Flight operations

Flight Operations Manual

- DA40 Flight Operations

  - Introduction to Using SOPs

  - Briefings

  - Limitations

- Documents

  - DA40NG FOM

  - DA40NG CHECKLIST

  - DA40NG QRH

- Tools

  - YourControls

  - Diamond DA40NGX

  - EFTP Scenery

- Flight Planing/ Completing ATS-flightplan

  - Completing ATS-flightplan

- Training fleet

- Diamond DA40NG

DA40 Flight Operations

Introduction to Using SOPs

Utilizing ATO our (Air Training Organization) SOPs (Standard Operating Procedures) is essential for ensuring safe and standardized aviation training. These procedures provide a structured framework for training processes, enhancing safety, regulatory compliance, and proficiency. ATO SOPs empower instructors and students to maintain a high level of safety and responsibility, contributing to the development of skilled sim aviators.

GENERAL

In our training organization, SOPs are the backbone of our commitment to excellence in aviation training. They establish a foundation of safety, consistency, and standardization while allowing us to design and deliver high-quality training programs. By adhering to these SOPs, we empower our trainers to create a safe and conducive learning environment, equip our students with the skills and knowledge they need for success, and ensure our organization remains at the forefront of aviation education.

FLOW PROCEDURE

The flow procedure employs a "do and verify" method for completing checklists. All procedures for the DA 40 NG aircraft are performed in a systematic flow pattern. This pattern represents a predetermined path that the pilot follows in the cockpit, with each pattern associated with a specific flight phase. Most of the items in the flow procedure are also listed in the expanded checklist. These items and their conditions are memorized and executed without the immediate need for reference to a checklist.

In contrast to a "read and do" checklist, where each item and its associated action are announced, flow pattern items are completed silently.

The normal checklist, following the flow pattern, is completed audibly, similar to a "read and do" checklist. The flow procedure is initiated when the specific flight phase requires it.

MANIPULATING BUTTONS AND SWITCES

The only exception to above are during school flights or when making changes such as flipping a switch, in which case the pilot verbally states the action being performed.

Briefings

Crew and Emergency Briefing

Crew briefing

Is done before engine start and should determine the objectives for the flight. e.g. "Flight to Training Area, Mission to practise straight and level flight as well as coordinated turns" or "Training flight in TC intention to do landings in different configurations" or "XC flight to EFTU with practice of low level navigation".

Determination of crew duties

Determination of crew duties and announcement of them e.g. "In the event of an emergency, I will assume control of the aircraft, with the instructor observing and providing assistance as needed." or if the training has just begun "In the event of an emergency, the instructor will assume control by stating 'My controls,' and I will provide assistance as needed."

Emergency drill

Complete the emergency brief from QRH by the heart.

Briefing for VFR flight

TAXI AND TAKEOFF BRIEFING

A taxi and takeoff briefing is conducted prior to initiating taxi for takeoff. This enables the pilot to review the taxi and takeoff procedures, allowing for the assessment of necessary actions.

It should contain and use:

● Type and reg ● Miscellaneous items such as TOW, ref speeds, NOTAMS, Weather ● Fuel check from OFP and MFD ● Flight plan set in MFD ● Rad Nav aids ● Emergency escape e.g. in case of emergency landing in front sector

Example "Okey we are operating today DA40 reg OH-DPA TOW today is 1215 kg and no affecting NOTAMS" "We are now at apron X and expecting taxi róute via X and Y to holding point XY for RWY01" Page 17 of 19 "Taxiways and runways are dry and good braking actions" "Intersection departure with rotation speed 65 KIAS initial climb Vx 72 KIAS FLAPS UP after passing 800ft. Climb using Vy 88 KIAS" "After departure following ATC instructions to TA TP70 after power reduction at 1400 ft we continue using cruise climb speed of 100 KIAS" "In case engine failure i will land on the remaining runway OR front sector" Threats? Questions?

APPROACH BRIEFING

The objective of an approach briefing is to prepare the crew for the execution of the intended approach procedure.

It should contain and use:

● Miscellaneous items such as NOTAMS, Weather ● Fuel check from OFP and MFD ● Flight plan set in MFD and TOD ● Rad Nav aids ● In case of go around

Example arriving form XC:

"Contact EFHK TWR before entering TMA on 118.600." "EFHK TMA inbound VIA LINTU at 1000 ft QNH 1000, TC height of 1000ft AD elevation 180 ft. Join with left turn to the right downwind of RWY22R."

Example arriving from TA:

"From training area TP70, after freq change to 118.7. We descend to 1500 ft and via LIMPU we fly south of the AD and join left downwind to runway 24 via right turn, TC altitude is 1000ft."

Continue:

"Landing on RWY 22R, Runway is dry. Wind is from 220/6 knots so no cross wind. Landing with flaps T/O. Estimated landing mass 1170 kg approach speed 74 KIAS. We expect to vacate the runway to the right side and we expect a taxi route via X and X to

apron X." "NAV is set for HEL VOR 114.20 and COM2 is set for unicom frequency 122.8." "In case of go around we do another circuit to the left" Threats? Questions?

Briefing for IFR flight

TBA

Limitations

AUTOPILOT GFC700

Autopilot needs to be off for takeoff and landing.

Maximum speed for operation: 165 KIAS

Minimum speed for operation: 70 KIAS

Minimum altitude for operation other than approach: 800ft

Minimum altitude for operation for approach: 200ft

TAXI

Maximum taxi speeds: 10kt GS on turn, 15kt GS on straight and 25kt GS on runway

Documents

All pilot training related documents.

DA40NG FOM

DA40NG FOM

DA40NG CHECKLIST

DA40NG CHECKLIST

DA40NG QRH

DA40NG QRH

Tools

This chapter includes tools for practical training

Tools

YourControls

YourControls

Diamond DA40NGX

Diamond DA-40 NGX

No.1 Installation

Install this mod to your community folder.

No. 2 Modification

Tool for modification: Visual Studio Code

Check location:

MicrosoftFlightSimulator/Community/DA40-
NGX/SimObjects/Airplanes/Asobo_DA40_NG/model/DA40_cockpit.xml

1. Open file DA40_cockpit.xml
2. Move from disabled modules these modules to the upper side(enabled).

```xml
17
18        <Include Path="DA40NGX\Customda40Logic.xml"/>
19
20
21        <Component ID="DA40NGX_Custom_Behavior">
22            <UseTemplate Name="Voltage_Indication"></UseTemplate>
23            <UseTemplate Name="Amps_Indication"></UseTemplate>
24            <UseTemplate Name="Engine_Indications"></UseTemplate>
25            <UseTemplate Name="Fuel"></UseTemplate>
26            <UseTemplate Name="ECU_FUNCTIONS"></UseTemplate>
27            <UseTemplate Name="FADEC"></UseTemplate>
28            <UseTemplate Name="Smooth_Indication"></UseTemplate>
29            <UseTemplate Name="Smooth_Fuel_Indication"></UseTemplate>
30            <UseTemplate Name="Electrical"></UseTemplate>
31            <UseTemplate Name="Engine_Behavior"></UseTemplate>
32            <UseTemplate Name="Other"></UseTemplate>
33            <UseTemplate Name="Water_cooling"></UseTemplate>
34            <UseTemplate Name="Remove_if_Career"></UseTemplate>
35
36
37        <!-- disabled modules go here
38
39            <UseTemplate Name="Engine_Failure"></UseTemplate>
40            <UseTemplate Name="Statesaving"></UseTemplate>
41
42        -->
43
44
45        </Component>
46
```

Figure 1.1 Before modification

```
20
21          <Component ID="DA40NGX_Custom_Behavior">
22              <UseTemplate Name="Voltage_Indication"></UseTemplate>
23              <UseTemplate Name="Amps_Indication"></UseTemplate>
24              <UseTemplate Name="Engine_Indications"></UseTemplate>
25              <UseTemplate Name="Fuel"></UseTemplate>
26              <UseTemplate Name="ECU_FUNCTIONS"></UseTemplate>
27              <UseTemplate Name="FADEC"></UseTemplate>
28              <UseTemplate Name="Smooth_Indication"></UseTemplate>
29              <UseTemplate Name="Smooth_Fuel_Indication"></UseTemplate>
30              <UseTemplate Name="Electrical"></UseTemplate>
31              <UseTemplate Name="Engine_Behavior"></UseTemplate>
32              <UseTemplate Name="Other"></UseTemplate>
33              <UseTemplate Name="Water_cooling"></UseTemplate>
34              <UseTemplate Name="Remove_if_Career"></UseTemplate>
35              <UseTemplate Name="Engine_Failure"></UseTemplate>
36              <UseTemplate Name="Statesaving"></UseTemplate>
37
38              <!-- disabled modules go here
39
40
41
42              -->
43
44
45          </Component>
```

Figure 1.2 After modification

3. Save modules/file

No. 3 Check

Check functionality in a simulator

EFTP Scenery

1. You can instal this EFTP scenery to your community folder
2. Downloadlink is <u>Tampere-Pirkkala Airport Scenery for MSFS2020</u>

Flight Planing/ Completing ATS-flightplan

In remarks add School Flight for Dual flight and Training Flight for solo flights under ATO

Completing ATS-flightplan

Our flight operations are conducted under controlled airspace so we have to complete ATS-flightplan form. You found this VATSIM flightplan from: <u>VATSIM Flightplan</u> We need to know following things from our aircraft:

- Equipments. How our aircraft is equipped
- What is our transponder type
- PBN capability
- How much we have fuel
- What is our Wake Turbulence Category
- ICAO aircraft typecode
- SelCal Code(If applicable)
- ADSB Hexcode(If applicable)
- Aircraft Registration
- RVR limit (If applicable for operation)
- Performance code

Our Diamond DA40NG aircraft basic information:

- ICAO type: DA40
- WTC: Light
- Crew: one
- Passengers: three seats
- Length: 8.1 m
- Wingspan: 11.9 m
- Height: 1.98 m
- Empty weight: 795 kg
- Gross weight: 1310 kg
- Powerplant: Lycoming IO-360-M1A 4-cylinder air-cooled horizontally-opposed piston engine, 180 hp
- Fuel tank capasity: 2x 20.6 USG

- Endurance with full tanks, 60% cruise setting 6 hours, plus 1h reserve
- Equipment codes: SDBGRY
- Transponder: S
- Navigation Capasity: SBAS
- PBN codes: A1B2C2D2L1S1S2

Performance

- Cruise speed: 124Kt TAS at 16000ft with 60% power.
- Stall speed: 58 Kt (flaps landing configuration)
- Range: 934 NM
- Service ceiling: 16 000ft
- Rate of climb: 651 ft/min
- Fuel consumption at 60% power: 5.1 USG/h
- Max demonstraded XC: 25 kts
- Approach speed in landing configuration: 66-77kts (Performance category A)

Training fleet

Here you found our fleet cockpit images.

Diamond DA40NG

Instrument panel

Pedestal