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## Flight Standardization Board (FSB) Report

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Revision: 3  
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Manufacturer  
**Saab AB, Saab Aeronautics**

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
A52EU	SAAB/SF340A	SAAB 340A	SF-340
A52EU	SAAB 340B	SAAB 340B	SF-340

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## 1. RECORD OF REVISIONS

Revision Number	Sections(s)	Page(s) Affected	Date
Original	ALL	ALL	2/16/1990
1	ALL	ALL	6/16/1992
2	ALL	ALL	6/07/2016
3	ALL	ALL	06/19/2018

## 2. INTRODUCTION

Aircraft Evaluation Groups (AEGs) are responsible for working with aircraft manufacturers and modifiers during the development and Federal Aviation Administration (FAA) certification of new and modified aircraft to determine: 1) the pilot type rating; 2) flightcrew member training, checking, and currency requirements; and 3) operational suitability.

This report lists those determinations for use by: 1) FAA employees who approve training programs; 2) FAA employees and designees who certify airmen; and 3) aircraft operators and training providers to assist them in developing their flightcrew member training, checking, and currency.

## 3. HIGHLIGHTS OF CHANGE

The purpose of this revision is a new format and has been completely modified from the previous revision. Major modifications include the deletion of currency levels depicted in the Master Differences Requirements (MDR) table, renaming of Operator Differences Tables to Differences Tables, and deleting regulatory repetitive information.

## 4. BACKGROUND

The Seattle AEG formed a Flight Standardization Board (FSB) that evaluated the Saab 340A and B as defined in FAA Type Certificate Data Sheet (TCDS) # A52EU. The evaluation was conducted during June 1984 using the methods described in FAA Advisory Circular (AC) 120-53, Crew Qualification and Pilot Type Rating Requirements for Transport Category Aircraft Operated under FAR Part 121.

## 5. ACRONYMS

AC	Advisory Circular
ACS	Airman Certification Standards
AEG	Aircraft Evaluation Group
AOM	Aircraft Operating Manual
APR	Automatic Power Reserve

CTOT	Constant Torque on Takeoff
FAA	Federal Aviation Administration
FFS	Full Flight Simulator
FSB	Flight Standardization Board
FSTD	Flight Simulation Training Device
FTD	Flight Training Device
LOFT	Line Oriented Flight Training
MDR	Master Differences Requirements
NWS	Nose Wheel Steering
POI	Principal Operations Inspector
PTS	Practical Test Standards
TCDS	Type Certificate Data Sheet
TCPM	Training Center Program Manager
14 CFR	Title 14 of the Code of Federal Regulations

## 6. DEFINITIONS

These definitions are for the purposes of this report only.

- 6.1 Base Aircraft.** An aircraft identified for use as a reference to compare differences with another aircraft.
- 6.2 Current.** A crewmember meets all requirements to operate the aircraft under the applicable operating part.
- 6.3 Differences Tables.** Describe the differences between a pair of related aircraft and the minimum levels operators must use to conduct differences training and checking of crewmembers. Difference levels range from A to E.
- 6.4 Master Differences Requirements (MDR).** Specifies the highest training and checking difference levels between a pair of related aircraft derived from the Differences Tables.
- 6.5 Mixed Fleet Flying.** The operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and currency events.
- 6.6 Operational Evaluation.** An AEG process to determine pilot type rating, minimum crewmember training, checking and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics, no-flap landing).
- 6.7 Operational Suitability.** An AEG determination that an aircraft or system may be used in the National Airspace System (NAS) and meets the applicable operational regulations (e.g., Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 121, 133, 135).
- 6.8 Qualified.** A crewmember holds the appropriate airman certificate and ratings as required by the applicable operating part.

- 6.9 Related Aircraft.** Any two or more aircraft of the same make with either the same or different type certificates that have been demonstrated and determined by the Administrator to have commonality.
- 6.10 Seat Dependent Tasks.** Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.
- 6.11 Special Emphasis Area.** A training requirement unique to the aircraft, based on a system, procedure, or maneuver, which requires additional highlighting during training. It may also require additional training time, specialized training devices, or training equipment.
- 6.12 Specific Flight Characteristics.** A maneuver or procedure with unique handling or performance characteristics that the FSB has determined must be checked.

## **7. PILOT TYPE RATING**

- 7.1** Type Rating. The Saab 340A and Saab 340B type rating designation is SF-340.
- 7.2** Common Type Ratings. Not applicable.
- 7.3** Military equivalent designations. Military aircraft that qualify for the SF-340 can be found on the [faa.gov](http://www.faa.gov/licenses_certificates/airmen_certification/) website under Licenses and Certificates, Airmen Certification, Online Services, Aircraft Type Rating Designators. This webpage is kept up-to-date and can be found at [http://www.faa.gov/licenses\\_certificates/airmen\\_certification/](http://www.faa.gov/licenses_certificates/airmen_certification/).

## **8. RELATED AIRCRAFT**

- 8.1** Related Aircraft on Same TCDS. The Saab 340A is related to the Saab 340B. As used in this report, series groups are identified as SF-340A and SF-340B.
- 8.2** Related Aircraft on Different TCDS. Not applicable.

## **9. PILOT TRAINING**

- 9.1** Airman Experience.

The provisions of this section apply to all SF-340A and SF-340B training programs, and assume the training will be given to airmen with previous experience. Examples of applicable previous experience may include any of the following: experience in parts 121 or 135 air carrier operations, part 125 operations, former military, commuter, or corporate pilots with turbine powered aircraft experience, etc. Pilots without this experience may require additional training.

## 9.2 Special Emphasis Areas.

Pilots must receive special emphasis on the following areas during initial, differences, and recurrent ground training for the SF-340A and SF-340B:

- a) Automatic Power Reserve (APR) system (SF-340B).
- b) Reverse thrust system with one engine inoperative (SF-340A).
- c) Independent reverse thrust capability with one engine inoperative (SF-340B).
- d) Constant Torque on Takeoff (CTOT) system (SF-340A and SF-340B).
- e) Autocoarsen system (SF-340A and SF-340B).
- f) Flight Status Panel (FSP) (SF-340A and SF-340B).
- g) Ice Speed Modification/Improved Stall Warning Computer (SF-340A and SF-340B).

Pilots must receive special emphasis on the following areas during initial, differences, and recurrent flight training for the SF-340A and SF-340B:

- a) Effect of Type II and Type IV Deicing/Anti-Icing Fluids (SF-340A and SF-340B).
- b) APR system (SF-340B).
- c) Reverse thrust system with one engine inoperative (SF-340A).
- d) CTOT system (SF-340A and SF-340B).
- e) Autocoarsen system – with autocoarsen system inoperative, demonstrate engine failure on takeoff and go-around (SF-340A and SF-340B).
- f) FSP (SF-340A and SF-340B).
- g) Ice Speed Modification/Improved Stall Warning Computer – demonstrate single engine missed approach in icing conditions (SF-340A and SF-340B).

## 9.3 Specific Flight Characteristics.

Maneuvers/procedures required to be checked as referenced in the airline transport pilot (ATP) and Aircraft Type Rating practical test standards (PTS) for Airplane or Airman Certification Standards (ACS), as applicable, and/or Appendix F of part 121.

There are no specific flight characteristics.

## 9.4 Seat Dependent Tasks.

- a) Operation of nose wheel steering (NWS) (initial, transition, upgrade, and recurrent training) (left seat).
- b) Manual and Emergency Landing Gear Extension (initial, transition, and recurrent training) (left and right seat).
- c) Activation of passenger emergency oxygen system (initial, transition, and recurrent training) (left and right seat).

**9.5 Regulatory Training Requirements which are Not Applicable to the SF-340A and SF-340B.**

- a) Fuel Jettisoning. Not applicable to the SF-340A and SF-340B. There is no substitute available.
- b) Tuck and Mach Buffet. Not applicable to the SF-340A and SF-340B. There is no substitute available.
- c) Flight engineer's station. Not applicable to the SF-340A and SF-340B. There is no substitute available.
- d) Turns with and without spoilers. Not applicable to the SF-340A and SF-340B. There is no substitute available.

**9.6 Flight Simulation Training Devices (FSTD).**

There are no specific systems, procedures, or maneuvers that are unique to the SF-340A and SF-340B that require a specific FSTD for training.

**9.7 Training Equipment.**

There are no specific systems or procedures that are unique to the SF-340A and SF-340B that require specific training equipment.

**9.8 Differences Training Between Related Aircraft.**

Pilots must receive differences training between the SF-340A, SF-340B, and SF-340 "Cargo Configuration". The level of training is specified in Appendix 3, Differences Tables.

## **10. PILOT CHECKING**

**10.1 Landing from a No-Flap or Nonstandard Flap Approach.**

The probability of flap extension failure on the SF-340A and SF-340B is not extremely remote due to system design. Therefore, demonstration of a no-flap approach and landing during pilot certification or a 14 CFR part 61, § 61.58 proficiency check, part 91, § 91.1065 competency check, part 121, § 121.441 proficiency check, part 125, § 125.287 competency check, or part 135, § 135.293 competency check is required.

Refer to FAA Order 8900.1, Volume 5 when the test or check is conducted in an aircraft versus a full flight simulator (FFS).

**10.2 Specific Flight Characteristics.**

Maneuvers/procedures required to be checked as referenced in the ATP and Aircraft Type Rating for Airplane PTS or ACS, as applicable and/or Appendix F of part 121.

There are no specific flight characteristics.

### **10.3 Seat Dependent Tasks.**

Pilots must be checked in these seat dependent tasks:

- a) Operation of NWS (initial, transition, upgrade, and recurrent checking) (left seat).
- b) Manual and Emergency Landing Gear Extension (initial, transition, and recurrent checking) (left and right seat).
- c) Activation of passenger emergency oxygen system (initial, transition, and recurrent checking) (left and right seat).

### **10.4 Other Checking Items.**

Not applicable.

### **10.5 FSTDs.**

There are no specific systems, procedures, or maneuvers that are unique to the SF-340A and SF-340B that require a specific FSTD for checking.

### **10.6 Equipment.**

There are no specific systems or procedures that are unique to the SF-340A and SF-340B that require specific equipment.

### **10.7 Differences Checking Between Related Aircraft.**

Pilots must receive difference checking between the SF-340A, SF-340B, and SF-340 "Cargo Configuration". The level of checking is specified in Appendix 3.

## **11. PILOT CURRENCY**

There are no additional currency requirements for the Saab 340A/B other than those already specified in parts 61, 121, 125, and 135.

### **11.1 Differences Currency Between Related Aircraft.**

Not applicable.

## **12. OPERATIONAL SUITABILITY**

The SF-340A and SF-340B is operationally suitable for operations under parts 91, 121, 125, and 135. The list of operating rules evaluated is on file at the Seattle AEG.

## **13. MISCELLANEOUS**

### **13.1 Forward Observer Seat.**

The SF-340A and SF-340B forward observer seat has been evaluated and determined to meet requirements of §§ 121.581(a), 125.317(b), and 135.75(b), and AC 120-83, Flight Deck Observer Seat and Associated Equipment.

### **13.2 Landing Minima Categories.**

Reference 14 CFR part 97, § 97.3. The SF-340A and SF-340B is considered Category C aircraft for the purposes of determining “straight-in landing weather minima”.

### **13.3 Emergency Evacuation.**

A full-scale emergency evacuation was successfully completed on the SF-340 by Saab-Fairchild in 1985. Was observed by FAA ANM 270S. The aircraft was configured with 34 passenger seats and one flight attendant. The demonstration complied with § 121.291(a).

### **13.4 Normal Landing Flaps.**

The SF-340A and SF-340B normal “final landing flap settings” are 20° and 35°.

## APPENDIX 1. DIFFERENCES LEGEND

### Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	<ul style="list-style-type: none"> <li>• Operating manual revision (HO)</li> <li>• Flightcrew operating bulletin (HO)</li> </ul>	<ul style="list-style-type: none"> <li>• Crew has already demonstrated understanding on base aircraft (e.g. updated version of engine).</li> <li>• Minor or no procedural changes required.</li> <li>• No safety impact if information is not reviewed or is forgotten (e.g. different engine vibration damping mount).</li> <li>• Once called to attention of crew, the difference is self-evident.</li> </ul>
B	Aided Instruction	<ul style="list-style-type: none"> <li>• Audiovisual presentation (AV)</li> <li>• Tutorial computer-based instruction (TCBI)</li> <li>• Stand-up instruction (SU)</li> </ul>	<ul style="list-style-type: none"> <li>• Systems are functionally similar.</li> <li>• Crew understanding required.</li> <li>• Issues need emphasis.</li> <li>• Standard methods of presentation required.</li> </ul>
C	Systems Devices	<ul style="list-style-type: none"> <li>• Interactive (full-task) computer-based instruction (ICBI)</li> <li>• Cockpit procedures trainers (CPT)</li> <li>• Part task trainers (PTT)</li> <li>• Level 4 or 5 flight training device (FTD 4-5)</li> </ul>	<ul style="list-style-type: none"> <li>• Training can only be accomplished through systems training devices.</li> <li>• Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations.</li> <li>• Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.</li> </ul>
D	Maneuvers Devices	<ul style="list-style-type: none"> <li>• Level 6 or 7 flight training device (FTD 6-7)</li> <li>• Level A or B full flight simulator (FFS A-B)</li> </ul>	<ul style="list-style-type: none"> <li>• Training can only be accomplished in flight maneuver devices in a real-time environment.</li> <li>• Training requires mastery of interrelated skills versus individual skills.</li> <li>• Motion, visual, control loading, and specific environmental conditions may be required.</li> </ul>
E	Level C/D FFS or Aircraft	<ul style="list-style-type: none"> <li>• Level C or D full flight simulator (FFS C-D)</li> <li>• Aircraft (ACFT)</li> </ul>	<ul style="list-style-type: none"> <li>• Motion, visual, control loading, audio, and specific environmental conditions are required.</li> <li>• Significant full task differences that require a high fidelity environment.</li> <li>• Usually correlates with significant differences in handling qualities.</li> </ul>

### Checking Differences Legend

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

## APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE

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

<b>Related Aircraft</b> ↓	<b>Base Aircraft</b> →	SF-340A	SF-340B
SF-340A		B/A	B/B
SF-340B		D/D	B/A

### APPENDIX 3. DIFFERENCES TABLES

This Design Differences table, from the SF-340A to the SF-340B, was proposed by Saab-Fairchild and validated by the FSB on June 1984. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: SF-340A	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
TO RELATED AIRCRAFT: SF-340B						
	POWERPLANT	LIMITATIONS, INDEPENDENT AUTO REVERSE, AUTOIGNITION, PROP OVERSPEED GOVERNOR, CTOT APR, DECU	Yes	Yes	B	C
	PERFORMANCE	NEW FORMAT	Yes	Yes	B	B
	FUEL	TEMPERATURE	No	No	B	B
	COCKPIT INTERIOR	ENGINE INSTRUMENTS, FLIGHT STATUS PANEL, CL UNFEATHER POSITION, TEST PANEL, FLAP HANDLE POSITION	No	Yes	B	B
	WARNINGS/ CAUTIONS	WARNING AND ANNUNCIATOR	No	Yes	B	B
	FLIGHT STATUS PANEL	DIFFERENT INDICATIONS/PHILOSOPHY	No	Yes	B	B
	EXTERIOR DIFFERENCES	VORTEX GENERATORS, SPANWISE BOOTS, TAILCONE DRYER	No	No	B	B

FROM BASE AIRCRAFT: SF-340A  TO RELATED AIRCRAFT: SF-340B	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	MISSED APPROACH WITH MANUAL APPLICATION OF 7% DELTA TORQUE (107 %)	To be accomplished in single engine configuration.	Yes	Yes	B	C Level 5 FTD
	INDEPENDENT REVERSE CAPABILITY		Yes	Yes	B	C Level 5 FTD

This Maneuver Differences table, from the SF-340A to the SF-340B, was proposed by Saab-Fairchild and validated by the FSB on August 15, 1989. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

<b>FROM BASE AIRCRAFT: SF-340A</b>	<b>MANUEVER</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHNG</b>	<b>TRAINING</b>	<b>CHECKING</b>
<b>TO RELATED AIRCRAFT: SF-340B</b>						
	DUAL CONTROL REVERSE REQUIREMENT		Yes	Yes	B	B
	TAKEOFF WITH CTOT AND APR ACTIVATION	One engine fail at V <sub>1</sub>	Yes	Yes	B	D FFS
	TAKEOFF WITH CTOT AND NO APR	One engine fail at V <sub>1</sub>	Yes	Yes	B	C Level 5 FTD
	AUTOCOURSAN SYSTEM	Inoperative with V <sub>1</sub> failure.	Yes	Yes	D FFS	D FFS