Introduction

FLY! is the only simulator which proposes a true and complete instrument panel, a cockpit including all elements we find in the real plane and a completely realistic starting.

Naturally, as in any consumer simulator, a key (in Fly! it is the key " E ") allows to jump this stage and to find yourselves engines started only with radios to be set. It is a pity! The starting of your plane is a stage, of the greatest importance, included in the flight preparation. It is also the stage which allows, by its rigour and the breaking down of its actions, to make sure that everything is correct and that the flight safety is ensured.

More the plane is sophisticated (several engines, turboprops, reactors) more this stage is long and complex. It must be carefully made. To jump some steps, to rely only on your memory or on your habits, can be at the origin of serious accidents.

This manual, **useful exclusively for flight simulation**, has for only purpose to allow the "in simulation" SENECA V user to dive into the real manipulations of the check list enumeration for starting the plane. The SENECA V is a magnificent plane, to start it is a true pleasure.

René Birot
Fly.Simvol president
Simvol Webmaster
ROTW coordinator
Private pilot

Table of contents

1- Piper Seneca V conducted tour in FLY!

1-1 Outside views (at Gap airport)

1-2 Instruments panel
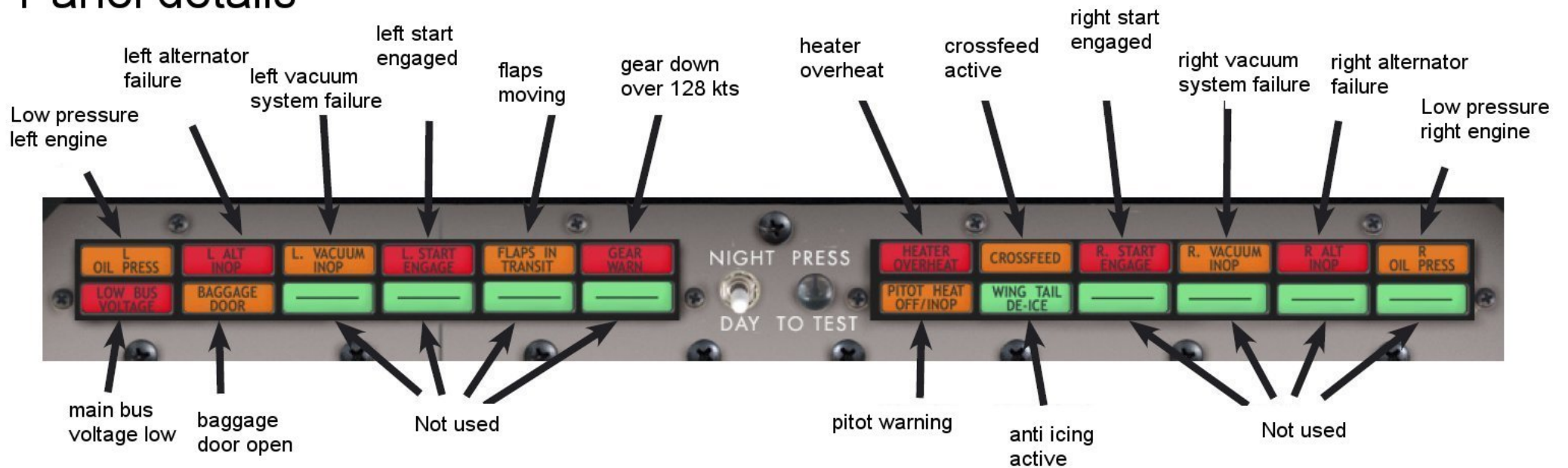
1 - Clock	39 - Radio Com Nav 1
2 - VOR	40 - GPS
3 - Airspeed indicator	41 - DME
4 - Turn coordinator 5 - Radar altimeter	42 - Radio Com Nav 2
6 - Artificial horizon	43 - ADF
7 - HSI (Horizontal Situation Indicator)	44 - Transponder
8 - Pilot contol stick axis	45 - De-icing ammeter
9 - Altimeter	46 - Switches
10 - Vertical speed indicator	47 - Throttle control lever
11 - ADF indicator	48 - Propeller pitch control lever
12 - Oxygen pressure 13 - Emergency locator beacon	49 - Mixture control lever
14 - Parking brake 15 - Switches lighting rheostat	50 - LH Alternate Air
16 - Instrument panel lighting rheostat	51 - RH Alternate Air
17 - Instruments lighting rheostat	52 - Switch et voyant de la synchronisation des hélices
18 - Auxiliary oxygen	53 - LH engine cowl flaps
19 - RH warning panel (see below)	54 - RH engine cowl flaps
20 - LH warning panel (see below)	55 - Engines control lever friction handle
21 - Digital display	56 – Flaps switch
22 - LH manifold pressure	57 – Flaps indicator
23 - RH manifold pressure	58 - Switches
24 - LH RPM	59 - Airspeed indicator
25 - RH RPM	60 - Artificial horizon
26 - LH TIT	61 - Altimeter
27 - RH TIT	62 - Turn coordinator
28 - LH Fuel Flow and temperature cylinder	63 - RMI
29 - RH Fuel Flow and temperature cylinder	64 - Vertical speed indicator
30 - LH temperature and oil pressure	65 - Engine hour meter
31 - RH temperature and oil pressure	66 - 28 VDC power point
23 - Vacuum	67 - Co-pilot control stick axis
33 - Fuel quantity	68 - Switches
34 - Landing gear down indicator	69 - Fuses panel
35 - Emergency landing gear	70 - Warning lights rheostat switch
36 - Landing gears control lever	71 - Warning lights test
37 - Audio panel	72 - Compass
38 - Autopilot	73 - Windshield de-icing

Piper Aircraft SENECA V

Panel details

left alternator failure

left vacuum system failure

Low pressure left engine

left start engaged

flaps moving

gear down over 128 kts

heater overheat

crossfeed active

right start engaged

right vacuum system failure

right alternator failure

Low pressure right engine

| L OIL PRESS | L ALT INOP | L. VACUUM INOP | L. START ENGAGE | FLAPS IN TRANSIT | GEAR WARN | HEATER OVERHEAT | CROSSFEED | R. START ENGAGE | R. VACUUM INOP | R ALT INOP | R OIL PRESS |
| LOW BUS VOLTAGE | BAGGAGE DOOR | | | | | PITOT HEAT OFF/INOP | WING TAIL DE-ICE | | | | |

NIGHT PRESS

DAY TO TEST

main bus voltage low

baggage door open

Not used

pitot warning

anti icing active

Not used

| SURF — DEICE | OFF / PROP HEAT | OFF / WSHLD HEAT | OFF / ICE LIGHT | OFF / PITOT STALL WARN HEAT |

deice surfaces

deice propellers

deice windshield

ice light control

pitot heat

| OFF / RADIO MASTR | DME NAV 1 / DME NAV 2 | GND CLEAR | OFF / RADAR ALT |

radio master switch

NAV1/NAV2 DME select

ground group radio

radar altimeter switch

| OFF / AIR NAV 2 | FAN HIGH / FAN LOW |

not used

DIGITAL DISPLAY

Temperatures
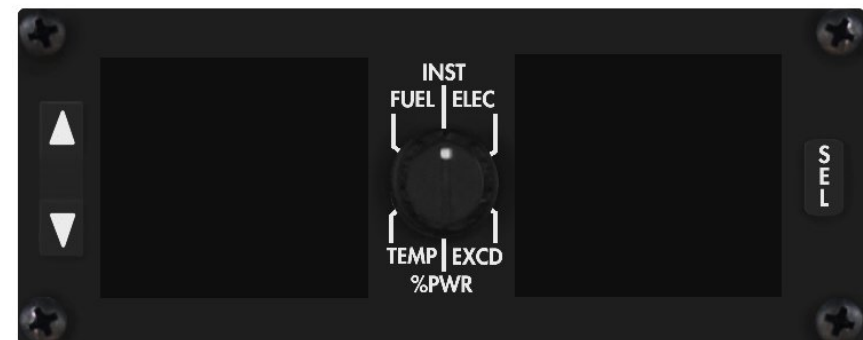

Engines

Fuel management

Electrical power system

Display central button allows to review the different pages of systems, temperatures, engines, fuel and electricity.

LH switch allows to display the different engines pages. Green LED's point out displayed parameters.

RH SEL button allows, in the "Temperatures" page, to display Farenheit or Celsius degrees.

2- Plane features

2-1 Engine

- 2 (ea) 220 HP, 6 cylinders Teledyne Continental TSIO-360-RB engines

2-2 Propeller

- 2 (ea) three blades Hartzell propellers, constant speed type

2-3 Dimensions

- Length = 28.6 ft/8.7 m
- Wing span = 38.9 ft/11.9 m
- Height = 9.9 ft/3.0 m

2-4 Weights

- Standard empty weight = 3,413 lbs/1548 kg
- Standard useful load = 1,337 lbs/606 kg
- Maximum take-off weight = 4,750 lbs/2155 kg

2-5 Fuel/Oil

- Fuel 100LL
- Usable capacity = 122 gal/462 l
- Oil capacity = 8 qts/7.6 l

3- Performances

3-1 Speeds

- Gross weight maximum speed (18,500ft) = 218 kts/404 km/h
- Normal cruising speed = 176 kts/326 km/h (10,000 ft), 190 kts/351 km/h (18,500 ft)

- Stall speed (flaps full down 40°) = 61 knots/113 km/h
- Vertical speed with 2 engines = 100 ft/mn up to 25,000 ft (max. approved altitude)
- Vertical speed with 1 engine = 50 ft/mn up to 16,500 ft

3-2 Other performances

- Take-off distance (ground roll) = 1,143 ft/348 m
- Take-off distance (total over 50 ft/15m obstacle) = 1,707 ft/520 m (flaps 25°)
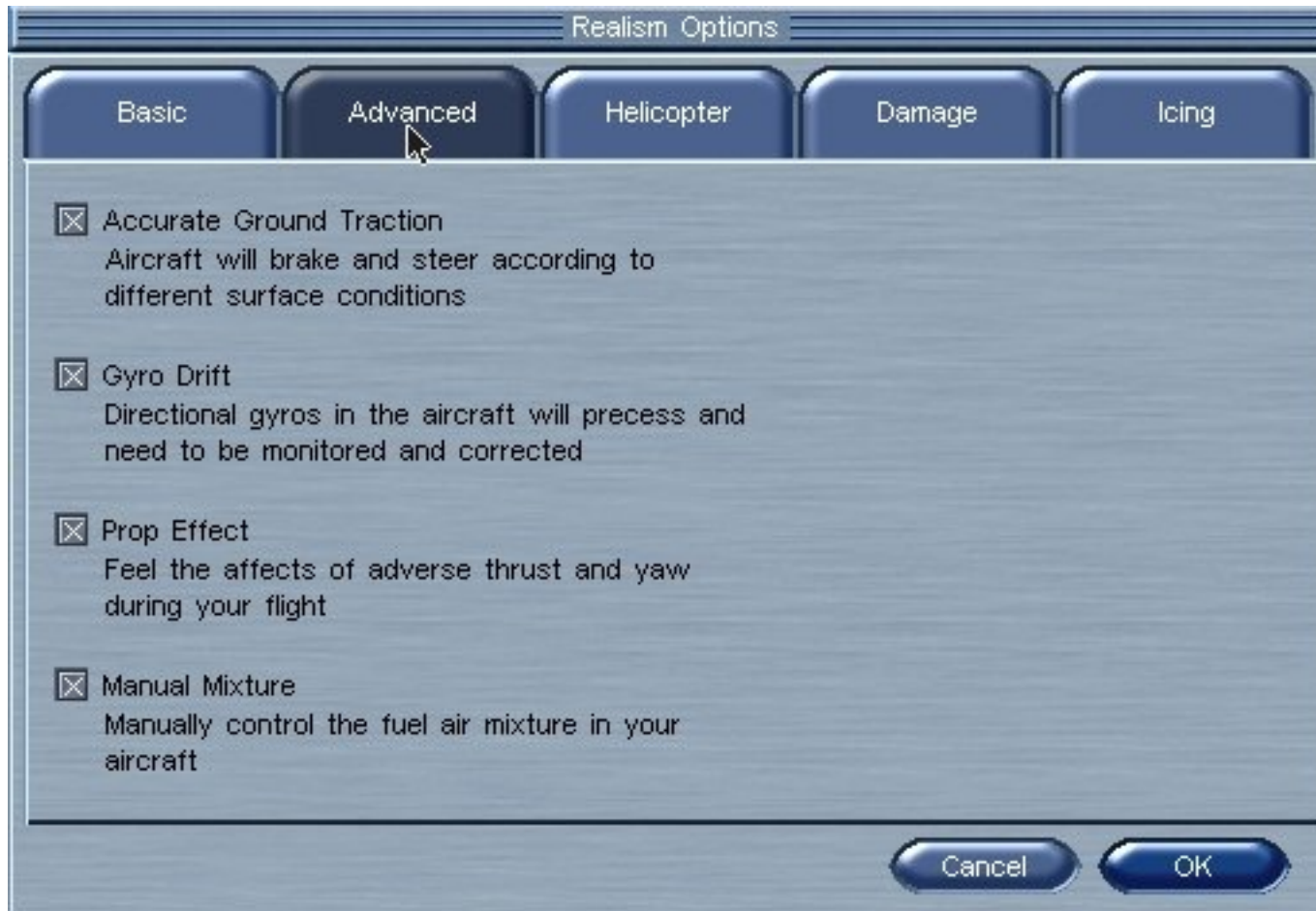
4- Engines starting

4-1 Preparation

Starting sequence will be detailed here below with commented pictures. It is necessary to follow it exactly; it is the same that the one detailed with the key "E".
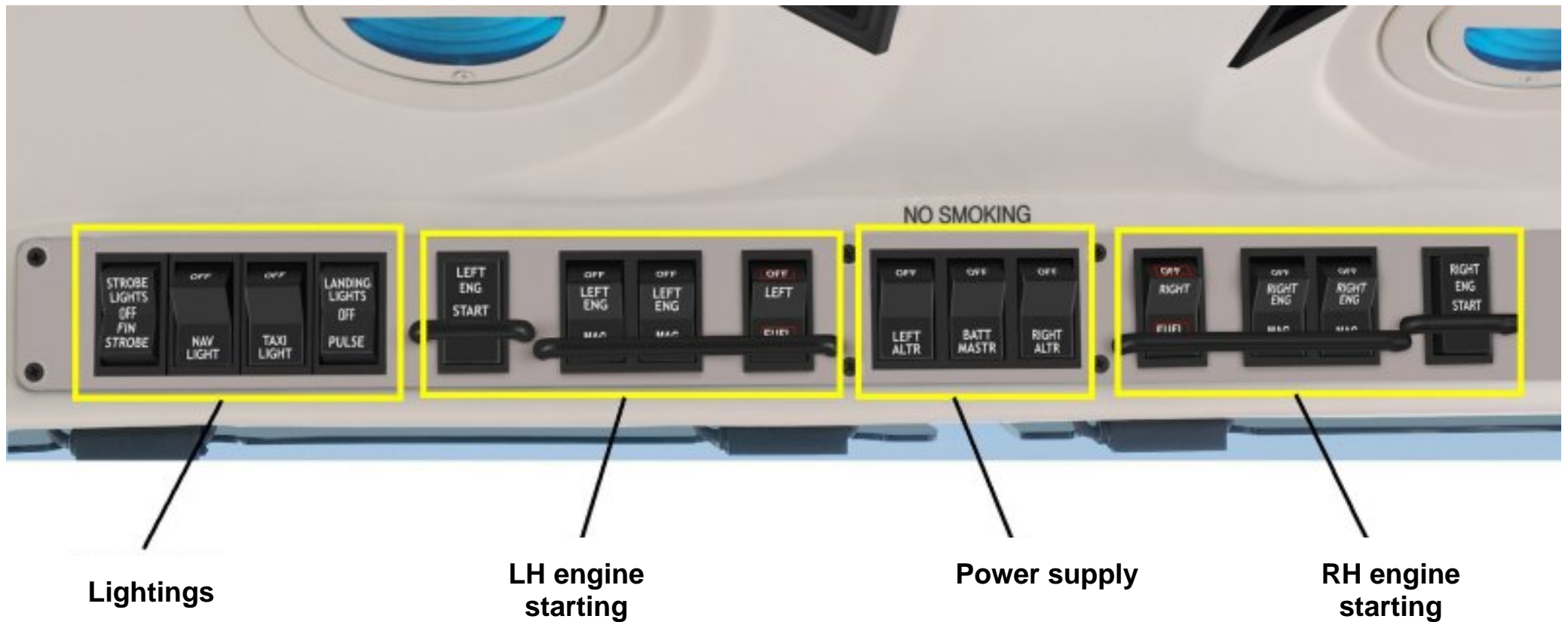It is also important to have every « realism » parameter activated:
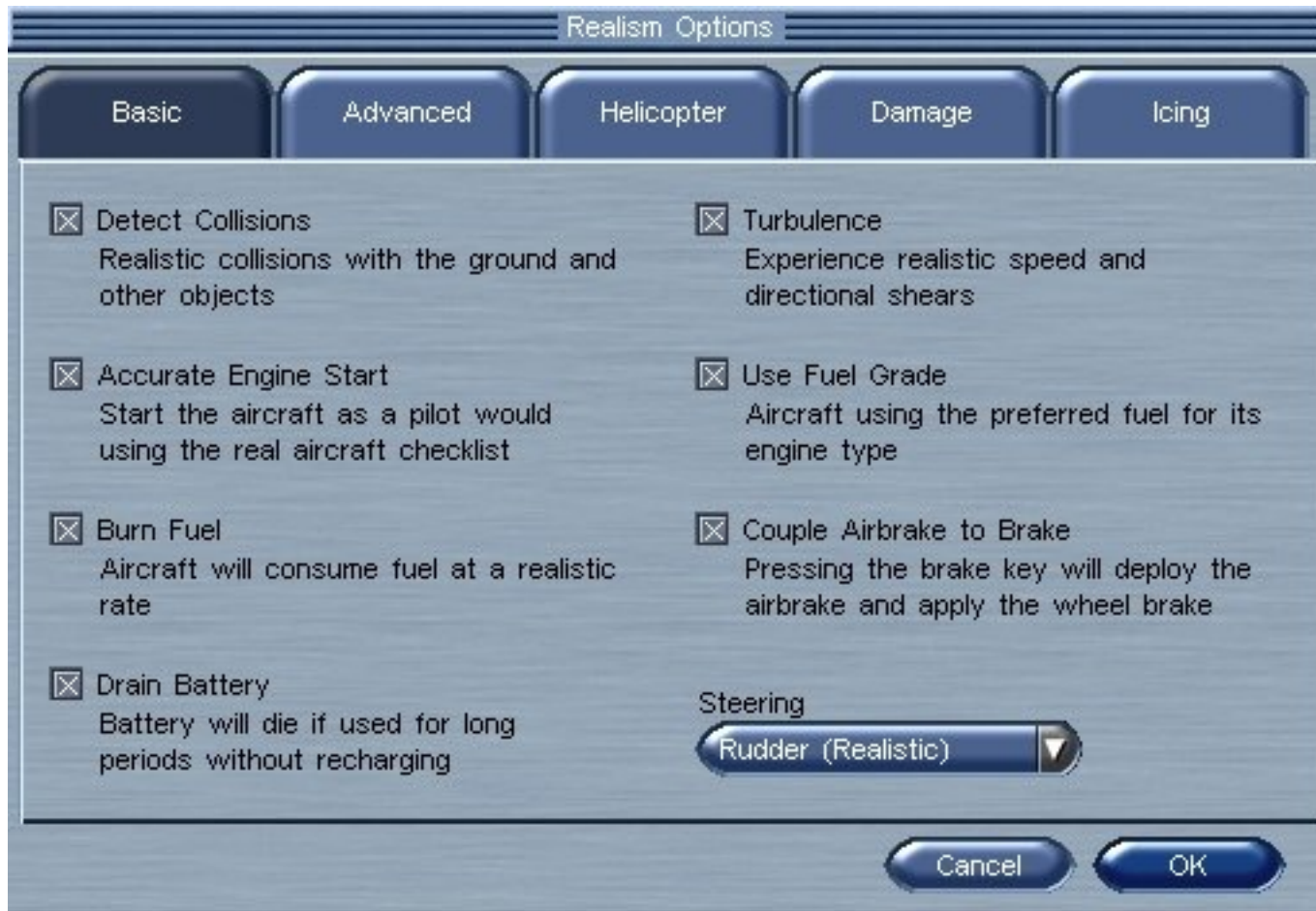
A large part of the starting takes place on the superior panel, it is thus important to study it beforehand

Lightings

LH engine starting

Power supply

RH engine starting

4-2 RH engine starting

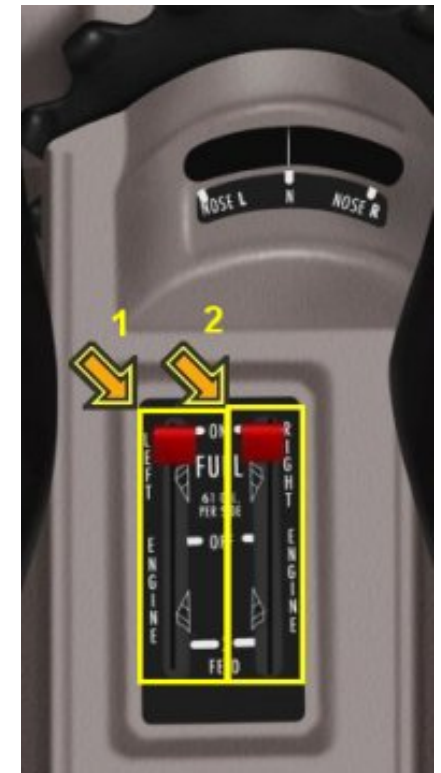Check that lightings are switched off

Main battery « ON »
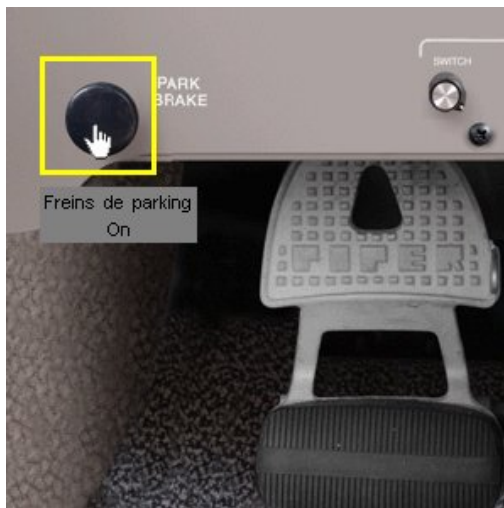
Parking brake « On »   Power 10%,   LH propeller forward,   LH mixture to max.   Fuel open (L and R)

Note: Click « right » your mouse to move all various engine control levers

Both magnetos « ON », RH electric fuel pump « ON »

Engage RH engine starter

Once RH engine started, RH alternator « ON »

4-3 LH engine starting

Propulsion block adjustment (power, propeller, mixture)

Do not use for real flight

Engine starting

Both magnetos « ON », LH electric fuel pump « ON »

Engage LH engine starter
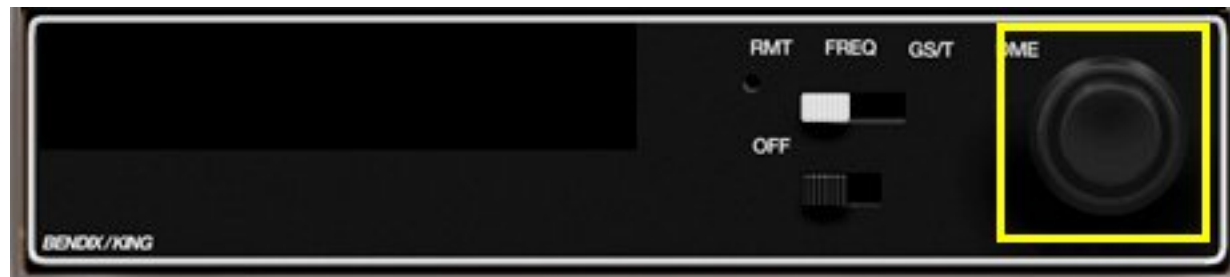

Once LH engine started, LH alternator « ON »

Both electric fuel pumps « OFF »

Avionics starting, Radio Master switch « ON »…… and DME

Check of warning panels (LH and RH)

4-4 Engines shutdown procedure

- Radio master switch « OFF »
- Mixture control lever « IDLE CUTOFF »
- Fuel control levers « OFF »
- Both magnetos switches « OFF »
- Main battery switch « OFF »
- Both alternators switches « OFF »

Naturally, wing flaps are retracted, electric fuel pumps are switched off and parking brake is « ON ».

And to come down, key « F10 » will open you doors!
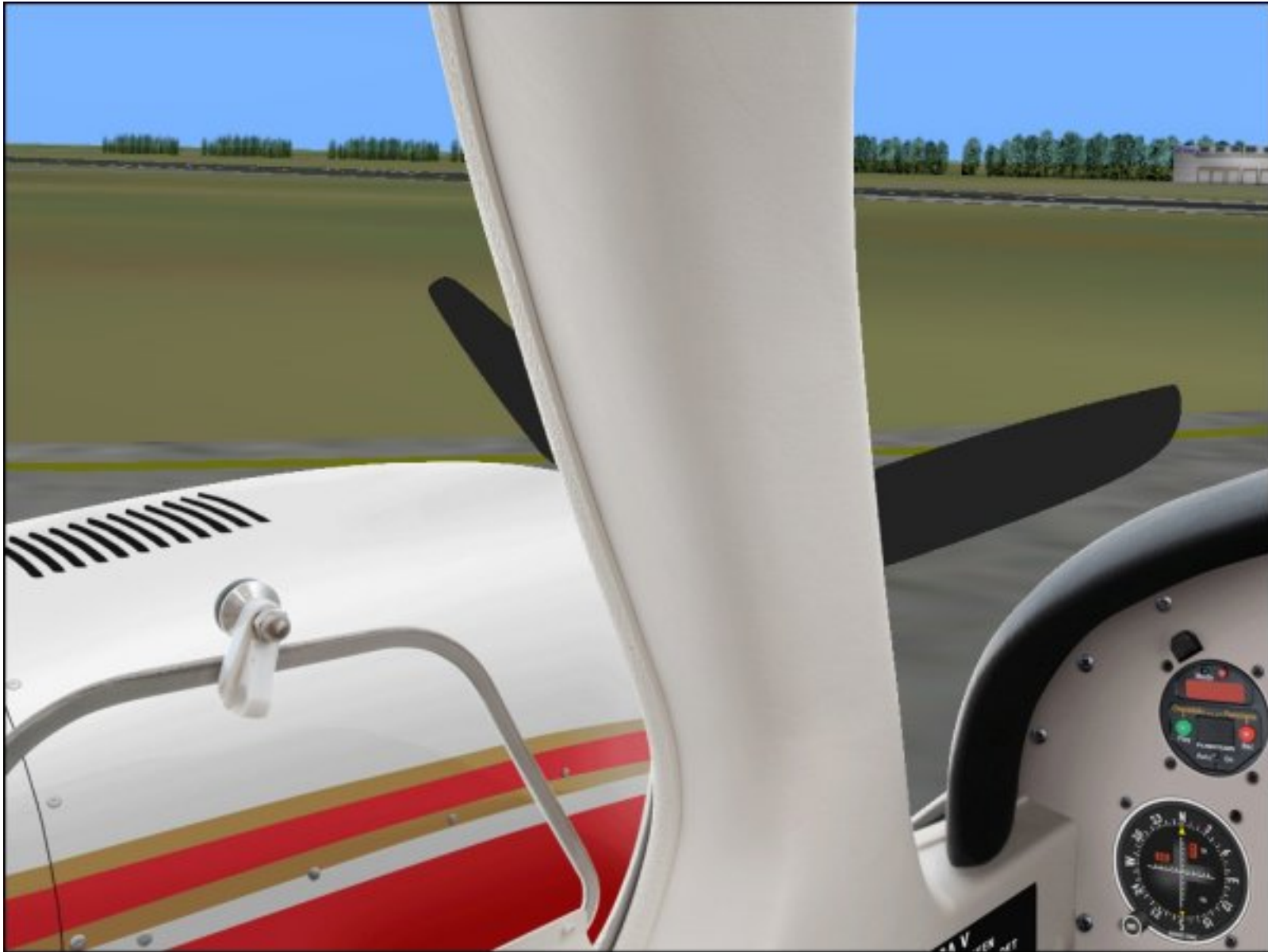
5- Seneca in some pictures

5-1 Internal views

Do not use for real flight

Piper Aircraft SENECA V

5-2 One bonus in the Seneca: special ROTW Navigator Display

The ND (Navigator Display) is usable on all planes with some adaptations. It appears in a pop-up window by pressing keys « **Shift + X** ».

It allows showing on a single screen all standard EFIS information with TCAS features included (anti-collision system which shows the others planes located in the close environment, with their altitude difference).

Every button allows to show a type of information (Airport, VOR, NDB, Waypoint, TCAS and Flight plan) several pressures allowing to show the various pages linked to the type of information (except the FPL page).

Button in top on the left allows zooming.

The TCAS displays in red dangers with less than 6 Nm and less than 1,000 ft of altitude difference.

Flight plan (FPL) display requires to have prepared and to have saved it (file « situation ») with as name « rotw_fpl.sit » from thumbnail « saved simulations »

AIRP VOR NDB WPT TCAS FPL

5-3 Others ROTW's « plus » points

- Complete electrical power management (voltage changes according to the charge), with batteries decreasing if an alternator failure occurs
 (according to used equipments)

- Opening and closing of left, right and cargo doors (key « F10 »)

- Instruments panel true to the original one by Peter Sidoli, project initiator (ex Real Air Simulation)

- More than 90% of switches are operative

- Complete instruments panel lighting management

- Note: as for all ROTW planes, you need to set sensitivity parameters (100% for « controls » and 1% for « Trim »).

- NAV-COM2 and the transponder, are adjustable in right lateral view.

- Outside textures lighted during night

- New button added to adjust the auto pilot: an operative « rocker up/down », correcting a TRI bug.

A first pressure cuts the « ALT » function
Following pressures fix the rate of descent (DN) or ascent (UP) for the autopilot, by step of 500 ft. The stop is either automatic in APR function as soon as the "glide" is intercepted, or manual by activating the « ALT » button.

Do not use for real flight

6- Credits

Project initiator	**Peter Sidoli**
Digitized pictures	**TJ**
3D model	**Jarno Deken (F2FD)**
Instruments panel	**TJ**
Internal views	**TJ**
Flight model	**Laurent Claudet**
Electrical connexions	**Laurent Claudet and TJ**
POD files integration	**Laurent Claudet**
Navigator Display	**Laurent Claudet**
Specific modules (DLL)	**Laurent Claudet**
Real flight tests	**Peter Sidoli**
Simulated flight tests	**all ROTW team**
French flight manual	**René Birot and TJ**
English translation	**Jean-Marie Reuter**

SENECA V is a *Peter Sidoli*, F2FD and ROTW common project