# **ELITE** Airtrainer®

**MODEL AT-11** 

# TRAINER OPERATIONS MANUAL

Serial Nº 11042



# ELITE Airtrainer®

# TRAINER OPERATIONS MANUAL

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Nothing in this manual supersedes any operational documents issued by the Civil Aviation Safety Authority (Aust).

# **RECORD OF AMENDMENTS**

No.	Date amended	Date inserted	Inserted by: Init.	Description
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# **SECTION ONE**

## 1. SYNTHETIC TRAINER CATEGORIES AND CREDITS

# 1.1 INTRODUCTION

1.1.1 Civil Aviation Order 40.2.1 para 9 provides for the use of approved synthetic trainers to meet specified recency and renewal requirements to maintain the privileges of an instrument rating.

## 1.2 SYNTHETIC TRAINER CATEGORIES

1.2.1 The Authority may grant 'Recency only' approval for synthetic trainer credits in accordance with Civil Aviation Orders for use by instrument rating holders. Such approval will be granted to the manufacturer or his agent when the trainer meets the requirements of 'FSD2 - Operational Standards and Requirements - Approved Synthetic Trainers', Section 6. In granting the 'recent experience only' approval, the Authority will assign a Category B listing with Schedule 2 credits only. A cockpit enclosure and instructor facilities are not required.

1.2.2 The following table details the description and credits for a Category B 'recency only' trainer.

		The second supplies to the second supplies the
CATEGORY	DESCRIPTION	CREDITS
B (Recency only)	<ul> <li>ADF, VOR, ILS and DME required (TSO GPS included)</li> <li>Full instrumentation and controls required.</li> <li>Realistic aerodynamic simulation and characteristics required.</li> </ul>	Recency  2 hours (of the three) instrument time requirement in 90 days.  NDB, VOR, ILS, LLZ, DME arrival, GPS NPA  1 hour instrument time in 90 days for single pilot recent experience

1.2.3 Synthetic trainer requirements for Category B are detailed in Section 3 of the publication FSD2 - Operational Standards and Requirements - Approved Synthetic Trainers.

### 1.3 SYNTHETIC TRAINER SOFTWARE VERSION

- 1.3.1 The Elite Evolution models use the ELITE ® software produced by ESS Ag, Switzerland. The software is subject to periodic assessment and amendment to enhance and fix housekeeping issues, such as, reported bugs and compatibility with computer systems and hardware. The owner / operator of the Elite Evolution has the option whether or not to obtain updates.
- 1.3.2 Software versions released *do not* alter the user interface, (what the person sees and how the simulation is interfaced), in such a way as to void the accreditation of the Elite Evolution Airtrainer. All ELITE software versions are authorised with the Elite Pilot series. Further details can be obtained from Simflight at <a href="mailto:simops@simflight.com.au">simops@simflight.com.au</a>.
- 1.3.3 Never the less should a version be released that fundamentally alters the accreditation of the Elite Pilot series airtrainer then the owner / operator will be notified of this on initial offer of the software update. The owner / operator will then be required to notify their local CASA office of such an update and arrange for CASA inspection if required.

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Model AT11 STOM

1.3.4 The owner / operator is to maintain a record of software updates by noting the form below. This record is to be maintained with the STOM at all times.

ELITE Software Version	Date installed	Installed by:	Signature
ELITE Ver 8.6	12/09/13	SimFlight	Dava.
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# **SECTION TWO**

# 2. THE TRAINER

# 2.1 INTRODUCTION

2.1.1 The trainer software used is the 'ELITE Pilot Ver8.6'. This software and avionics hardware is manufactured in Switzerland by ELITE Simulation Solutions AG. The flight controls are manufactured by SAITEK USA. Simflight as Agents for ELITE facilitate and support the product in Australia.

# 2.2 TRAINER DESCRIPTION

2.2.1 This particular version of the Elite Airtrainer is the Model AT11 (single pilot recency only unit). The instrumentation and performance represents various popular aeroplane types which can be selected by the pilot, such as, Archer or Cessna or various other aircraft modules can be added. Although the Trainer is generic the instrument panels are photorealistic and true to life. The software used is ELITE® by ESS AG which has been specially modified to allow RNAV (GNSS) NPA capability.



- 2.2.2 The trainer comprises of hardware yoke, pedal & throttle controls and avionics. The pilot is able to fully interface with the computer generated instrument panel via the mouse, switches and buttons. The pilot is able to monitor morse code identification by dialling in the appropriate frequency. Fuel tank management is also provided. The following hardware is approved for use with this said Trainer and ELITE software:
  - a. ELITE based hardware (Pro-Panel II / SE or ELITE Yoke, Pedals and throttle quadrants).
  - b. Saitek Pro USB Yoke, throttle quadrant and pedals
  - c. CH Pro USB Yoke, throttle quadrant and pedals
- 2.2.3 The following navigation aids are fitted:
  - ADF (twin needle RMI or Fixed Card)
  - VOR (twin needle RMI, HSI and CDI)
  - ILS/LLZ
  - DME
  - TSO C-129 GPS

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- 2.2.4 The following IFR recency can be carried out:
  - Basic instrument flying
  - Instrument letdowns (NDB, NDB/DME, VOR, VOR/DME, Twin Locator, GPS/DME arrivals, GPS NPA and ILS / LLZ)
  - Standard Instrument departures and Arrivals
  - · Cross country instrument flight.
- 1.2.3 The following aircraft types with their corresponding instrument panel can be used with the Trainer:
- Cessna 172R / 182S
- Piper Archer III
- Piper Arrow IV
- Beech Bonanza A36
- Beech Baron 58
- Piper Seneca III
- King Air B200
- 1.2.4 Shown below are some examples of the aircraft modules available. Refer to the Trainer Pilot Handbook for checklist and information specific to the module selected.



### **Beech Baron 58 features:**

- KG258 or KI256 Attitude Indicator
- KI525A HSI
- KI229 RMI
- KFC150 Flight Control System
- KAS297B Altitude / Vertical Speed Selector
- Trimble 2000 Approach Plus GPS
- GPS Annunciator Panel
- KEA130A Encoding Altimeter
- Transponder KN 67A
- ADF KR 27 TSO
- Nav / Comm KX 165 TSO

# Also available as DG / Fixed Card panel configuration

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# Piper Seneca III PA-34-220T features:

- KG258 or KI256 Attitude Indicator
- KI525A HSI
- KI229 RMI
- KFC150 Flight Control System
- KAS297B Altitude / Vertical Speed Selector
- Trimble 2000 Approach Plus GPS
- GPS Annunciator Panel
- KEA130A Encoding Altimeter
- DME KN 62A Receiver
- Transponder KN 67A
- ADF KR 27 TSO
- Nav / Comm KX 165 TSO
- Radar altimeter

# Available in HSI / RMI panel configuration only



# Beech Bonanza A36 features:

- Same instruments as per Beech Baron
- Plus Radar Altimeter

# Also available in DG / Fixed Card panel configuration

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Beech King Air B200 (only with King Air Power Quadrant)







Cessna 172R

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# **SECTION THREE**

# 3. APPROVALS

# 3.1 APPROVAL OF SYNTHETIC TRAINER

- 3.1.1 Applications for the approval of a 'recency only' synthetic trainer shall be made to the Authority through a Regional Office of the CASA. The application must meet the requirements contained in Section 6 of the FSD2.
- 3.1.2 A synthetic trainer which is to be used only for the purposes of logging recency by the holder of a current instrument rating or a Private IFR rating may be issued with a certificate of approval (STC) and used for this purpose without having an accreditation inspection by a CASA Flying operations inspector provided that:
- The trainer is the same make, model, software version, and
- Control system as one which has already been approved and used for this purpose without having an accreditation inspection, and
- A copy of this approval must be included in the STOM.
- 3.1.3 A certificate of approval will be issued if the owner or operator (*end user*) of the synthetic trainer supplies the following information to CASA:
- the make (Elite Airtrainer), model (AT-11), software version (version 8.6) and manufacturer's serial number of the synthetic trainer including the control system (SAITEK), and
- a copy of the CASA certificate of approval for that make, model, software version and control system of synthetic trainer, and the system which will be used to verify ground time logged, and
- the name of the owner or operator (the end user) and the address at which the synthetic trainer will be operated.

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# **SECTION FOUR**

# 4. TRAINER PROCEDURES

### 4.1 TRAINER OPERATION

- 4.1.1 The operation of the trainer is fully contained in the on-line Elite Manual supplied with the software. It can be printed out or read either prior to using the software or during the running of the flight simulator program.
- 4.1.2 The Trainer procedure is outlined in Appendix 2.

# 4.2 METHOD OF VERIFICATION

- 4.2.1 FSD2, Section 3 requires that instrument rating holders may use a synthetic trainer to log ground time to meet the recent experience requirements of CAO 40.2.1 without the presence of a flight instructor, provided the simulated flight path and flight duration may be verified. Verification may be by means of automatic recording of the date, flight path and flight duration.
- 4.2.2 The procedure to be used by the end user pilot to meet verification requirements is as follows:
- Each pilot using the AT11 Trainer is recommended to have his or her own storage disk, such as, a USB memory disk marked with their name. This disk is the property of each pilot and is to be secured in their possession. The disk is inserted into the trainer computer to save the flight path, date and time for each session.
- 2. Prior to commencing the currency session the pilot is to record the session start time, his or her name, signature and the date and time in the 'Trainer Flight Log', see Appendix 1.
- 3. At the conclusion of each flight session or exercise the pilot saves the path (showing the instrument flight undertaken including any approaches) onto his or her storage disk as a record of the flight path, date and time. It is recommended that the path file name be saved as a date, example, '15Feb00'. If more than one session is conducted on the same day then the subsequent path file could be saved as, '15Feb00-2'. This way the log book entry can be easily verified with the saved path file stored in the storage disk as evidence of the flight. The saved path file can be loaded up into the map screen for verification of instrument flight undertaken. The saved path file is recorded in the 'Trainer Flight Log'.
- 4. The actual training session time is registered by the software in the 'Control' menu. Freezing the simulation stops this elapsed time. The pilot is to record this time in the 'Trainer Flight Log'. This time will generally be less than the Session time and is the value recorded in the pilots log book.
- 5. Should the end user pilot decide to abort the session or not record the flight in his or her log book the Trainer Flight Log is still to be completed with the notation of no file saved.
- 4.2.3 The above procedure ensures that the logged time and approaches conducted are verified with both the saved path file showing date and time which must correlate with the Trainer Flight Log.

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THE TRAINER FLIGHT LOG MUST BE KEPT WITH THE TRAINER AT ALL TIMES. PREVIOUS FILLED LOG SHEETS MUST BE FILED FOR EASY ACCESS BY CASA IF REQUIRED.

IT IS HIGHLY RECOMMENDED THAT A BACK-UP COPY OF ALL PATH FILES BE CARRIED OUT ON A REGULAR BASIS (AT LEAST ONCE A WEEK).

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AT-11 STOM

# **APPENDIX 1**

TRAINER FLIGHT LOG

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SAVED PATH FILE NAME								A 3				
SESSION FLIGHT TIME	in of											00 1 10 5 0 1 1 0 4 0
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# **APPENDIX 2**

# **ELITE AIRTRAINER - PROCEDURE**

# 1. Switch ON Sequence

- a) Computer switch on
- b) Allow Computer to boot-up into Windows desktop
- c) Select ELITE icon (double click with mouse)
- d) Launch into simulator program by following screen prompts
- e) Refer to ELITE User Manual for more information on 'Menu' for setting up flight exercise.
- f) Pilot to setup switches as required for flight exercise

# 2. Close Down Sequence

- a) Save path to pilot's storage disk and print exercise if desired
- b) Exit ELITE program using the 'Menu' or pressing ALT Q from the keyboard.
- c) Exit Windows
- e) Computer off.

# 3. NAV-AID setup

- a) ELITE has a computer generated instrument panel including navigation radios and marker beacon.
- b) All nav-aids can be setup by the pilot in the Trainer by selecting the correct frequency.
- c) Morse code ident can be monitored by selecting ident for each navigation radio.
- d) The TSO GPS can be setup as per the Trimble TNL2000 approach plus receiver. A checklist is supplied with the Trainer.

# 4. Com Radio & Transponder

- a) A display of the communication radio and transponder code are displayed on the computer generated instrument panel or if using the AP3000 avionics stack, the actual LED display.
- The pilot can select the appropriate communication frequency or transponder code from switches on the instrument panel.

# 5. General

- a) Cloud base and visibility can be setup by the pilot prior to the training session. These parameters can be altered at any time during the session by the pilot.
- b) Wind direction and speed can be setup by the pilot prior to the training session. These parameters can be altered at any time during the session by the pilot to an accuracy of one degree and one knot.
- c) A software generated timing device is available to the pilot to program metreological parameters over a period of time.
- d) Instruments can be programmed by the pilot with a varying probability of failure.
- e) A plot of the flight path is available to the pilot at any time for review. It can be saved and printed out in both plan and profile view for record keeping by the pilot.

# Full details of the above procedures are contained in the ELITE User Manual supplied.

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# **APPENDIX 3**

# **ELITE USER MANUAL - PILOT GUIDE**

The user manual is available on screen and can be accessed by double clicking the Elite User Manual icon. The manual can be also accessed during a training session without exiting the Elite simulation program. Alternatively the manual can be printed out if desired.

The main topics useful to the pilot are as follows (based on Version 8 Manual):

	Topic	Page Number
1.	Description of Instruments	35
2.	Description of Radio Navigation Receivers	40
3.	NAV / COMM	41
4.	DME Receiver	42
5.	ADF Receiver	43
6.	Marker Receiver	43
7.	Transponder	44
8.	GPS Receiver	44
9.	GPS Annunciator	45
10.	MAP Page	201
11.	Meteo Page	242
12.	Metar Page	257
13.	Malfunctions Page	268
14.	Control Page	278
15.	Configuration Page	288
16.	Modification Page	304
17.	Troubleshooting Software	313
18.	Troubleshooting Hardware	314
19.	Error Messages	316

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# **SECTION FIVE**

- 5. REAL EMERGENCY PROCEDURES
- 5.1 ACTIONS BY PILOT
- 5.1.1 If an electrical short circuit should occur:
  - 1. Computer switch off.
  - 2. Vacate Trainer.
- 5.1.2 If a fire should develop:
  - 1. Vacate Trainer.
  - 2. Fight fire and notify Fire Brigade if required.

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# **SECTION SIX**

# 6. TRAINING SYLLABI FOR SIMULATED INSTRUMENT FLIGHT

This section details the training syllabi and sequences applicable to the credits available on this *Category B* Trainer.

# 6.1 RECENCY REQUIREMENTS

- 6.1.1 CAO 40.2.1 paragraph 11.2, 11.3, 11.4 and 11.5 specify the requirements for the use of an approved synthetic flight trainer for recent experience prior to acting in-command of an IFR flight in an aircraft.
- 6.1.2 As a guide the pilot may use the following sample flight exercises to meet the approach recent experience requirements. Instrument ground time accrued conducting these approaches can be used towards the two hours IF out of three hours required every 90 days.

# 1. NDB

- An appropriate NDB Approach is chosen by the pilot.
- The pilot locates him or herself either in the air on an inbound track to the NDB or on the ground requiring a take-off and cross country flight to the navaid.
- Enter the holding pattern.
- Carry out an NDB let-down, with either a landing or an overshoot as required.

# 2. VOR

- An appropriate VOR Approach is chosen by the pilot.
- The pilot locates him or herself either in the air on an inbound track to the VOR or on the ground requiring a take-off and cross country flight to the navaid.
- Enter the holding pattern.
- Carry out an VOR let-down, with either a landing or an overshoot as required.

### 3. ILS

- An appropriate ILS Approach is chosen by the pilot.
- The pilot locates him or herself either in the air on an intercept track to the localiser or on the ground requiring a take-off and cross country flight to the initial approach fix.
- Carry out an ILS approach with either a landing or an overshoot.

### 4. DME / GPS Arrivals

- Choose an appropriate Arrival procedure
- The pilot should also practice a DME arc procedure.

### 5. GPS Approach

- An appropriate GPS Approach is chosen by the pilot.
- The pilot locates him or herself either in the air on an intercept track to the most appropriate initial approach fix or on the ground requiring a take-off and cross country flight to the initial approach fix.
- Carry out a GPS NPA with either a landing or an overshoot.
- 7.5 The pilot is to ensure that the 'Trainer Flight Log' (Section 4 Appendix 1) and that the flight path is saved onto the pilot's floppy disk after each sortie.

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# APPENDIX 1 ELITE AIRTRAINER CHECKLIST

# **ELITE AIRTRAINER CHECKLIST**

(Checklists and Limitations for other ELITE aircraft modules contained in ELITE Operators Manual V8.0 supplied).

# **CESSNA 172**

Pre-Start: (not required if commencing session with engines started)

Throttle

Check closed

Mixture

Check full rich

Battery

On

Alternator

On

Flap

Up

Fuel

Check Quantity - Select tank

Fuel Pumps

On

Master Avionics

Off

Brakes

Parked

Start:

Beacon

Check on

Throttle

Advance 1/4"

Magneto

Select both

Starter

Start, adjust RPM

Pre-Takeoff: (starting in the air, check following before releasing from 'freeze')

Brakes

Set

Flight controls

Free & Correct

Instruments

Check

\_\_\_\_

Check idle

Throttle Mixture

Check full rich

Magneto

Throttle 1500RPM Check L-B-R-B

Trims

Neutral

Flap

Set 0° or 10°

Fuel

Check Quantity - Select tank

Nav Aids / Txpdr

Set and ID

Takeoff:

Freeze button

Release

Brakes

Release

Throttle

Open

Yoke

Rotate at 66 - 72 kts

After Takeoff:

Gear

Up

Flaps

Up

Cruise climb power

Full throttle, rich mixture, 2500 RPM

Cruise climb speed

100 KIAS (flaps up, V<sub>y</sub>) 110 KIAS cruise climb

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# Top of Climb / Top of Descent:

Power

Adjust as per supplied data card

Mixture

Lean

TOPC checks

FCLEAR check (see placard on instrument panel)

# Pre - Landing:

**Brakes** 

Released

Gear.

Down, three greens

Mixture

Rich

Prop

Full fine

Fuel

Check, select tank

Flap

As required

Vat

88 kts flaps up

80 kts flaps down

# After Landing:

Flaps

Up

Brakes

Set

Throttle

Set

Radios / Electrical

Idle Off

Mixture

Cut-off

Lights & Strobes

Off

Magneto

Off

Battery

Off

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# Cessna 172P Limitations

# **OPERATIONAL LIMITATIONS:**

V <sub>NE</sub>	Never Exceed Speed (red line)	158 KIAS
V <sub>NO</sub>	Maximum Structural Cruising Speed	127 KIAS
Vs	Stalling Speed Flaps Retracted (lower end of green arc)	44 KIAS
V <sub>so</sub>	Stalling Speed Flaps Extended (lower end of white arc)	33 KIAS
V <sub>FE</sub>	Maximum Flaps Extended Speed Up to 10 <sup>0</sup> > 10 <sup>0</sup>	110 KIAS 85 KIAS

# Climb:

V <sub>X</sub> (best angle)	2300 – 2420 RPM	56 KIAS (flaps 10 <sup>0</sup> ) 65 KIAS (flaps 0 <sup>0</sup> )	
V <sub>Y</sub> (best rate)	2300 – 2420 RPM	76 KIAS	
Cruise Climb	2300 – 2420 RPM	70 - 80 KIAS	

# Service ceiling 14,000 feet MSL - For best climb rate, use lean mixture

Altitude	Power	75%	65%	55%	RPM
0	TAS	112	105	96	2100/2450
4000		116	108	98	2100/2575
8000		120	111	100	2100/2700

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# **SECTION SEVEN**

- 7. SCHEDULE OF PERMISSIBLE UNSERVICEABILITY
- 7.1 The following items are permissible unserviceability:
- 1. Either the CDI or the HSI but not both if conducting ILS/VOR/GPS NPA training.
- 2. Both the CDI and HSI if ADF training only is being conducted
- 3. DME unless DME training is being conducted
- 4. RMI if conducting VOR training only
- 5. GPS unless GPS training is being conducted

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# **SECTION EIGHT**

# 8. MAINTENANCE RECORD

8.1 Unserviceability are to be entered onto the 'Maintenance Record Form' found in Appendix 1. On completion of maintenance the unserviceability is to be signed off and dated.

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No.	3
Age	-

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# **APPENDIX 1**

# MAINTENANCE RECORD FORM

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# **SECTION NINE**

# 9. DATABASE UPDATE POLICY

# 9.1 AUSTRALIAN NAVIGATION DATABASE

- 9.1.1 The end user is to ensure that the navigation database conforms with the current enroute charts. He is to modify the database, in accordance with the Elite Software instructions found in the Elite manual, to adequately reflect the navigation area being flown in.
- 9.1.2 A cross check of the approach plates and enroute charts are required prior to any training session to ensure that the frequencies of navaids are correct.
- 9.1.3 The enroute charts and approach plates are to be current.

# 9.2 GPS DATABASE

9.2.1 As there is no safety concern with the GPS data being out-of-date the Company policy is that the instructor must check and ensure that the GPS approach being flown conforms with the current paper approach plates used. Therefore expired GPS data may be used for synthetic trainer IFR training, recency and renewals.

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# **SECTION TEN**

# 10. ACCREDITATION TEST GUIDE

- 10.1.1 For the accreditation test guide refer to Appendix I in the CASA document FSD 2 Operational Standards and Requirements Approved Synthetic Trainers. This initial test is conducted by the manufacturer or his agent with a CASA Flying Operations Inspector.
- 10.1.2 When used for logging recency by the holder of a current instrument rating or a Private IFR rating an accreditation inspection by a CASA Flying operations inspector is not required provided that the requirements of FSD2 Section 6 paragraph 6.6 is met.

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