135, 121, Appendix F, and FAA Practical Test Standards (PTS) pertinent to multi-engine turbojet transport aircraft apply.

6.1.2 Areas of emphasis. The following areas of emphasis should be addressed during checks as necessary:

   a) Proficiency with manual and automatic flight in normal and non-normal situations must be demonstrated. For crews not experienced with AFCS, emphasis is related to proper mode selection and use, crew coordination when performing mode or data changes, and interpretation of annunciations. For crews familiar with AFCS but not having recent experience with newer generation flight instruments; navigation, manual capture of altitudes, raw data approaches, tracking of VOR radials/NDB bearings using an RMI and other such systems or procedures may require additional practice or review in one or more of the above areas.

   b) Controls and displays; proper setup, selection, and use of those displays should be demonstrated, particularly during instrument approaches.

   c) Communication Radio Management; clear understanding and use of the communication radio display should be demonstrated. This will be particularly important when flight training device (FTD) and simulator training sessions may not fully incorporate simulated ATC.

   d) Proper outside visual scan without prolonged fixation on cockpit displays or controls should be consistently demonstrated.

   e) Proper speed management and control application during rotation and flare.

   f) When noise abatement procedures other than as specified be AC 91-53 are used, proper performance of the alternate procedures should be addressed.

6.1.3 No Flap Approach. Checking regarding a No Flap approach and landing for DA-7X aircraft is conducted in accordance with the provisions of paragraph 3.1.3 of this report. “No Flap” and “Hydraulic System Abnormal” approaches may be combined and should be addressed during checking.
6.1.4 Stalls. In normal law, with the flaps extended, no aural or aerodynamic indication of an impending stall is possible; consequently no requirement exists to check stalls with the flaps extended as a part of the Falcon 7X type rating practical test.

With flaps up in normal law, the aircraft may experience an aerodynamic buffet indicative of an impending stall. Clean stalls in normal law, therefore, should be included in the Falcon 7X type rating practical test. Checking in stalls should ensure pilots apply a stall recovery technique for an aural “stall” warning, or other aerodynamic indication of an impending stall, and not check stall recovery procedures for an “increase speed” warning.

Training and checking in the aircraft should be discontinued if the flight control system degrades out of normal law.

6.2 Proficiency checks are administered as designated in § 61.58, § 135.297 and § 121.441 for the DA-7X. These checks must be administered by an authorized check pilot or operationally qualified FAA Aviation Safety Inspector. Satisfactory completion of a proficiency check may be substituted for recurrent flight training IAW 14 CFR Parts § 135.351 or § 121.433.

7. FSB SPECIFICATIONS FOR RECENCY OF EXPERIENCE

7.1 Recency of Experience Required by 14 CFR §121.439 and §135.247.

7.1.1 Use of the term “Segment” as applied to currency. For the purposes of this FSB report, a segment consists of the following flight phases or maneuvers: Preflight, Start, Takeoff, Climb, Cruise, Descent, Approach, Landing, and Shutdown. Credit for a segment requires that a crewmember serve in an appropriate cockpit crew position during the necessary flight phases or maneuvers, but does not require the crewmember to physically control the aircraft or autopilot during those maneuvers. For example, both pilots may take credit for a segment even though only one actually controls the aircraft during the takeoff and landing. Pilots may not take credit for a segment by observation from a jumpseat.

7.1.2 Currency for Mixed Fleet Flying Operations. These are shown in MDR/ODR tables.

8. AIRCRAFT REGULATORY COMPLIANCE CHECKLIST

8.1 Compliance Checklist. Compliance checklists are provided as an aid to FAA Certificate Holding District Offices (CHDO) in identifying those specific rules or policies for which compliance has already been demonstrated to the FAA for aircraft having a particular aircraft type certificate. The checklist also notes rules or policies not demonstrated to the FSB, which must be demonstrated to CHDOs by operators.
8.2 DA-7X Observer Seat. The observer seat on the DA-7X as evaluated, satisfies the requirement of § 135.75.

9. **FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS**

9.1 Flight Training Device and Simulator Characteristics. Flight training device (FTD) and simulator characteristics pertinent to the DA-7X are as specified by pertinent 14 CFR Part 135 regulations, 14 CFR Part 121, and 14 CFR Part 60, as amended, except as described below. The acceptability of differences between devices, simulators, and aircraft must be addressed by the POI.

9.2 Use of FTDs for Specific Check/Evaluation Items. Certain ATP, type rating, or proficiency check/evaluation items may be completed in FAA qualified FTDs. This is appropriate for items such as FMS initialization or engine start non-normal procedures. Under 14 CFR Part 135 and 121 Appendix F, checking credit in such instances must be approved by the POI. Under 14 CFR Part 91, equivalent standards should be used.

9.3 Aircraft Simulator and Flight Training Device Compatibility (§ 121.407). When related aircraft are flown in mixed fleets, the combination of simulators and flight training devices used to satisfy MDR or ODR provisions must match specific related aircraft flown by that operator. The acceptability of differences between devices, simulators, and aircraft operated must be addressed by the POI.

9.4 Device Approval. Requests for device approval should be made to the POI. The POI may approve these devices for that operator if their characteristics clearly meet the established FAA criteria and have been qualified by the National Simulator Program (NSP). Where devices do not clearly satisfy a given level, POIs should request advice from the FSB Chairman (AEG), NSP, or AFS-200.

10. **APPLICATION OF FSB REPORT**

10.1 Relevant parts of this report (e.g. Type Rating Designation, checking maneuvers, etc.) are effective when the report is approved by the FAA.

11. **ALTERNATE MEANS OF COMPLIANCE**

11.1 Approval Level and Approval Criteria. Alternate means of compliance to differences requirements of 14 CFR Part 121 Subpart N & O or Part 135 Subparts G & H for mixed fleet operations other than as specified in provisions of this report, must be approved by the Flight Standards, Air Transportation Division (AFS-200). Any differences petitioned under AQP must be coordinated with AFS-200, the POI, and the FSB. If alternate means of compliance is sought, operators will be required to establish that the proposed alternate means provides an equivalent
level of safety to the provisions of AC 120-53, as amended, and this FSB report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

11.2 Equivalent Safety. In the event alternate means of compliance is sought, training program hour reductions, simulator approvals, and device approvals, may be significantly limited and reporting requirements may be increased to assure equivalent safety. AFS-200 will generally not consider relief by alternate means of compliance unless sufficient lead time has been planned by an operator to allow for any necessary testing and evaluation.

11.3 Interim Programs. In the event unforeseen circumstances make it impossible for an operator to comply with MDR provisions, the operator may seek interim program approval rather than a permanent, alternate compliance method. Financial arrangements, scheduling adjustments, and similar justifications are not considered to be “unforeseen circumstances” for the purposes of this provision.
## APPENDIX 1

MASTER DIFFERENCE REQUIREMENTS (MDR) TABLE

<table>
<thead>
<tr>
<th>FROM AIRPLANE</th>
<th>Falcon 7X EASyI</th>
<th>Falcon 7X EASy II</th>
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</thead>
<tbody>
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<td>TO AIRPLANE</td>
<td></td>
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</tr>
<tr>
<td>Falcon 7X EASyI</td>
<td>Not Applicable</td>
<td>D/A/B</td>
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<tr>
<td>Falcon 7X EASy II</td>
<td>D/A/B</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
APPENDIX 2
SAMPLE ODR TABLES

Available from SEA-AEG Flight Standardization Board Chairman.
APPENDIX 3
TRAINING PROGRAM OBJECTIVES

1. GENERAL TRAINING PERFORMANCE OBJECTIVES

The general training performance objectives, related to the DA-7X Pilot Initial Type Rating Training Course, come in addition to the relevant training performance objectives developed in the Falcon Training Policy Manual, Volume II, ref DSC 02/770-TOD.

Upon completion of the DA-7X Pilot Initial Type Rating Training Course, a pilot must be able to:

- Demonstrate a good knowledge and understanding of all airplane systems and limitations, including avionics and engines,
- Demonstrate a good knowledge and understanding of the philosophy used in the design of the EASy cockpit,
- Execute any maneuver safely, smoothly and accurately,
- Strictly apply normal, abnormal, and emergency procedures, at the appropriate time, in coordinated manner and upon relevant triggering event,
- Use appropriate manufacturer or company documentation when necessary,
- Keep at any moment situational awareness, in order that the success of a procedure or a maneuver is doubtless,
- Show pertinent judgment in flight management,
- Understand and apply Crew Resource Management (CRM) procedures,
- Positively communicate with other crew members,
- Demonstrate a good knowledge and understanding of airplane performances through the use of relevant materials (documentation, electronic tools such as PETAL, PILOT, etc), and
- Use the operational documentation CODDE 2, CODDE 3 (QRH 1 and QRH 2) and the Master Minimum Equipment List (MMEL).

2. GROUND INSTRUCTION SEGMENT

2.1. Introduction

This section provides the Dassault Aviation specifications of the ground instruction segment, including the laboratories sessions.

The ground instruction segment comprises daily ground courses organized in two parts:

- The first part, ground session, provides interactive theoretical knowledge, and
The second part, laboratories session, provides interactive hands-on experience on the items instructed during the related first part. The second part should be based on laboratories.

The two parts should be performed on the same day.

2.2. Prerequisites

Refer to applicable regulations.

2.3. Ground session profile and characteristics

The ground sessions must provide the student with the knowledge consistent with the defined training performance objectives and completions standards with respect to the following:

- Manufacturer Falcon documentation, including CODDE 1, CODDE 2, CODDE 3 (QRH 1 and QRH 2), Pilot Assist List, MMEL,
- Training documentation,
- Cockpit design,
- Systems location,
- Systems operation in normal, abnormal and emergency situations, including associated procedures and CRM principles,
- Systems limitations in normal, abnormal and emergency situations, including the airplane itself,
- Man machine interface,
- Operational methodology,
- Performances,
- Weight and Balance, and
- Dispatch decision using the MMEL.

The minimum required items are:

- Air conditioning and pressurization,
Airplane Systems Synoptic,

Auxiliary power unit,

Avionics, including avionics architecture, display and panel management, PDU /Multifunction Display unit (MDU),

Bleed air system,

Brakes,

Communication,

Crew Alerting System (CAS),

Dimensions,

Doors and openings,

Electrical power system,

Electronic Checklist (ECL),

Emergency equipment,

Fire and overheating protection,

Flight Control System,

Flight Planning, Flight Management and Navigation (including PRNAV),

Fuel system,

Hydraulic power system,

Integrated maintenance,

Ice and rain protection,

Interior and exterior lights,

Landing gear,

Lighting,
Markings and placards,
Nose wheel steering,
Oxygen system,
Power plant,
Warnings and indicating, and
Water waste.

2.4. Laboratories session profile and characteristics

The laboratories sessions (LAB) should provide interactive hands–on experience on the items instructed during the related ground sessions.

Each main system learned during ground session must be reviewed and used through the cockpit interface. This must be done after each corresponding ground session module.

LAB sessions must train the student to be familiar with the tasks sharing, recommended by the Dassault operational documentation, in order to ease the transition to simulator sessions.

LAB sessions can be based on local flight (only to give realism to the associated situation learned).

For instance, at the end of the fuel system ground session, the same day (or the day after, regarding the schedule of the day flow and the trainees working time), a LAB session should be performed to review and practice the fuel system including normal phases and all the warnings and the associated procedures.

A typical LAB session should be organized as follows:

- Limitations associated,
- Normal use of the system / device and tasks sharing recommended, and
- Warnings and / or CAS messages associated to the system / device.

Various means can be used to be in compliance with these specifications to obtain an increase of hands-on experience:

- Flight Training Device (FTD),
- CPT (Cockpit Procedures trainer),
- Interactive computer, and
- Other means adapted to interactive learning.
APPENDIX 4
DA-7X COMPLIANCE CHECKLIST

Available from SEA-AEG Flight Standardization Board Chairman.
APPENDIX 5
HEADS UP DISPLAY TRAINING PROGRAM

The HUD pilot training requirements consists of those related to initial and recurrent ground and flight training. Unless covered concurrently during an initial or transition type rating course, a prerequisite to beginning this course of training is prior training, qualification and currency in the DA-7X airplane. It should be noted that the program focuses principally upon training events flown in the left seat by the pilot-in-command (PIC). Nevertheless, second-in-command (SIC) indoctrination and training is also essential.

1. INITIAL GROUND TRAINING: For all operators, the initial ground training program should include the following elements:

A. Classroom instruction covering HUD operational concepts, crew duties and responsibilities and operational procedures including preflight, normal and non-normal pilot activities. For operators wishing credit for low visibility operations predicated on use of the HUD, information should be provided on the operational characteristics, capabilities, and limitations of the ground facilities (surface movement guidance control system) and airborne systems. Airline policies and procedures concerning low visibility operations should include a reporting process, MEL issues, operation following a missed approach, Operating Experience (OE) and currency requirements.

B. Classroom instruction (or Computer Based Training - (CBT)) on the HUD symbology set and it’s inter-relationship with airplane aerodynamics, inertial factors and environmental conditions.

C. A HUD pilot training manual or equivalent material in the Operations Manual which explains all modes of operation, the use of various HUD controls, clear descriptions of HUD symbology including limit conditions and failures, and incorporating a crew procedures guide clearly delineating pilot-flying (PF) and pilot monitoring (PM) duties, responsibilities and procedural call-outs and responses during all phases of flight during which HUD operations are anticipated. Emphasis on the availability and limitations of visual cues encountered on approach both before and after DH. This would include:

- Procedures for unexpected deterioration of conditions to less than minimum Runway Visual Range (RVR) encountered during approach, flare and rollout.
- Demonstration of expected visual references with weather at minimum conditions.
- Expected sequence of visual cues during an approach in which visibility is at or above landing minima.

D. A graphical display demonstrating all modes of operation complete with sound. For operators wishing credit for low visibility operations predicated on use of the HUD, this should include narrative descriptions and several low weather approach demonstrations with procedural
call-outs and responses. All critical procedural call-out possibilities should be covered.

E. If the HUD is used as a CAT II landing system, emphasis on the need for rigorous crew discipline, coordination and adherence to procedural guidelines as is required for other CAT II landing systems.

2. INITIAL FLIGHT TRAINING: Unless integrated with initial or transition type rating training, flight training dedicated to HUD familiarization and proficiency is in addition to other required elements. Initial flight training should be conducted in accordance with the applicable provisions of 14 CFR Part 135.347 or 121.424. When a simulator is used, only FAA approved DA-7X simulators with both a visual and the Heads Up Guidance System installed may be used. For flight simulator training, all required approaches should be flown from no closer than the final approach fix (FAF) for instrument approaches and from no closer than approximately 1000 feet Above Ground Level (AGL) (3 - 4 NM) to the runway threshold for visual approaches. The following flight training program is generic in nature and should not be construed to dictate what the flight course of instruction must consist of. Each operator has his own unique requirements, route structure, fleet composition and operations policies to consider in developing their training program. Therefore, what follows might be considered as a guide to an operator who is tailoring a HUD training program to fit his own needs.

A. **Airwork** - Airwork should include:

- Straight and level flight, accelerations and decelerations.
- Normal and steep turns, climbs and descents.
- Approach to stall and recovery and unusual attitudes.
- Vectors to intercept and track selected VOR courses.

Note: Emphasis should be placed on HUD unique symbology, i.e., flight path, flight path acceleration, airspeed error tape, Angle of Attack (AOA) limit bracket, and excessive pitch chevrons. When this training is complete, the trainee should have a thorough understanding of the relationship between aircraft flight path parameters and the HUD symbology.

B. **Visual Approaches (VMC mode)**

- Perform one approach showing deviations above and below glideslope for symbology/runway relationship.
- Straight-in landings, no wind, repeat with 10 kt cross wind and at night.
- Circling approaches and landing with 10 kt crosswind.

Note: It is desirable to fly half of these approaches at different airports that have dissimilar approach and runway lighting systems. Special emphasis should be placed on optimizing circling approach techniques and procedures. Approaches with the aircraft in an non-normal flap configuration should be included.
C. Instrument Approaches:

- a) For all operators.
  - Perform a CAT I approach to 200 foot DH, 2400 RVR, wind calm
  - Demonstrate failures and incorrect settings on approach, i.e., mis-set runway elevation, airspeed, selected course, etc.
  - Illustrate unique characteristics of symbology in wind shear conditions, i.e., erratic wind speed and direction, flight path, flight path acceleration and speed error, etc.
  - Non-precision approach, VOR approach, 600-2, 15 knot crosswind.

- b) For operators wishing credit for low visibility operations predicated on use of the HUD.
  - Perform a CAT II approach to 100 foot DH, 1200 RVR, 5-10 kts crosswind.

Note: Several of the instrument approaches should include a variety of ground and airborne system failures requiring pilot recognition and appropriate procedural actions. Demonstrate system/component failures could include flap asymmetry problems, engine out operations, Head Up Guidance System (HGS) sensor failures, etc. Demonstration how HUD failure modes can reduce precision and increase pilot workload unless PF/PM duties and responsibilities are clearly delineated and understood.

D. Takeoff: For operators wishing credit for low visibility takeoff operations predicated on use of the HUD.

- Normal takeoff, clear and calm, repeated with gusty winds.
- Takeoff, 600 foot RVR, 5 knot crosswind.
- Takeoff, 300 foot RVR, 5 knot crosswind, engine failure prior to V1.
- Takeoff, 300 foot RVR, 5 knot crosswind, engine failure after V1.
- Takeoff with HGS failure, 300 foot RVR.

For air carriers; within 60 days subsequent to completion of HUD training, pilots must have completed their Operating Experience (OE) for HUD CAT II operations. All previously qualified (in aircraft) pilots should be certified upon satisfactory completion of the HUD ground and flight training programs.

All initial, upgrade and transition captains must be certified by a check pilot during their OE. This requirement should include three HUD assisted takeoffs: one visual approach and three instrument approaches in conditions not less than RVR 1800. SIC should be certified to perform Category II PM duties upon satisfactory completion of the HUD training program.

For all operators; prior to utilizing the HUD in Instrument Meteorological Conditions (IMC) conditions below RVR 1800, each PIC must accomplish at least twenty-five manually flown HUD approaches to Category II minima in VMC conditions. Each approach must terminate in a
manually controlled HUD assisted landing or HUD assisted go-around. In addition, each PIC must accomplish at least twenty-five HUD assisted takeoffs in VMC conditions prior to using the HUD mode in IMC conditions. Upon completion of this requirement the HUD qualified pilot would then be certified to conduct HUD approaches to company authorized minima as set forth in their Operations Specifications.

**RECURRENTITY REQUIREMENTS**

For operators wishing credit for low visibility operations on use of the HUD, during the six month recurrent training and proficiency checks, the following low visibility operations should be performed in addition to regular requirements:

- Approach and landing, 700 foot RVR, 10 knot crosswind
- Approach, 700 foot RVR, 10 knot crosswind, light turbulence with missed approach
- Takeoff, 300 foot RVR, 10 knot crosswind*
- Takeoff, 300 foot RVR, engine failure either before or after V1*

* For HUD systems certified for lower than standard takeoff

Selected ground training subjects should be reviewed annually.
APPENDIX 6

Falcon 7X ROCKWELL COLLINS 5860 HEAD UP DISPLAY (HUD) AND CMC FORWARD LOOKING INFRARED CAMERA ENHANCED FLIGHT VISION SYSTEM (EFVS)

1 PURPOSE AND APPLICABILITY

This appendix to the FSB report addresses the Rockwell Collins Head-Up Guidance System HGS 5860 with Enhanced Flight Vision System (EFVS) incorporating the CMC 2600 forward looking infrared camera.

The operational goal of EFVS is to improve aviation safety during operations at night and in low visibility conditions due to weather or other environmental factors. Pilots using EFVS should be careful not to conclude that the flight path is free of hazards merely because none are visible in the EFVS image in the HUD. In some situations imaging sensor performance can be variable and unpredictable.

For United States registered aircraft, the Airplane Flight Manual (AFM) Supplement for this installation restricts EFVS use to qualified pilots who have been trained and current in accordance with the minimum requirements listed in this FSB report Appendix. Ground school training and simulator training is required. It is recommended that operators and training providers review AC 90-106 prior to EFVS use and training.

During the evaluation, the FSB found the EFVS operationally suitable for providing situational awareness for the crew, as well as for applying operational credit per 14 CFR 91.175(l) & (m) when operated by crew members trained and qualified according to the provision of this FSB report Appendix.

2 PILOT TYPE RATING REQUIREMENTS

In accordance with FAR Parts 1 and 61, the pilot type rating for the Dassault Falcon 7X is “DA-7X”. The pilot type rating is unchanged for aircraft with Rockwell Collins 5860 HUD with EFVS installed.

3 MASTER COMMON REQUIREMENTS (MCR’S)

Not applicable.

4 MASTER DIFFERENCES REQUIREMENTS (MDR’s)

Not applicable.
5 ACCEPTABLE OPERATOR DIFFERENCE REQUIREMENTS (ODR’s)

Not applicable.

6 FSB SPECIFICATIONS FOR TRAINING

HUD

For training of the Rockwell Collins 5860 EFVS flightcrew members must be trained in accordance with Appendix 5 of this FSB report.

EFVS

The FSB recommends special training emphasis in the following areas.

The trainees must be aware that after completion of this EFVS training, a safe and efficient use of HGS and EFVS can be kept if it is used on a regular basis. It is recommended to perform HGS and EFVS operations as regularly as possible during normal operations, especially during take-off, approach and landing phases of flight.

1. Ground School Segment. To be qualified in either seat position, and to operate as either the PF or PM, in accordance with the provisions of this FSB report Appendix both pilots must have attended 4 hours of ground school training meeting the specifications below. This ground school training should precede the simulator training.

1.1 Infra Red theory and associated limitations

The trainee should be made aware of the general infra red theory and the characteristics of the EFVS image, including the dependency of the image on the weather conditions, thermal crossover (not exhaustive). In particular, the trainee should be made aware of the effect of rain (roman candles, …) which may degrade the EFVS image and require it to be removed.

1.2 General Description

The description of EFVS hardware is based on information from CODDE 1, Rockwell Collins EFVS pilots guide and any other applicable documentation (e.g. certification documentation provided by Dassault Aviation).

It comprises:

- The description of the additional features to the HGS components:
  - Infra-Red (IR) Sensor Unit (ISU);
  - External IR Window (IRW);
  - Aircraft Identification tag (AIT);
• EVS control panel on the instrument panel (including "calibration" pushbutton)
  Explain the LOW and HIGH settings and the related CONTRAST/BRIGHT presets.
• EFVS kill /dim switch on the LH side-stick (to remove the image from the HUD, dim it or display it again):
  Description, function, conditions of use.

• The modifications of the HGS to make it EFVS capable:
  • HGS computer (LRU);
  • HGS Over Head Unit (LRU).
  • EFVS controls on the combiner:
    Video brightness and contrast controls and logics;
    Symbology brightness.
  • Head down EFVS image (with Video feature);
  • EFVS symbology in HGS;
  • EFVS symbology in the PDU;
  • Flight Management Window (FMW) / Arrival: use of the EFVS Baro M, LOC TRK and Elev fields;
  • EFVS failures (Fault messages);
  • Associated circuit breakers / system protection.

1.3 Types of operations for which EFVS is approved - Limitations

The types of operations for which HGS with EFVS is approved and the limitations are listed in the relevant Airplane Flight Manual (AFM) supplement as well as in CODDE 2 and QRH 1.

1.4 EFVS operating procedures

The procedures described in Falcon 7X CODDE 2 / QRH 1 should be used as a reference for explaining the EFVS operating procedures.

The following topics are discussed:

• General use and philosophy of EFVS operation;
• Normal procedures;
  ▪ Calibration of the system: describe the calibration logics
  ▪ Appropriate use of control to remove / dim / restore the EVS image (e.g. kill / dim switch):
In addition to check of proper operating condition, the trainee should be made aware that the use of the kill/dim switch before arriving to minima is useful for transition from EFVS to Visual, as it improves the "see through";

- Types of interferences that may lead to perform an action (calibration, removal of the image);
- Conditions where a gain / no gain is expectable, including the weather / scene image quality dependence;
- The image brightness logic (image and symbology dependence) and associated recommendations;
- Recommended EFVS displays (head-up / head down);
- Physical parallax of the image on ground;
- Procedures for each phase of flight from exterior inspection to after landing;
- Briefings; the criteria for deciding whether the approach is eligible or not for operational credit must be discussed in details, e.g. discuss one eligible non-precision approach (e.g. Rimini LIPR VOR 13, Lille LFQQ VOR 08), and one non-eligible non-precision approach and explain. For example, the instructor can provide the trainees with miscellaneous approach charts, ask them whether those approaches are eligible or not, let them search, provide the good answer and explain.

- Crew coordination (tasks and call-outs). In particular, annunciation of published and EVS minima and SOP's; focus on the specific callout from the PM at the EVS Baro-minimums.
  - The trainee should be made aware of the importance of the PM call-out "EVS MINIMUM" at the EVS minimum, because of possible delays in automatic EFVS call-outs due to prioritization of others automatic call-outs (call-out of autopilot disconnection for example).
  - The provision for a head-down view of the EFVS image is intended to allow the pilot not flying to monitor the approach in accordance with Crew Resource Management (CRM) principles as presented by Dassault Aviation.

- Where in the HUD that the PF should look to acquire required visual references for descent below published Decision Altitude (DA)/Decision Height (DH): the importance to look in the appropriate portion of the HUD to acquire EFVS return;
- Importance of cross checking the conformal symbology (Flight Path Vector (FPV) and Flight Path Angle (FPA) reference cues) against the EVS visual scene presentation to enable the flight crew to recognize malfunctions of the EVS, navigational guidance information, and improper presentation of elements in the visual scene during an approach;
- FD de-cluttering logic in the HUD;
- Identification of 100 ft HAT using Barometric Altitude for situational awareness. Response to altitude callouts and alerts;
- Non-precision approaches: deselecting of guidance panel modes after the minima when committed to land;
- AFM Performance & Obstacle Clearance on Go Around; It is the operator's responsibility to ensure that EVS BARO M (which is at least 100 ft above the touch down zone elevation) provided to the crew and manually entered is such that airplane performances are compatible with missed approach Obstacle clearance of the approach to be performed;
- AFM Limitations and failure modes;
- Conduct of precision and non-precision (APV) approaches;
- Low Visibility Operations procedures, especially taxi procedures;
- the EVS image can be displayed in the HUD while monitoring an automatic CAT.II approach, with no EVS operational credit.

- Weather conditions (including snow, haze, sandstorm, etc.);
  - Use relevant videos when applicable;
  - Focus on the effect of heavy rain (roman candles, …) which may impair the pilot's vision so that the IR image should be removed from HUD.

- Crosswind conditions;
- Abnormal procedures and limitations (Refer to AFM / CODDE 2);
- Post flight recording and logging of the EFVS approach (according to the appropriate regulation).

### 1.5 Human Factor Aspects

Special emphasis must be set concerning human factor issues related to the use of EFVS and infrared technology, e.g.:

- Interpretation of EFVS images, especially for runway markings and lightings (including LED lighting). The trainee should be made aware about PAPI indication through the EFVS: PAPI always shows 4 white lights in HUD/EVS image, indicating HIGH even if the aircraft is on the correct descent slope, which could make the pilot descent for the 2 RED/2 WHITE which never appears.

- Transition from EVS imagery to non-EVS visual conditions (maximum use should be made of videotapes of actual EFVS approaches): the relative luminosity between IR imagery and that of approach lighting systems should be identified;

- Visual anomalies such as "roman candles", "burlap effect" as applicable (refer to CODDE1);
• Use relevant videos when applicable;
• Some of these artifacts (e.g. roman candles) impair the pilot's natural vision: the pilot then must remove the EVS image from the HUD (using the kill/dim switch) as per AFM limitation.

• Misinterpretation of the IR video cues by the pilot (e.g. interpret a parallel taxiway as the active runway);
• Familiarization to IR imagery (scene contrast detected by IR sensors can be very different from that detected by natural vision; e.g. The EFVS "sees" nothing when the runway has just been cleared away from snow and the runway lights are OFF).
• Effect of combination "EFVS image / HGS symbology" in situation of non consistency of the IR image and symbology, misalignment, aircraft unusual attitude;
• Design eye position;
• Emphasize that the display of an IR image (2D image) in a HUD (narrow field of view) that may result into some "tunnelling" and "fascinating" effects:
  • These effects may encourage to unconsciously have a deeper path angle than perceived, especially when the flight director is no longer displayed.
  • Recommendation to manage the flight path vector against the approach path reference and touchdown zone in these situation (Do not rely on the IR image to monitor or manage the A/C position and trajectory). Discuss how to use the FPV in the HUD to manage the slope on a visual approach.
  • Importance of cross checking the HGS instrumentation presentations against EFVS visual scene presentation: the pilot flying must not stop following the Flight Director unless distinctly visible and identifiable visual references are seen without reliance on the EFVS; he must not "follow" the EFVS image to determine the aircraft's trajectory, this image is only used to comfort the lateral alignment and touch down point.
  • Watching an EFVS image might become tiring if it is done for a long time. It should be limited only to cases where the EFVS can provide a certain benefit.

1.6 Applicable Regulation Requirements

Applicable regulation documents (the list must be displayed for the trainees); e.g.
FAA: FAR Part 91.175, Part 121.651, Part 125.381, Part 135.225

1.7 Training progress

At the end of this instruction segment, the output level of each trainee must be evaluated (correct understanding of the EFVS).
1.8 Duration

The total duration of the ground session should be 4 hours.

2. Duration Simulator instruction segment for initial EFVS training

To be qualified in accordance with the provisions of this FSB report to serve as the Pilot Flying (PF) using the HUD with EFVS, that pilot must have received 2 hours of simulator training as PF using the HUD with EFVS which meets the specifications of paragraph 2.2 below.

To be qualified in accordance with the provisions of this FSB report to serve as the Pilot Monitoring (PM) during operations using the HUD with EFVS, that pilot must have received 2 hours of simulator training performing the duties of the PM which meets the specifications of paragraph 2.3 below.

For both the PF and PM, these two hours must be in a level C or D simulator qualified for EFVS training, and in an EFVS training course of instruction approved under FAR 121, 135, or 142. Aircraft time may not be substituted for simulator time as the failure scenarios and various weather conditions can not be reliably and safely replicated in the aircraft.

All the simulator exercises will be conducted from / to a runway with weather conditions compliant with each procedure. The night conditions exercises will be performed first as EFVS operations are generally easier in night conditions than in day light conditions.

The first take-off of the simulator session will be completed at maximum landing weight.

It is recommended to perform the exercises from / to an airfield with a mountainous environment in order to demonstrate the benefit of EFVS in such conditions (e.g. Innsbruck).

The simulator used for the simulator instruction segment must be FAA qualified to Level C with a daylight visual system, or to Level D. The EVS standards must at least meet the requirements contained in the Guidance Bulletin 03-03 “Enhanced Flight Vision System (EFVS) FSTD Qualification” issued by the FAA-NSP (AFS-205) or any other relevant regulation.

2.1 Briefing

EFVS procedures and limitations are reviewed. Exercises which will be performed in the simulator are discussed. The procedures described in Falcon 7X CODDE 2 / QRH 1 should be used as a reference for explaining the EFVS operating procedures detailed in § 1.4 of this appendix. The briefing will focus on the human factor issues as detailed in § 1.5 of this appendix.

Review the operational benefit as per applicable regulation and discuss how it will be introduced during this simulator session.

Review the possible differences between the simulator and the "real" aircraft, e.g.: 
• The EFVS image in the HUD might be better in the simulator than it is actually in the real aircraft, especially during day time, due to ambient light considerations.
• The simulator cannot reproduce some artifacts such as "roman candles" (due to rain drops on the IRW).
• SYMB brightness setting in the HUD which may be different.

2.2 Simulator (left seat / PF)

2.2.1 Flight Preparation
• Seat positioning;
• Rudder pedal adjustment;
• Combiner adjustments (symbology brightness, contrast, …);
• Displays, modes, annunciations;
• Design eye position;
• System use, check and test;
  • Calibration

2.2.2 Taxi
• Taxi out from ramp or into ramp in:
  • Night VMC, and
  Day low visibility conditions (100 to 150 m RVR)

2.2.3 Take-off
• Take-off from brakes release with 150 m RVR - Manual speed bug
• Demonstrate the use of EFVS kill/dim switch on the LH side-stick.

2.2.4 Multiple take-off, approaches and landings (operational benefit)
The exercises below should be performed. Repositioning the simulator between each exercise is permitted.
• Night conditions
  • After take-off (VMC) demonstrate the symbology in a clear night.
  • Precision approach - landing (VMC conditions);
  • Non precision approach / VMC conditions.
    Demonstrate the use of FPV to manage the slope during a final approach.
Discuss the operational benefit of EFVS.

- Freeze the simulator at the appropriate height during approach in order to demonstrate visual characteristics with and without EFVS for various weather conditions (if possible) and temperatures.
- Demonstrate the benefit of EFVS in a mountainous environment (e.g. Innsbruck, Austria (LOWI)) and VMC conditions.
- Demonstrate the use of EFVS kill / dim switch on the LH side-stick.
- Day light / IMC conditions.
- Instrument Landing System (ILS) CAT I precision or non precision approaches (alternately) with ceiling below the published DA/MDA. For each exercise the visibility should be set in order to demonstrate the RVR operational benefit accordingly with the related regulation.

Check that the AFM limitations are observed.

Demonstrate operational gain through five approaches:

- First approach (foggy conditions): the PF acquires the EFVS references at the published minima, but does not acquire the visual references at the EFVS minima: a missed approach is performed.
- Second approach (snowy conditions + maximum offset between final approach path and runway centerline): the PF acquires the EFVS references at the published minima, then acquires the visual references at the EFVS minima and lands.
- Third approach (foggy conditions) - IR image becomes laterally fixed and offset. The PF acquires the EFVS references at the published minima and continues. The PF should normally follow the FD guidance as per CODDE2 procedure, and discover that the IR image is not conformal with reality: he/she should elect to go-around, or to land if visual references are acquired and a safe landing can be anticipated. Focus on the necessity to not follow the IR image.
- Fourth approach (snowy conditions + crosswind 15kt - No offset) - Performed with AP and AT disengaged (following FD): the PF acquires the EFVS references at the published minima, then acquires the visual references at the EFVS minima and lands.
- Fifth approach: the PF acquires the EFVS references at the published minima, but loses them before acquiring natural vision on the runway (EVS FAIL Fault message): a missed approach is performed.

- Additional exercises as necessary. At least one failure impacting the EFVS operation should be performed during the simulator session (refer to CODDE 2 EFVS related pages - Abnormal Procedures). One failure may result in performing the missed approach procedure with heads down.
2.3 Simulator (right seat / PM)

The procedures described in Falcon 7X CODDE 2 should be used as a reference concerning the crew tasks allocations, call-outs an recommended displays of EVS image. Focus must be made on crew coordination, especially concerning the minima annunciation (unless the operator has a dedicated specific approved procedure).

The PM has to be trained accordingly.

2.4 Completion Standards

Successful completion of the simulator training prescribed in this appendix validates the requirements for qualification.

2.5 Duration

The duration of the simulator instruction segment for EFVS initial training is 2 hours (for both the left seat (PF) and the right seat (PM)).

If both crew members have to be trained as LH pilots for EFVS operation they will switch seats and the total duration will be 4 hours for the crew.

NOTE 1: Title 14 Code of Federal Regulations (CFR) 14 Section 91.175 (c) states that a pilot may continue an approach below the authorized MDA or continue the approach below the authorized DH if subparagraphs (1), (2), and (3) are met. Subparagraph (1) states, in pertinent part, “The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made….”. Subparagraph (2) states, in pertinent part, “The flight visibility is not less than the visibility prescribed in the standard instrument approach procedures being used”. Subparagraph (3) states, in pertinent part, “…at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot…”. All three subparagraphs: (1), (2), and (3) must be met. EVS is certified to allow the pilot to use EVS imagery to see the visual references required by subparagraph (3). The pilot must determine flight visibility without the use of EVS imagery.

NOTE 2: The EVS is also certified for use as an aid during all phases of flight: taxi, takeoff, climb, cruise, descent and landing.

7 FSB SPECIFICATIONS FOR CHECKING

Checking requires a proficiency check conducted in a level 'C' simulator, with a daylight visual display, in a level 'D' simulator, that has been qualified by the National Simulator Program for EFVS, or on an EFVS equipped aircraft. The proficiency check will include at least one instrument approach to published minimums and landing utilizing the EFVS. This check can be
accomplished concurrently with a proficiency or competency check under 61.57, 61.58, 121.441, 135.293, or 135.297.

8 FSB SPECIFICATIONS FOR CURRENCY

If CFR 14 part 61.57 (c) is being used for currency, at least one of the six required instrument approaches must be accomplished using EVS to published minimums.

9 FSB SPECIFICATIONS FOR DEVICES OR SIMULATORS

Device and simulator characteristics are designated in 14 CFR Part 60. The acceptability of differences between devices, simulators, and aircraft must be addressed by the POI or TCPM.

Requests for device approval should be made to the POI or TCPM. The POI or TCPM may approve these devices for that operator if their characteristics clearly meet the established FAA criteria and have been qualified by the National Simulator Program (NSP).

10 ALTERNATE MEANS OF COMPLIANCE

The FSB chairman should be consulted by the POI or TCPM when alternate means of compliance, other than those specified in this report, are proposed. Alternate means of compliance must be approved by the FAA Air Transportation Division, AFS-200, Washington Headquarters. If an alternate means of compliance is sought, operators will be required to submit a proposed alternate means for approval that provides an equivalent level of safety to the provisions of AC 120-53A and this FSB report Appendix. Analysis, demonstrations, proof of concept testing, differences documentation, and/or other evidence may be required.

In the event that alternate compliance is sought, training program hour reductions, simulator approvals, and device approvals may be significantly limited and reporting requirements may be increased to ensure an equivalent level of training, checking, and currency. FAA will generally not consider relief through alternate compliance means unless sufficient lead-time has been planned by an operator to allow for any necessary testing and evaluation.
APPENDIX 7

FLIGHTCREW SLEEPING QUARTERS AND REST FACILITIES

In accordance with the guidance provided in AC 121-31 (see Issue Paper SEA AEG-O-7) – Flightcrew Sleeping Quarters and Rest Facilities, the Falcon 7X Flight Standardization Board (FSB) has conducted a comprehensive review of the Falcon 7X Flightcrew Rest Area, as documented in the Certification Plans Modifications M-OPT0063, M-OPT0506, M-OPT317, M-OPT325, M-OPT359, M-OPT393, M-OPT0664, M-OPT0037 and M-OPT0655 and finds the facilities in compliance with 14 CFR 121.485 (a), 135.269(b)(5) and 91.1061(b)(1). Further, future changes to the evaluated configurations that affect crewmember emergency and/or related training requires subsequent evaluation by the FSB. The Principal Operating Inspector (POI), in lieu of an on-site operational evaluation, may use this statement of compliance in an operator’s approval process.

Training – Occupants

As a minimum, prior to occupying the crew rest area, crewmembers must be familiarized with the conditions for occupancy and the safety provisions and equipment of the facility, to include the following:

• Maximum allowable occupancy for TTOL and in flight
• Emergency oxygen (decompression procedures)
• Primary and secondary escape routes (evacuation procedures)
• Communication system
• Occupant use of seat and ancillary equipment, seat belts and bunk restraints during turbulence and critical phases of flight
• Restrictions prohibiting bunk use during takeoff and landing, (as appropriate)
• Configuration of the Crew Rest Area depending of the flight phase (rest configuration and TTOL configuration, in accordance with aircraft placards).
• Limitations described in CODDE.
APPENDIX 8

Falcon 7X STEEP APPROACH LANDING OPERATIONS

BACKGROUND:

A Flight Standardization Board (FSB) was convened in May and June 2009 to evaluate operational suitability and to determine training, checking, and currency requirements for conducting steep approach landing operations in the Falcon 7X aircraft. Supporting regulatory material is the FAA Issue Paper IP AEG-O-8 "Operational Suitability".

FSB members completed academic and flight training at the UKTC CAE’s facility in Burgess Hill, UK. Then, FSB members flew the actual aircraft at Dassault Aviation's facilities in Istres, France.

Certification activities were conducted together with FSB evaluation. Certification activities included sessions on full flight simulator at the NETC CAE's facility in Whippany, NJ, USA.

Steep approach landing operations in the Falcon 7X are defined as those glide paths greater than 4.5 degrees and less than or equal to 6.0 degrees. Dassault Aviation modifications for steep approach landing operations are defined by M194 and M196.

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 flown on the full flight simulator, and Lugano airport (LSZA) was flown using 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 and night conditions using either 5.5 or 6.0 degree approach angles. Some abuse cases, up to 8.0 degree approach angle, were also conducted. 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. Although steep approach landing operations in the Falcon 7X 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).

OPERATIONAL SUITABILITY ASSESSMENT:

The FSB has determined that the conduct of steep approach landing operations requires no higher piloting skill level than that of normal (3 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.

FSB has evaluated two cases of Steep Approach procedures as described below, and found that Falcon 7X was operationally suitable with aircrew trained in accordance with the requirements set in this Appendix:
1. The first case of steep approach procedure (London City like) requires the requested glidepath angle from the initial approach fix/glide slope intercept to touchdown,

2. The second case of steep approach procedure (Lugano like) requires a steep glidepath with an intercept of a lesser glidepath based on a Visual Glide Slope Indicator (VGSI) or electronic (internal or external) glidepath.

**PREREQUISITES FOR STEEP APPROACH TRAINING:**

Unless Falcon 7X Steep Approach training is integrated with, or occurs sequentially preceeding an initial qualification pilot proficiency check, a prerequisite to Steep Approach training in the Falcon 7X is prior training, qualification, and currency in the Falcon 7X aircraft.

Any PIC/SIC who has been properly qualified in the Falcon 7X under 14 CFR 61.55, 14 CFR 135, or 14 CFR 91 Subpart K may conduct steep approach landing operations provided the training, checking, and currency requirements of this Appendix have been satisfactorily accomplished.

**STEEP APPROACH TRAINING REQUIREMENTS:**

**Academic Training**

Academic training must consist of training in the following areas and is appropriate to any aircrew position:

1. **AFM Annex and CODDE2 review** to include: Limitations, Abnormal Procedures, Emergency Procedures, Normal Procedures, and Performance with special emphasis on increased landing distance.

2. **Stages of the Steep Approach** to include: Stabilized approach concept as a key success for steep approach landing, appropriate slats/flaps configuration and approach speed.

3. **Comparison of the Steep Approach sight picture** to that of 3.0 degree (normal) approach.

4. **Pilot Techniques** to include: avoidance of abrupt control inputs, ground rush illusion.

5. **Identification of airports with Steep Approaches** to include the specificity of airports with steep approach, for example the landing distance safety factor for London City Airport.

**Flight Training**

Flight training, simulator or aircraft, must consist of training in the following areas and is appropriate to any aircrew position:

1. **Use of aircraft equipment** to include: use of the head-up display (HUD) if equipped, steep approach with and without the flight director displayed (without the flight director even for those Falcon 7X authorized to display it)
STEEP APPROACH CHECKING REQUIREMENTS:

There is no requirement for knowledge checking or flight proficiency testing for Falcon 7X steep approach qualification. Proof of completion of Falcon 7X steep approach training is sufficient for showing qualification.

STEEP APPROACH RECURRENT REQUIREMENTS: 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.

Operational Approval

This FSB report does not constitute operational approval for the execution of steep approaches in the Dassault Falcon 7X.

Additionally, be advised, it is common that individual airport authorities have training and documentation requirements specific to their airfields with regard to steep approaches.
APPENDIX 9

CLOSE-IN NOISE ABATEMENT DEPARTURE PROCEDURE

NOISE ABATEMENT DEPARTURE PROCEDURE

Some airports requiring a steep approach procedure may also require a noise abatement departure procedure; the FSB, at the request of Dassault Aviation, evaluated a Noise Abatement Departure Procedure (NADP) developed by Dassault Aviation for the Falcon 7X.

The NADP, as evaluated by the FSB, requires a thrust reduction at 400 feet Above Airport Level (AAL) after take-off - see CODDE2.

This procedure has been found suitable by the FSB, and does not contradict the FAA Advisory Circular AC 91-53A.
Appendix 10

EASy II AVIONICS

This appendix to the FSB report is for the Honeywell EASy II avionics upgrade to the Dassault Falcon 7X aircraft.

Dassault Aviation has developed an upgrade to the current Honeywell avionics suite in the Falcon aircraft designated as EASy aircraft. This upgrade will be an option that may be purchased by operators with options within the upgrade that may be purchased individually. The operational suitability evaluation incorporated all options available at the time of certification of this product and the FSB found them operational suitable when operated by crew members trained and qualified according to the provisions of this FSB report Appendix. Future option will include RNP-AR 0.3.

Major EASy II avionics functions evaluated included the following:

- ADS-B Out (Automatic Dependent Surveillance – Broadcast)
- RAAS (Runway Awareness Advisory System)
- ADM (Automatic Descent Mode)
- Paperless Charts
- LPV approach capability (Localizer Performance with Vertical guidance)
- SVS (Synthetic Vision System)
- XM™ graphical weather display
- ATC Datalink
- LSS (Lightning Strike Sensor)

For United States registered aircraft, the AFM Supplement for this installation restricts EASy II use to qualified pilots who have been trained in accordance with the requirements listed in this FSB report. Ground school training and simulator training is required unless specific training credits apply (see paragraph 7 of this Appendix).

**Ground Training:** To be qualified in either seat position, and to operate as either the PF or PM, in accordance with the provisions of this FSB report both pilots must have attended 4 hours of ground school training meeting the specifications of paragraph 1 below. This ground school training should precede the simulator training.

**Procedures Training:** To be qualified in accordance with the provisions of this FSB report to serve as a pilot on an aircraft with the EASy II avionics, that pilot must have received a minimum 2 hours of training with a device that meets the requirements of AC 120-53, or as amended, for Level C training. Typically the minimum acceptable training media for level C training would be interactive computer-based training, cockpit systems simulators, or cockpit procedures trainers.
**Flight Training:** To be qualified in accordance with the provisions of this FSB report to serve as a pilot on an aircraft with the EASy II avionics, that pilot must have received a minimum 2 hours of training as PF, as defined by the appropriate CODDE, in a device that meets the requirements of AC 120-53, or as amended, for Level D training. Typically the minimum acceptable training media for level D training would be Flight Training Device level 6.

To be qualified in accordance with the provisions of this FSB report to serve as a pilot on an aircraft with the EASy II avionics, that pilot must have received a minimum 1 hour of training in PM duties, as defined by the appropriate CODDE, in a flight training device that meets the requirements of AC 120-53, or as amended, for Level D training. Typically the minimum acceptable training media for level D training would be Flight Training Device level 6.

**Flight Training PF/PM Considerations:** For a pilot that could serve as a Pilot In Command (PIC) the PF flight training must be done from the left seat and the PM training may be accomplished from the right seat. For a pilot that is limited to Second In Command privileges may accomplish the PF and PM training from the right seat only.

1.0 Ground School Segment.

1.1 Description of EASy II Options

A general overview of all available options and modifications on the EASy II software is required. The items that need to be covered, but not limited to, are as follows:

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<th>Basic Modifications</th>
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<th>Optional Modifications</th>
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<td>ADS-B Out (Automatic Dependent Surveillance – Broadcast)</td>
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<td>RAAS (Runway Awareness Advisory System)</td>
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<td>LPV approach capability</td>
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<td>ATC Datalink</td>
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<td>LSS (Lightning Strike Sensor)</td>
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The modules of each of these subjects must be presented in a manner so to be appropriate for a pilot that has little or no experience/knowledge of these technologies.

1.2 Special Emphasis Items

The following items should be discussed in detail as to allow the pilot to understand the capabilities of the EASy II system.
- Temperature Correction for Glideslope vs Temperature Correction for Decision Height.
- LPV/Wide Area Augmentation System (WAAS)
- Manual computation of Vref. In case penalties must be applied to landing performance computations, VREF is only corrected for the approach speed computations, but not during Go Around. The crew must therefore be trained to manually compute landing performances.

2.0 Procedures Training.

2.1 Training Device – The training device used for procedural training should meet the requirements of AC 120-53, or as amended, for Level C training. If a training device is used that has visuals for flight, these visuals should not be used as they will provide a distraction for this segment of training. Additionally, the training should not be conducted in a manner that requires the pilot to manipulate the controls for the purpose of flight. This allows the pilot trainee to concentrate on the lesson versus flying the aircraft.

2.2 Training Elements – The training elements must include, but are not limited to, the following:

- Avionics Window – FMS Setup Tab
- Avionics Window – Autospeeds Tab
- Avionics Window – AFCS Tab
- Flight Management Window – Preflight Phase of Flight
- Flight Management Window – Departure Phase of Flight
- Flight Management Window – Approach / Landing Phase of Flight
- Primary Display Unit Windows
- Low / high altitude transition
- Permanent Radio Bar Very High Frequency (VHF) Tab
- Interactive Navigation Window (I-NAV)
- Avionics Malfunction
- HUD

2.2.1 Dassault Operational Method and Crew Resource Management practices will be applied during all phases of training.

3.0 Flight Training.

3.1 Training Device – The training device used for procedural training should meet the requirements of AC 120-53, or as amended, for Level D training.

3.2 Training Elements – The training elements must include, but are not limited to, the following:
• Low Visibility Surface Operations
• Crosswind takeoffs and landings
• Instrument departure procedure
• Flight Director, Autopilot and Autothrottle Procedures
• Steep turns
• Stalls
  o Clean Configuration Approach to Stall and Recovery
• Unusual Attitude Recovery
  o Nose High Unusual Attitude and Recovery
  o Nose Low Unusual Attitude and Recovery
• Descent
• Precision approaches
• Non-Precision approaches
• Missed approach
  o Complete
• Holding
• Time Permitting
  o Visual Approach

3.2.1 Dassault Operational Method and Crew Resource Management practices will be applied during all phases of flight.

4.0 Continuing Qualification. It is strongly recommended that pilots use all available options of the EASy II system during recurrent simulator training.

4.1 It is also recommended that LPV/WAAS approaches be done with each check or currency event if the pilot is authorized by Operations Specifications to do so.

5.0 General Training Aid Requirements. All training conducted in Falcon 7X that require the use of Desktop Simulation (DTS), Graphical Flight Simulation (GFS), Instrument Procedures Trainers (IPT), or Full Flight Simulators for either Easy I or Easy II modifications must represent the appropriate modification being taught.

6.0 ATC Datalink Training. ATC datalink functions (both FANS1A and Aeronautical Telecommunications Network (ATN) B1) are part of the EASy II avionics suite. Operators should ensure that flight crew are thoroughly familiar with all relevant aspects of data link operations according to the ICAO Global Operational Data Link Document (GOLD) prior to operation.

6.1 Training Elements – The training elements must include, but are not limited to, the following:

• Messages and user interface used in FANS 1/A and in ATN B1 are similar but not identical.
• Format of data (Flight Level (FL) and Mach) to be entered in Multi-Function Control Display Unit (MCDU) is specific and different between FANS 1/A and ATN B1.
• Complete content of message may not be displayed in first page, and in this case, crew has to look at the other page(s) where a required answer from the crew to the ATC may be displayed (with a specific mention that the acknowledge key for Oceanic Clearances is visible on first page).
• It is recommended that the PM displays the page in his PDU and not in the MDU shared area.
• There is no direct access to Oceanic Clearances via shortcut because Oceanic Clearances is part of a sub-page: crew needs to navigate in the page to get the message.
• There is no automatic handover between FANS 1/A and ATN B1. Handover should follow CODDE2 procedure.
• FANS 1/A clearance is to be manually loaded in the flight plan (it is not automatic).

7.0 Training Credits between F900EX EASy II, F2000EX EASy II, F7X EASy II.

7.1 EASy II (except ATC Datalink). Considering the similarities in EASy II definitions among F900EX Easy II, F2000EX EASy II, and F7X EASy II, the FSB has determined that the differences training level described below is required. Supporting document (Dassault Aviation document ref. DGAC13DSOF025) is available on file at the AEG.

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<tr>
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<td>F2000EX EASy II 1st Cert</td>
<td>F900EX EASy II 1st Cert</td>
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<tr>
<td>F7X EASy II</td>
<td>D</td>
<td>B</td>
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7.2 ATC Datalink. Considering the similarities in ATC Datalink definitions among F2000EX, F900EX, and Falcon 7X, an ATC Datalink training is valid for all EASy II Falcon airplanes.

8.0 EASy II Initial Programs. An initial training course should cover all the training requirements of Appendix 3 of this FSB report.

8.1 It is strongly recommended that EASy II initial programs incorporate autothrottle inoperative during go around scenarios in flight training to help facilitate the limitations of EASy I aircraft.

9.0 EASy II to EASy I Differences Training. An EASY II to EASy I course has been evaluated and is covered in the MDR table.

9.1 Training Requirements. The EASy I system is limited in function compared to EASy II. The ground training should address the following areas.
a. PDU  
b. Avionics page differences  
c. FMW Phase of Flight (POF) differences  
d. Absence of TOGA  
e. Absence of Dual checklists  
f. Absence of Temp Comp  
g. Absence of RAAS  
h. Data Management Unit (DMU) Loaded Charts  
i. Absence of ADS-B  
j. Absence of Automatic Descent Mode  
k. Absence of SBAS LPV  
l. Absence of Synthetic Vision  

9.2 Training Device – The training device used for procedural training should meet the requirements of AC 120-53 for Level C training.

10.0 EASy I Crew Training on EASy II Training Devices.

It is possible for EASy II Training Devices to be used with EASy I only qualified pilots if a training program is developed to limit the EASy II functionality to simulate the EASy I system.

10.1 Training Duration – A minimum of 2 hours ground training is required for specific differences from EASy I to the EASy II training device. A minimum of 2 hours of flight training per crewmember is required in a training device that meets the requirements of Level D training as defined in AC 120-53, or as amended. Since the two hour flight requirement is to allow for one hour of training in Pilot Flying (PF) duties and one hour in Pilot Monitoring (PM) duties the training for two crewmembers can be accomplished concurrently in a two hour block.

10.2 Noted Differences – The following differences listed by ATA code must be discussed and/or demonstrated.

**ATA 21: Pressurization**

- Cabin altitude indication color code logic not consistent when operating at a high elevation airport

**ATA 22: Autoflight**

- Auto-throttle less reactive
- Auto-flight
  - No Yaw damper (YD) authority limitation on ground
  - Available approaches different with different indications
ATA 23: Communications

- ADS-B out not available
- CPDL-C - ATN not available
- FANS-1A not available

ATA 31: Indicating & Recording

- 2nd ECL not available

ATA 34: Navigation

- MKB keyboard difference
  - No ATC DLTK key
  - XPDR key replaced with ATC and ATC/TCAS keys
- PDU design generic design:
  - “ADI” and “HSI” are now separated without see-through appearance
  - Different pitch / heading scales
  - FPV caged
  - Minor symbology differences associated with nav source indications, tuning, vertical and lateral tracking indications
  - No Synthetic Vision System (SVS)
- INAV differences in information available for display and corrections made in EASy II for known Vertical profile discrepancies.
- Avionics Window:
  - Auto Speed management and display differences
- Flight Management Window differences:
  - No QFE/QNH calculator
  - TOLD differences (wind settings, Engine out climb gradient and failure landing penalties not available… etc.)
  - No Temperature Compensation
  - Vertical Glidepath (VGP) mode: indications and APP arming/capture differences
  - Some types of approaches not available in database (approaches named with suffixes, circling approaches, LPV, RNP-AR)
- Global Positioning System (GPS)
  - No Satellite-Based Augmentation System (SBAS) service available
• Miscellaneous:
  o Other flight management differences (e.g. undue reset of approach minima when a
    DIRECT TO FINAL is performed…)
  o Miscellaneous surveillance differences (e.g. flight ID has to be re-entered for each
    flight)
  o FMS reset when AFIS uploading a FPLN which airports contain more than 100
    SID/STAR fixes.
• RAAS: The SILENT pushbutton on the Guidance Panel does not silence the RAAS
  advisories
• No XM Graphical Weather in the INAV
• No paperless charts capability
  o Charts reside in PCMCIA card and transmits over LAN

10.3 Flight Training - Flight training is required in a training device that meets the requirements
of Level D training as defined in AC 120-53, or as amended. The following elements are
required.

☐ Review of Avionics page tabs
☐ Review of Primary Display unit (PDU) layout
☐ Review of HSI toolbar
  o Review of MDU layout
  o Review of I-NAV
  o Review of FMW --- POF tabs
☐ Perform Flight plan entry
☐ Perform Crosswind takeoff to note FPS difference
☐ Execute a LOC based approach
☐ Execute a GPS approach

10.4 Training Credit

10.4.1 Time spent training under this paragraph cannot be used for any credit towards any other
time requirements set forth in this appendix or any other approved training program.

10.4.2 This training must be completed within the previous 6 calendar months of any EASy I
training on an EASy II training device. This limitation is only for pilots that have not been
previously EASy II qualified.