

NAVAL AIR TRAINING COMMAND



NAS CORPUS CHRISTI, TEXAS

CNATRA P-491 (Rev 9-23)

STUDENT GUIDE



GENESYS PFD/MFD DAY FAMILIARIZATION AVIONICS TRAINER SELF-STUDY 2

TH-73A

2023



DEPARTMENT OF THE NAVY

CHIEF OF NAVAL AIR TRAINING
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Subj: STUDENT GUIDE, GENESYS PFD/MFD DAY FAMILIARIZATION AVIONICS
TRAINER SELF-STUDY

1. CNATRA P-491 (Rev 09-23) PAT, "Student Guide, Genesys PFD/MFD Day Familiarization Avionics Trainer Self-Study 2," is issued for information, standardization of instruction, and guidance to all flight instructors and student military aviators within the Naval Air Training Command.
2. This publication will be used as an explanatory aid to support the flight training curriculum. The procedures contained within this training are the standards for functions, manipulation, and setup of the Genesys PFD/MFDs.
3. Recommendations for changes shall be submitted via the electronic Training Change Request (TCR) form located on the Chief Naval Air Training (CNATRA) website.
4. CNATRA P-491 (New 10-22) PAT is hereby cancelled and superseded.

A handwritten signature in black ink, appearing to read "T. P. Atherton".

T. P. ATHERTON
By direction

Releasability and distribution:

This instruction is cleared for public release and is available electronically only via Chief of Naval Air Training Issuances Web site,

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STUDENT GUIDE
FOR
TH-73A ADVANCED HELICOPTER TRAINING SYSTEM
GENESYS PFD/MFD
DAY FAMILIARIZATION AVIONICS TRAINER
SELF-STUDY 2
(TH-73A)



TERMINAL LEARNING OBJECTIVE

Terminal Learning Objective (TLO):

Upon completion of this self-study, the SNA will set the Genesys PFD/MFD displays for day familiarization flight and return to base procedures.

HOW TO USE THIS STUDENT GUIDE

1. This self-study student guide is intended for use with the Desktop Avionics Trainer (DAT) or Part-Task Trainer (PTT) to improve your understanding of the Genesys displays and their functionality. The more you understand the Genesys menus before getting into the simulator or aircraft, the more you will be able to focus on improving basic air work and situational awareness during flight.
2. This guide is complementary to the Day Familiarization Self-Study 1, reviewing many of the skills practiced. It should be used to prepare you to use the Genesys software during day familiarization simulator and flight events.
3. Familiarize yourself with the procedures in each chapter before getting into the simulator or aircraft. While in the simulator, work through each scenario to perform the procedures detailed in the guide.
4. As you work through the steps of each procedure, develop a list of questions about anything that is unclear to you. This practice will allow you to ask questions at a later time with the instructor in a one-on-one setting.

LIST OF EFFECTIVE PAGES

Dates of issue for original and changed pages are:

Original...0...31 Oct 22

Revision...1...12 Sep 23

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 32 CONSISTING OF THE FOLLOWING:

| PAGE NO. | CHANGE NO. | PAGE NO. | CHANGE NO. |
|--------------|------------|----------|------------|
| COVER | 0 | | |
| LETTER | 0 | | |
| iii – ix | 0 | | |
| x-(blank) | 0 | | |
| 1-1 – 1-17 | 0 | | |
| 1-18 (blank) | 0 | | |
| 2-1 – 2-4 | 0 | | |
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INTERIM CHANGE SUMMARY

The following Changes have been previously incorporated into this manual.

| CHANGE NUMBER | REMARKS/PURPOSE |
|---------------|-----------------|
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The following interim Changes have been incorporated into this Change/Revision:

| INTERIM CHANGE NUMBER | REMARKS/PURPOSE | ENTERED BY | DATE |
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TABLE OF CONTENTS

| | |
|--|-------------|
| TERMINAL LEARNING OBJECTIVE | iv |
| HOW TO USE THIS STUDENT GUIDE | v |
| LIST OF EFFECTIVE PAGES | vi |
| INTERIM CHANGE SUMMARY | vii |
| TABLE OF CONTENTS | viii |
| TABLE OF FIGURES | ix |
| | |
| CHAPTER ONE - PREPARE FOR FLIGHT | 1-1 |
| 100. INTRODUCTION | 1-1 |
| 101. CHECK THE PFD/MFD | 1-2 |
| 102. CHECK FOR EXCEEDANCES | 1-4 |
| 103. TUNE THE RADIOS | 1-4 |
| 104. SET UP A NAV SOURCE..... | 1-7 |
| 105. SET THE FLIGHT ID AND TRANSPONDER CODE..... | 1-8 |
| 106. CREATE AND LOAD A FLIGHT PLAN..... | 1-11 |
| 107. SET UP THE PFD/MFD | 1-15 |
| | |
| CHAPTER TWO - RETURN TO BASE | 2-1 |
| 200. INTRODUCTION | 2-1 |
| 201. BASE | 2-1 |
| 202. ATIS..... | 2-1 |
| 203. SQUAWK..... | 2-2 |
| 204. TOWER | 2-2 |
| 205. DELETE FLIGHT PLAN..... | 2-2 |

TABLE OF FIGURES

| | | |
|--------------------|---|-------------|
| Figure 1-1 | NATOPS Engine Pre-Start Checklist, Steps 28–31 | 1-2 |
| Figure 1-2 | Normal Indications Prior to Engine Start While on External Power | 1-3 |
| Figure 1-3 | UHF Preset Frequencies..... | 1-6 |
| Figure 1-4 | OBS Button..... | 1-8 |
| Figure 1-5 | Radio Menu | 1-9 |
| Figure 1-6 | Flight ID Menu Option..... | 1-11 |
| Figure 1-7 | CREATE-EDIT Menu..... | 1-12 |
| Figure 1-8 | Waypoint Search Option Buttons..... | 1-13 |
| Figure 1-9 | KNDZ-KNFJ-KNDZ Flight Plan | 1-14 |
| Figure 1-10 | Standard PFD Display | 1-16 |
| Figure 1-11 | AUDIO/RADIO Display Option on MFD..... | 1-17 |
| | | |
| Figure 2-1 | Delete Flight Plan Menu..... | 2-3 |
| Figure 2-2 | Confirm Delete Flight Plan Menu | 2-4 |

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CHAPTER ONE PREPARE FOR FLIGHT

100. INTRODUCTION

During this section of the guide, you will practice the procedures to prepare for a flight. Follow the scenario prompts throughout the chapter while performing the steps in the trainer.

Upon the completion of Chapter 1, you will have accomplished the following objectives:

- Power on the PFD/MFD Display Units and conduct checks according to the NATOPS Engine Pre-Start Checklist.
- Check for exceedances using the HALF ENGINE option on the MFD.
- Set up the basic attitude and Horizontal Situation Indicator (HSI) on the PFD.
- Set up the HALF ENGINE and AUDIO/RADIO display options on the MFD.
- Create and load a basic flight plan to and from NAS South Whiting Field (KNDZ).
- Set up a NAV source using the NATOPS Systems Check.
- Set the Flight Identification (ID) and outbound transponder code with the appropriate information.
- Tune the VHF1 radios.
- Tune the UHF1 and UHF2 radios.

SCENARIO:

You and your Instructor get into the TH-73A with side number 611 for a flight to Navy Outlying Field (NOLF) Choctaw (KNFJ) from NAS South Whiting Field (KNDZ). Using standard procedures and the NATOPS Pocket Checklist (PCL), you run through the checklists as a crew. You are responsible for the checklist items concerning the Genesys display units.

Per the NATOPS Engine Pre-Start Checklist Steps 28–31 (Figure 1-1), power on the Genesys display units and confirm they started without errors.

28. BATT Switch — ON.
29. BUS Switch — ON.
30. PFD/MFD — Checked and Set. Verify databases current. Press any key on the display to exit Status Page and enter Flight Mode. Pilot MFD set to FULL ENGINE page.

Note

- The pilot PFD and MFD are automatically activated when the helicopter is electrically powered (copilot side units require BUS switch to be ON to operate). Each display has an automatic built-in test function; the test starts automatically at display power up. Allow self-test to complete to show the Status Page for the unit with the software version and database information displayed.
- The TERRAIN database is not periodically updated.

31. CAS Messages — Checked. Verify GEN CONTR caution light extinguished. If MAINTENANCE advisory is present, check exceedances.

CAUTION

Starter engagement with GEN CONTR caution illuminated will result in starter burnout.

Note

The CAS IN AIR exceedance is a nuisance alert and requires no corrective action.

Figure 1-1 NATOPS Engine Pre-Start Checklist, Steps 28–31

101. CHECK THE PFD/MFD

To power on the PFD/MFD display units:

1. Verify Circuit Breakers (CB) and overhead switches to the **IN** and **OFF** position.
2. Turn the **BATT** (Battery) switch **ON**.
3. Turn the **BUS** switch **ON**.
 - INITIALIZING displays.
4. Verify the displays complete the initial self-test without fault and the Navigation Data expiration date is in the future. In the aircraft, a self-text fault or expired Navigation database would require maintenance action.
5. Press any button on the bezel to activate the flight display units.

1-2 PREPARE FOR FLIGHT

SCENARIO:

Per the NATOPS Engine Pre-Start Checklist Step 31 (Figure 1-1Figure), check the Crew Alerting System (CAS) messages, prior to engine start, for normal indications. To view the CAS messages during engine start and shutdown, the pilot's MFD should be set to the FULL ENGINE page.

To display the FULL ENGINE option on the MFD:

1. On the MFD, press **KNOB 2 (E2)** to open the Display menu.
2. Rotate **KNOB 2 (E2)** to highlight the **FULL ENGINE** option and press to select.
 - The menu closes and the selected option (Figure 1-2) displays on the MFD.



Figure 1-2 Normal Indications Prior to Engine Start While on External Power

102. CHECK FOR EXCEEDANCES**SCENARIO:**

Check for exceedances. If an exceedance occurred, MAINTENANCE will display in green in the CAS window when the aircraft is on the ground (the MAINTENANCE advisory will extinguish when airborne). Exceedances can only be checked from either the Full Engine or Half Engine pages. If the EXCD button is not available, there are no exceedances to check. CAS IN AIR displays if a message is displayed in the CAS window in flight. This is normal to see in the exceedances page and requires no corrective action.

To check for exceedance:

1. On the MFD, press the **MENU (R1)** button.
2. Press the **EXCD (R4)** button.
 - A grey menu displays any CAS IN AIR messages or exceedances.
3. Press **EXIT (R1)**.

103. TUNE THE RADIOS**SCENARIO:**

Tune Instructor Common (121.95) in VHF 1 active and to Pensacola Approach (124.85) in VHF 1 standby fields.

To tune the VHF radios:

1. From the MFD, press the **RADIO (L7)** button.
 - If you are currently in the Radio page, this step does not apply.
2. Rotate **KNOB 1 (E1)** to highlight the VHF1 radio.
3. Rotate **KNOB 2 (E2)** to adjust the KHZ portion of the standby frequency.
4. Rotate **KNOB 3 (E3)** to adjust the MHZ portion of the standby frequency.
5. Press the **SWAP (R7)** button to switch the active and standby frequencies.
6. Rotate **KNOB 1 (E1)** to highlight the VHF2 radio and repeat the steps to select the frequencies.

1-4 PREPARE FOR FLIGHT

SCENARIO:

Using the presets, tune UHF1 to ATIS (CH 1), then to South Whiting Ground (CH 3).
Tune UHF2 to HT-8 Base (CH 5) in the active.

To tune the UHF radio:

1. From the MFD, press the **RADIO (L7)** button.
 - The Radio menu displays. If you are currently in the Radio page, this step does not apply.
2. Rotate **KNOB 1 (E1)** to highlight the UHF1 radio.
3. Press the **CH MODE (R4)** button to change the radio from manual entry to presets.
 - The frequency displays in the active column and the channel number displays in the standby field. You will only see one frequency at a time.
4. Rotate **KNOB 2 (E2)** to select the channel (Figure 1-3).



Figure 1-3 UHF Preset Frequencies

5. Rotate **KNOB 1 (E1)** to highlight the UHF2 radio.
6. Press the **CH MODE (R4)** button to change the radio from manual entry to presets.
7. Rotate **KNOB 2 (E2)** to select the channel.
8. Press the **EXIT (R1)** button to close the Radio menu.
 - The UHF2 and VHF2 active frequencies are displayed at the top of the right seat PFD in the radio frequency panel.
 - The UHF1 and VHF1 active frequencies are displayed at the top of the left seat PFD radio frequency panel.

1-6 PREPARE FOR FLIGHT

104. SET UP A NAV SOURCE**SCENARIO:**

Per the NATOPS Systems Check Step 13.f. set up the NAV source for flight.

To set up a NAV source:

1. On the MFD, press the **OBS (L4)** button (Figure 1-4).
2. Press the **NAV FMS (L2)** button.
3. Select the **NAV VLOC 2** option.
4. Press **KNOB 1 (E1)** to select the option.

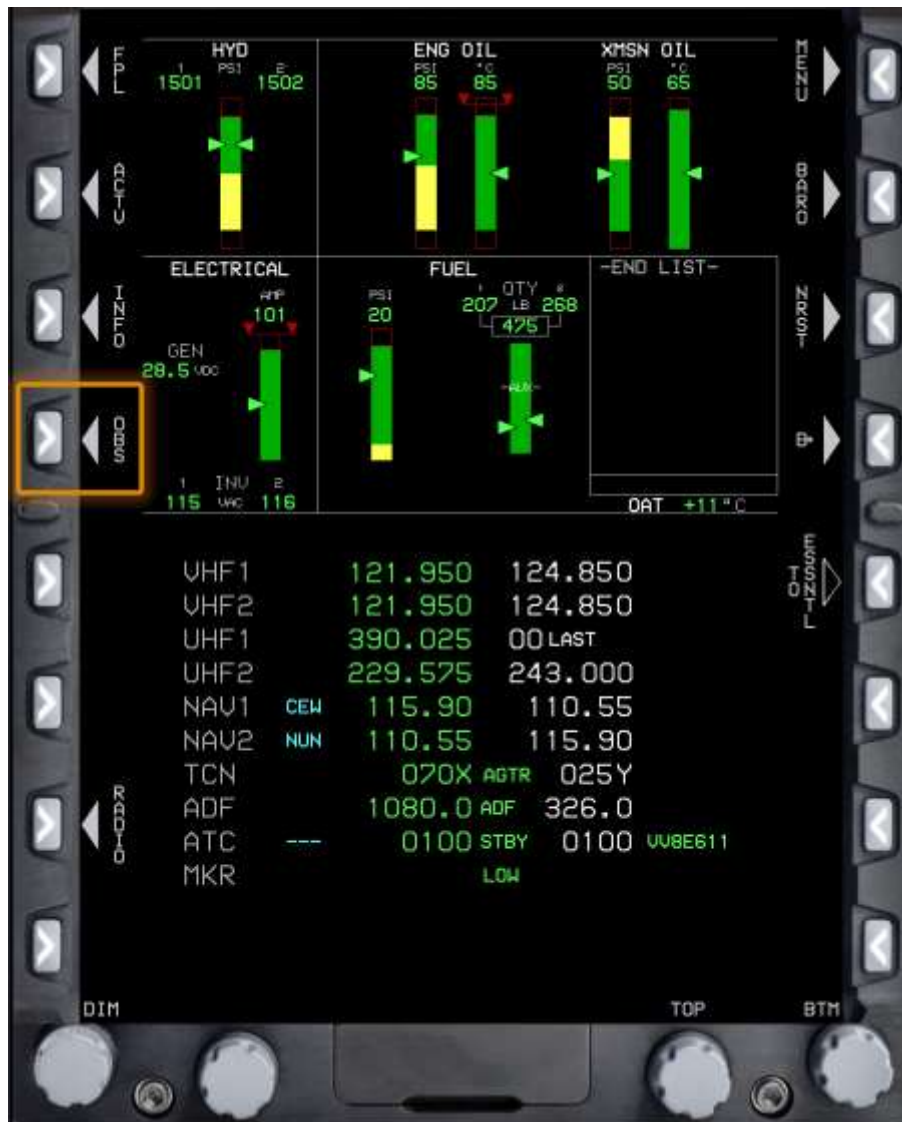


Figure 1-4 OBS Button

105. SET THE FLIGHT ID AND TRANSPONDER CODE

SCENARIO:

Set the outbound transponder code to 0100 and the Flight Identification (ID) to VV8E611.

To set the transponder code:

1. From the MFD, press the **RADIO (L7)** button.
 - The Radio menu displays (Figure 1-5).

1-8 PREPARE FOR FLIGHT

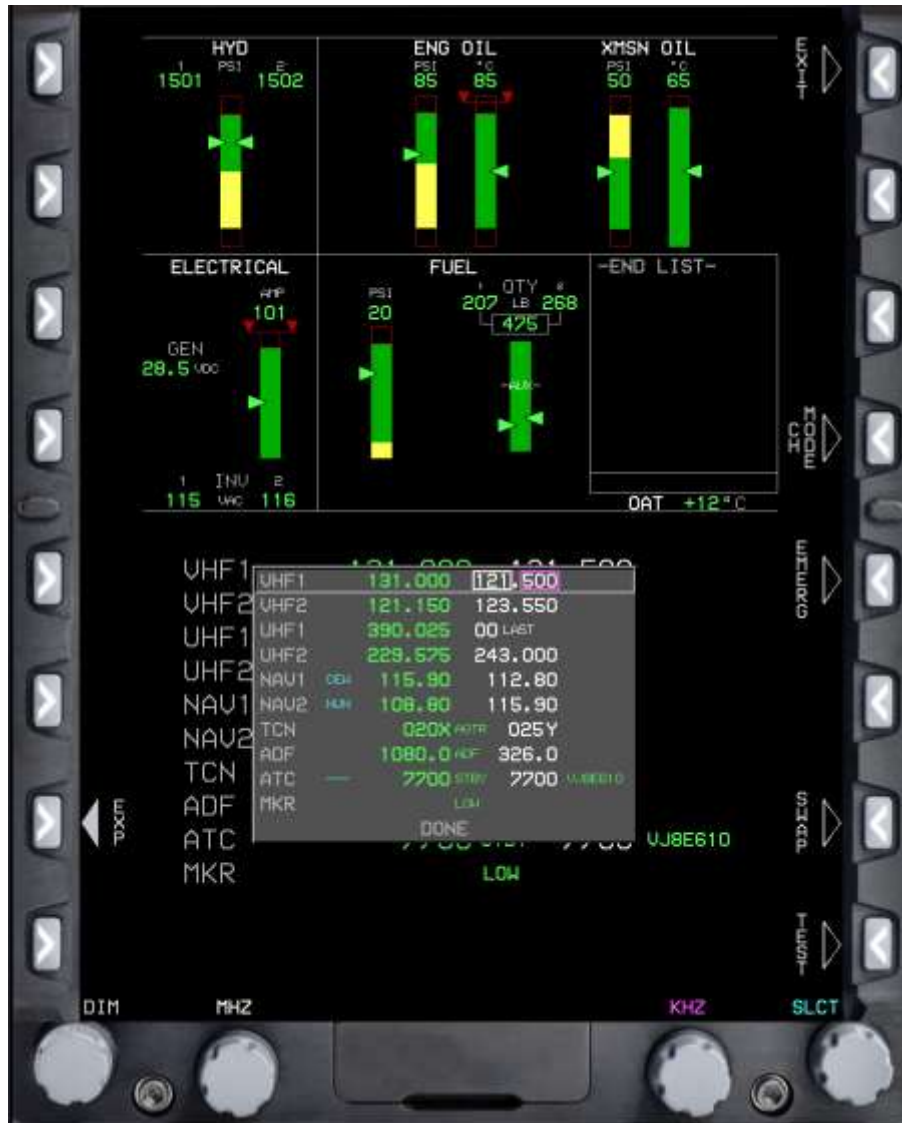


Figure 1-5 Radio Menu

2. Rotate **KNOB 1 (E1)** to the ATC option.
3. Rotate **KNOB 2 (E2)** to select the first transponder code number and press to select.
 - The next transponder code is highlighted.
4. Continue entering the remaining transponder codes.
5. Press the **SWAP (R7)** button to move the transponder code to active.

6. Rotate **KNOB 3 (E3)** to change the transponder mode to **STBY**.
 - The transponder must be in **STBY** to be able to get the **EXP (L7)**. You must change to **STBY** if in **GND** or **ALT**.

To set the flight ID:

1. Press the **EXP (L7)** button.
 - Ensure transponder mode is in **STBY**.
2. Rotate **KNOB 1 (E1)** to the **FLT ID** option (Figure 1-6).
3. Rotate **KNOB 2 (E2)** to change the Flight ID and press to advance to the next digit.
4. Press the **EXIT (R1)** button to return to the AUDIO/RADIO menu.

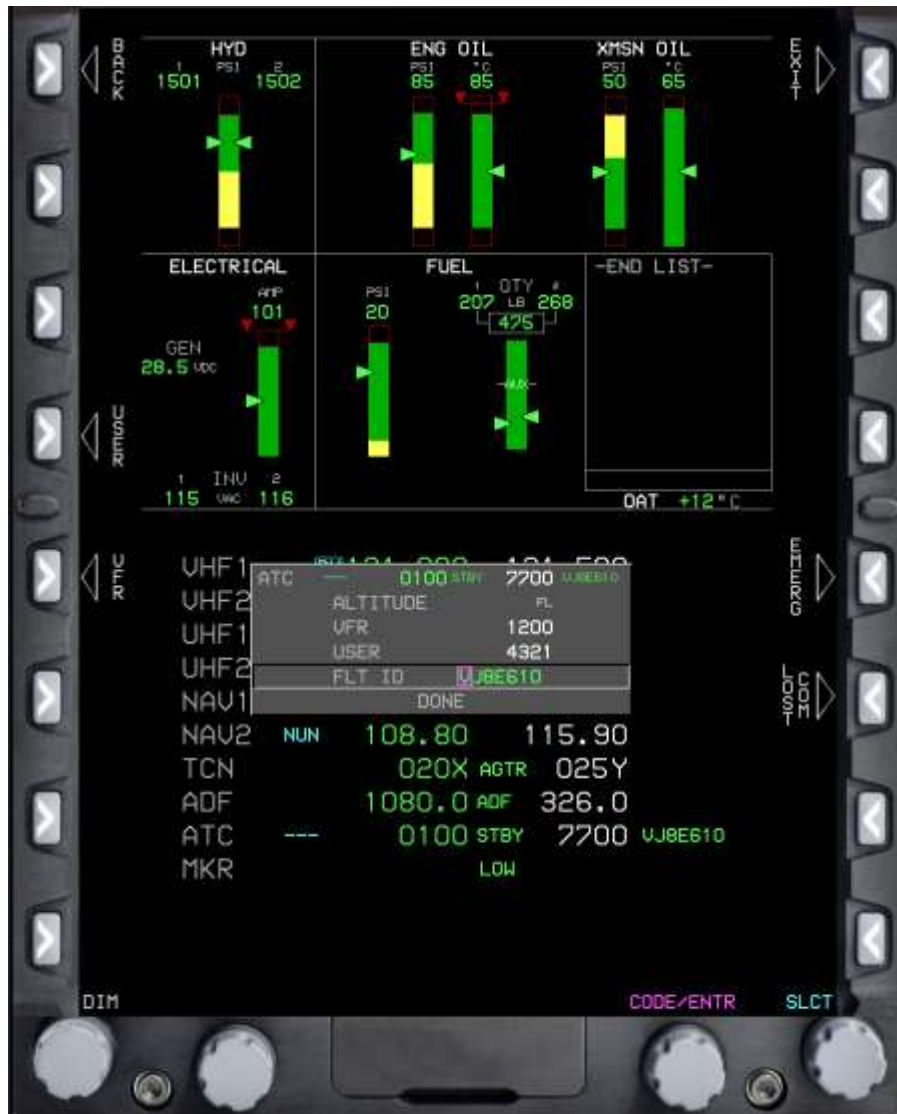


Figure 1-6 Flight ID Menu Option

106. CREATE AND LOAD A FLIGHT PLAN

SCENARIO:

Per the NATOPS Systems Check Step 13.e., load a basic flight plan from KNDZ to KNFJ and back (KNDZ-KNFJ-KNDZ).

To create a new flight plan:

1. On the MFD, press the **FPL (L1)** button.
2. Press **KNOB 1 (E1)** to select the **CREATE-EDIT** menu option.
 - The CREATE FLIGHT PLAN menu displays (Figure 1-7).

3. Press **KNOB 1 (E1)** to start a new flight plan.
 - There are two ways to add points to a flight plan: using the nearest or the search functions. You will become familiar with both methods below.

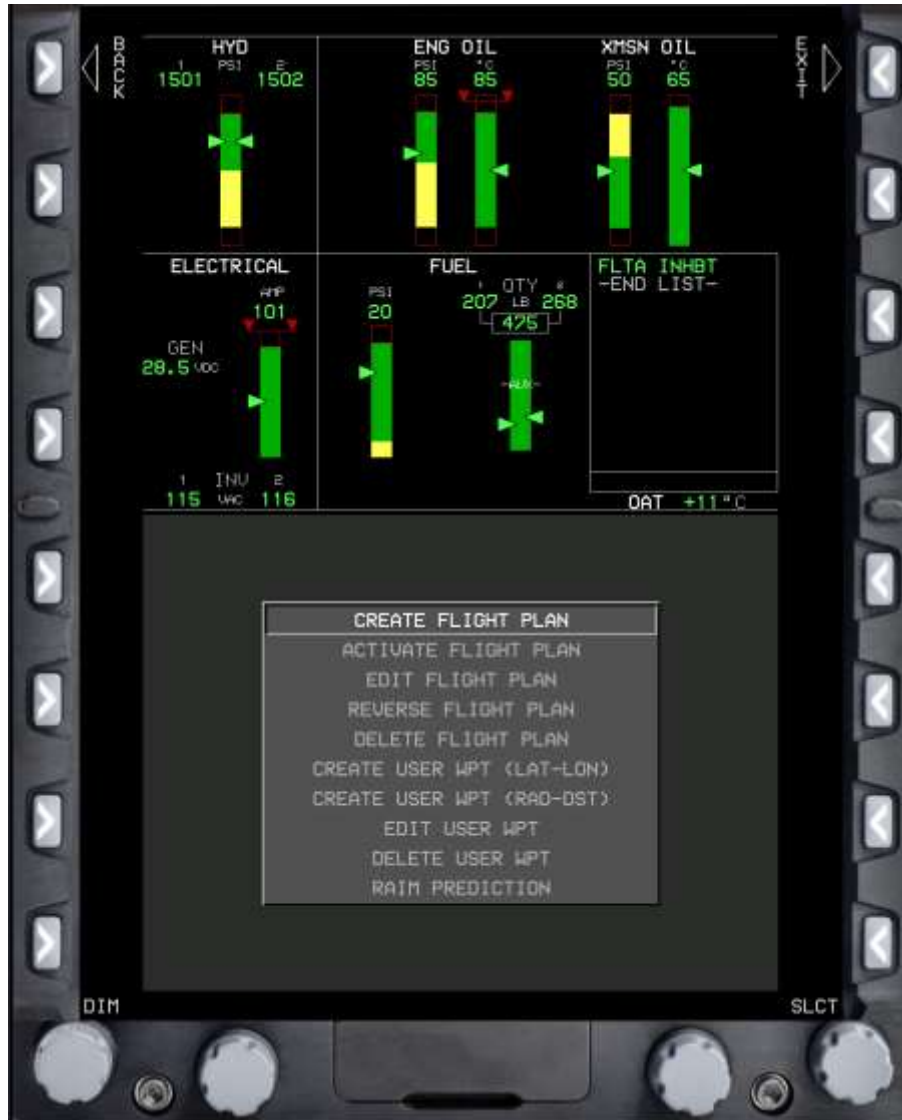


Figure 1-7 CREATE-EDIT Menu

To add a waypoint to a flight plan using the NRST (Nearest) airport function:

Use the NRST function to add the departure airport to a new flight plan.

1. Press the **ADD (R6)** button to display the waypoint search option buttons (Figure 1-8).

1-12 PREPARE FOR FLIGHT

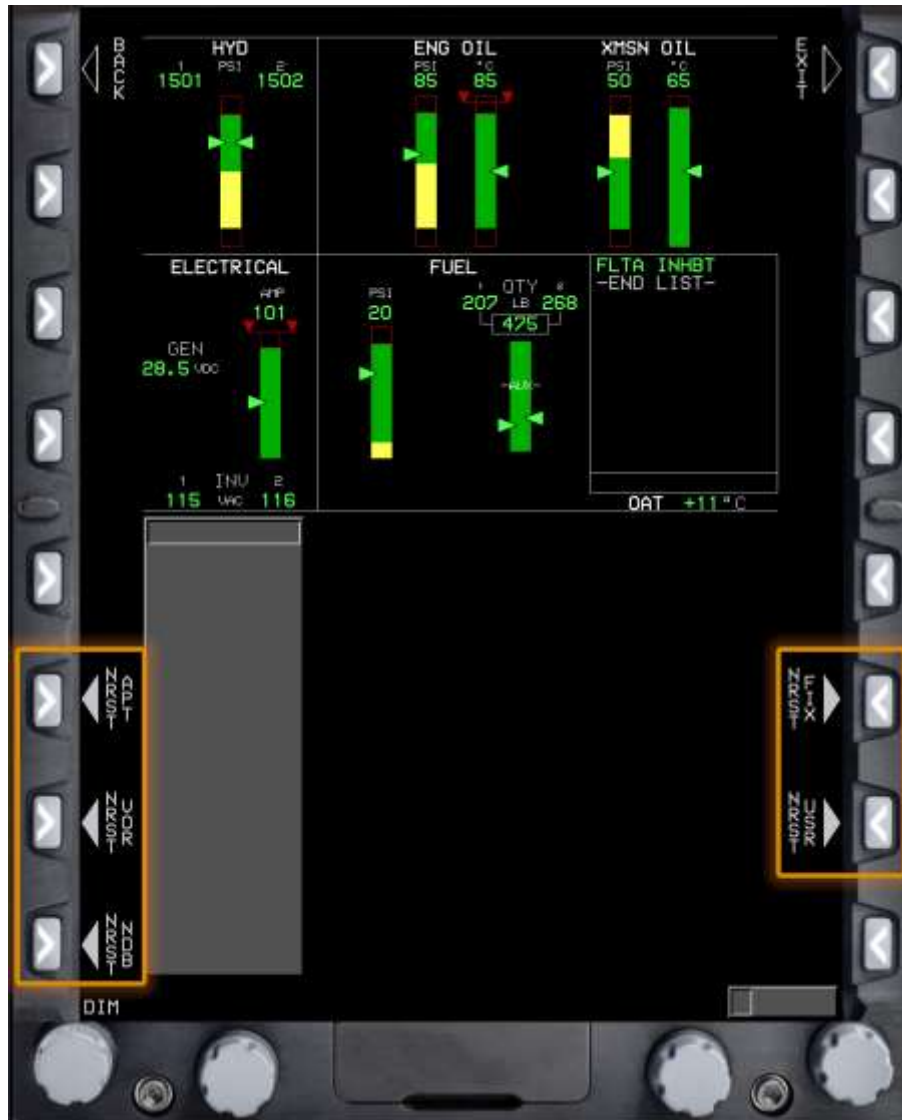


Figure 1-8 Waypoint Search Option Buttons

2. Press the **NRST APT (L6)** button to display a list of the nearest airports from the last waypoint in the flight plan, or if there are no waypoints in the flight plan yet, then L6 will display a list of the nearest airports from the aircraft's current location.
3. Rotate **KNOB 1 (E1)** to scroll through the airports, if necessary.
4. Press **KNOB 1 (E1)** to add the highlighted airport to the flight plan.

To add a waypoint to a flight plan using the SEARCH function:

Use the SEARCH function to add the remaining waypoints to the flight plan.

1. Press the **ADD (R6)** button to display the Waypoint Search menu.

2. Rotate **KNOB 1 (E1)** to scroll to the first letter or number of the desired waypoint identifier and press to select the option. Repeat this step, and after two or three characters have been input, press the **SEARCH (R8)** button to display a list of waypoints with the selected characters.
3. Rotate **KNOB 1 (E1)** to highlight desired waypoint and press **KNOB 1 (E1)** to select and load it into the flight plan.
4. Continue adding waypoints to the flight plan, as necessary (Figure 1-9).

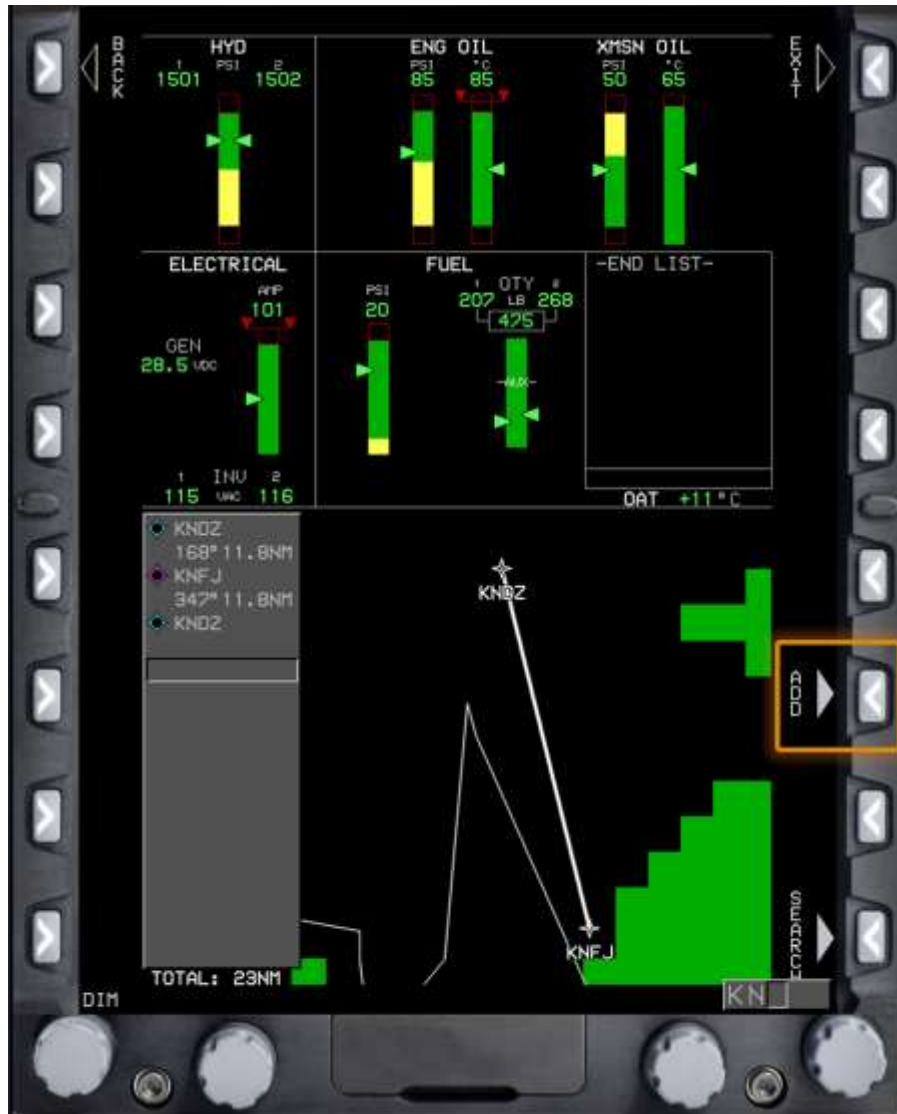


Figure 1-9 KNDZ-KNFJ-KNDZ Flight Plan

To save and activate a flight plan:

1. Press the **SAVE (R8)** button to save the flight plan to the system.
 - The CREATE-EDIT menu displays.
2. Rotate **KNOB 1 (E1)** to the ACTIVATE FLIGHT PLAN menu option and press to select.
 - A list of saved flight plans displays. If more than one flight plan with the same name exist(s), then the flight plan name with the highest number (x) is the flight plan you just created.
3. Rotate **KNOB 1 (E1)** to highlight the flight plan to be activated and press to select.
4. Press the **EXIT (R1)** button to close the flight plan menu

107. SET UP THE PFD/MFD

SCENARIO:

You and the instructor start the aircraft and are conducting the Systems Check. Set up the PFD and MFD for flight now. In this scenario you will set up the PFD to basic attitude and Horizontal Situation Indicator (HSI). Then set up the MFD to HALF ENGINE and AUDIO/RADIO displays.

To display the basic attitude gyro option in the top area of the PFD:

1. On the PFD, press the **MENU (R1)** button to display additional menu levels.
2. Press the **DCLTR (R4)** button to enter the DCLTR menu.
3. Rotate **KNOB 1 (E1)** to cycle through the options.
4. Press **KNOB 1 (E1)** to select the following options: **ANLG AGL** (RADALT dial), **BASIC** (basic attitude gyro), **TURN IND**, and **FD2**.
 - A check mark displays to confirm each selection and the data displays in the top area of the PFD.
5. Select **DONE** at the bottom of the menu or **EXIT (R1)** to save changes (Figure 1-10).

To set up the HSI and display the HSI in the bottom area of the PFD:

1. On the PFD, press **KNOB 1 (E1)**.
2. Rotate **KNOB 1 (E1)** to select **HSI** and press **KNOB 1 (E1)** to select the option.

3. Select **MENU (R1)**, then **DCLTR (R8)** for the bottom area display option.
4. Rotate **KNOB 1 (E1)** to highlight and select **PTR TCN 1** (TACAN needle) and **LIN RAD ALT** (RADALT tape).
5. Select **DONE** at the bottom of the menu or **EXIT (R1)** to save changes (Figure 1-10).



Figure 1-10 Standard PFD Display

To display the HALF ENGINE option on the top area of the MFD:

1. On the MFD, press **KNOB 2 (E2)** to open the display options for the top half of the MFD.
2. Rotate **KNOB 2 (E2)** to highlight the **HALF ENGINE** option and press to select.

1-16 PREPARE FOR FLIGHT

The menu closes and the selected option displays in the top area of the MFD (Figures 1-11). To display the AUDIO/RADIO option on the bottom area of the MFD:

1. On the MFD, press **KNOB 1 (E1)** to open the Display menu.
2. Rotate **KNOB 1 (E1)** to highlight the **AUDIO/RADIO** display option and press to select.
 - The menu closes and the AUDIO/RADIO displays in the bottom area of the MFD (Figure 1-11).

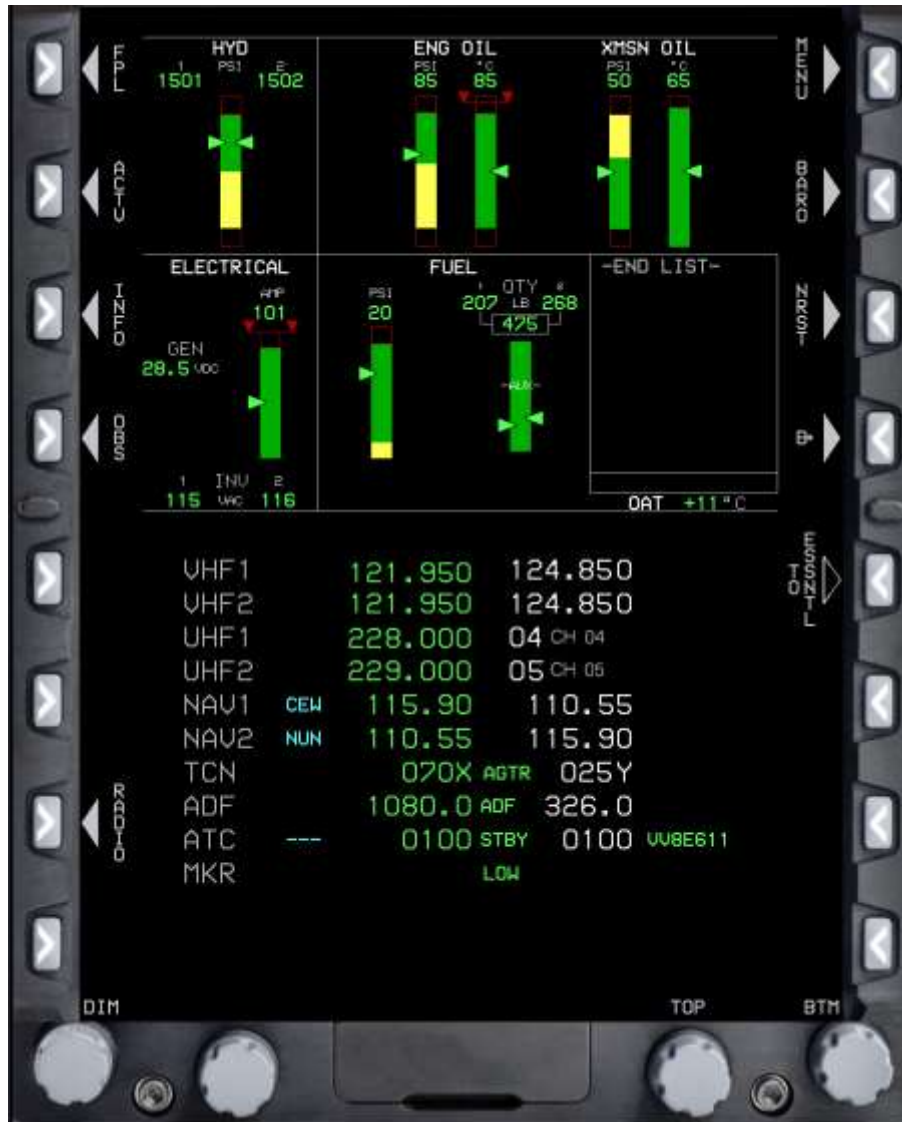


Figure 1-11 AUDIO/RADIO Display Option on MFD

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CHAPTER TWO RETURN TO BASE

200. INTRODUCTION

During this section of the guide, you will practice the procedures to use the Genesys software to return to base. Follow the scenario prompts throughout the chapter while performing the steps in the trainer.

Upon the completion of Chapter 2, you will have accomplished the following objectives:

- Use the TBAST acronym to conduct the Return to Base (RTB) procedures to refuel and hotseat.
- Delete a flight plan on the MFD.

SCENARIO:

You finished pattern work at KNFJ and are going to Return to Base (RTB) to refuel and hotseat. Run through calling base, obtaining ATIS, changing the transponder to the appropriate inbound code, and switching to South Whiting Field Tower (TWAS/Traffic Audio, Base, ATIS, Squawk, and Tower, or BAST). If this event is conducted using a PTT, you may ensure Traffic Audio is on, TAWS Low Alt is on, and TAWS is not inhibited by pushing the appropriate buttons above the displays.

201. BASE

Switch the UHF radio frequency to HT-8 Base to report, “*Base, 611, 15 minutes out for the hotseat.*”

To switch the UHF radio frequency:

1. On the MFD, press the **RADIO (L7)** button.
 - If you are currently in the Radio page, this step does not apply.
2. Rotate **KNOB 1 (E1)** to highlight the **UHF2** option.
3. Change the preset frequency to CH 5 HT-8 Base.

202. ATIS

To switch the UHF frequency to ATIS:

1. Rotate **KNOB 1 (E1)** to highlight UHF1.
2. Change the preset frequency to CH 1.

3. Rotate **KNOB 1 (E1)** to change the preset to CH 4 South Whiting Tower.

203. SQUAWK

Change the transponder code to the inbound code 0400.

To change the transponder code:

1. Rotate **KNOB 1 (E1)** to highlight the ATC option.
2. Rotate **KNOB 2 (E2)** to change the first digit.
3. Press **KNOB 2 (E2)** to advance to the next digit.
4. Press the **SWAP (R7)** button to make it the active code.

204. TOWER

Switch the UHF frequency to South Whiting Tower.

To switch the UHF radio frequency:

1. Rotate **KNOB 1 (E1)** to highlight UHF1.
2. Change the preset frequency to CH 4.
3. Press the **EXIT (R1)** button to close the menu.

205. DELETE FLIGHT PLAN

To delete a flight plan:

1. Press the **FPL (L1)** button on the MFD.
2. Press **KNOB 1 (E1)** to select the CREATE-EDIT menu option.
3. Rotate **KNOB 1 (E1)** to highlight the DELETE FLIGHT PLAN menu option (Figure 2-1) and press to select.
 - A list of saved flight plans will display DELETE WHICH FPL.

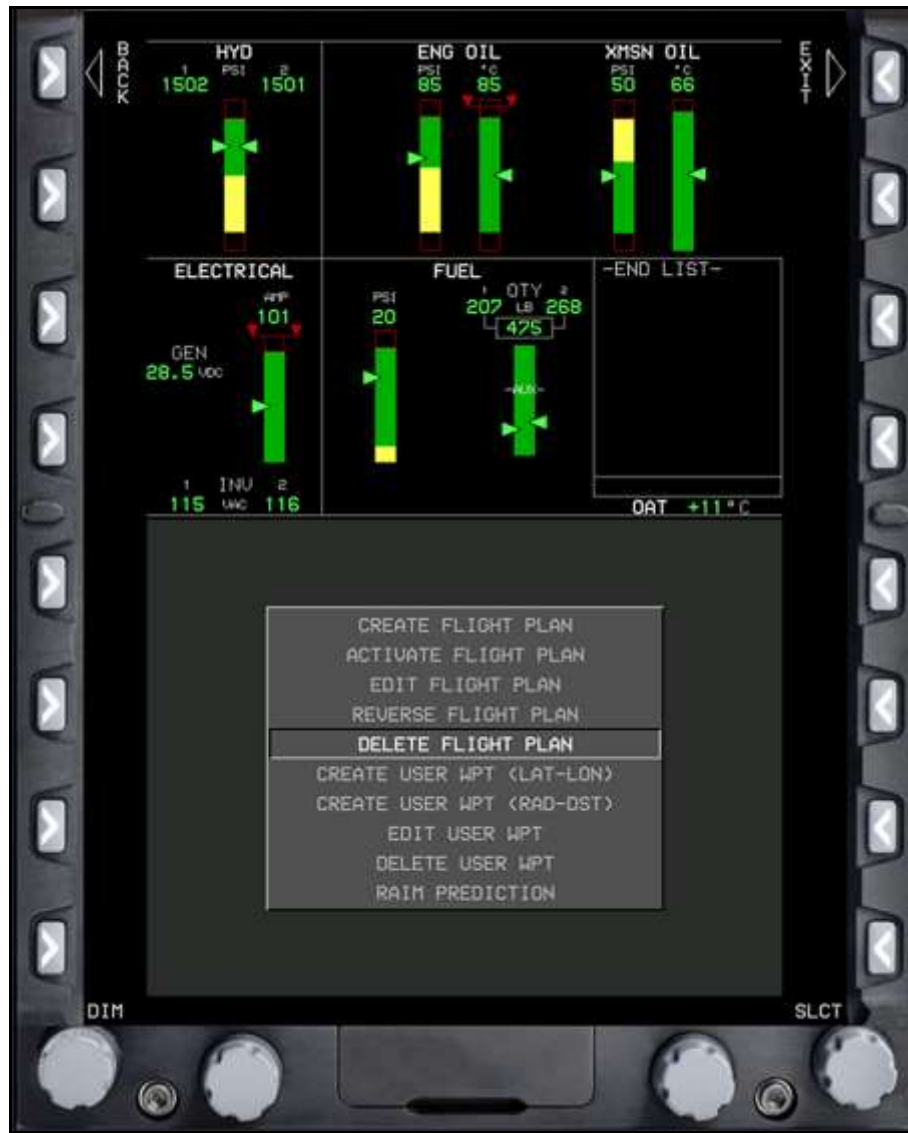


Figure 2-1 Delete Flight Plan Menu

4. Rotate **KNOB 1 (E1)** to the flight plan you wish to delete and press to select.
 - A message will pop up displaying CONFIRM DELETE FPL (Figure 2-2).

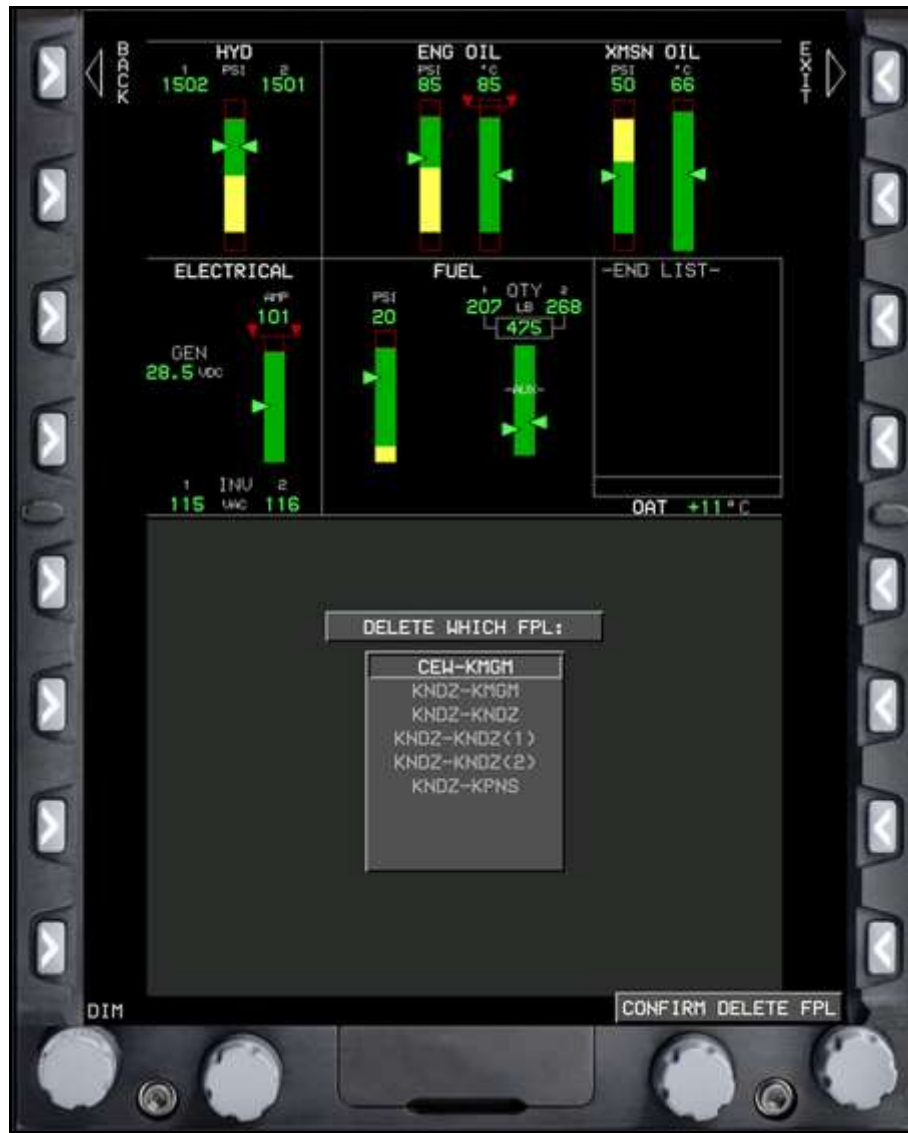


Figure 2-2 Confirm Delete Flight Plan Menu

5. Press **KNOB 1 (E1)** to CONFIRM DELETE FPL.
6. Repeat Steps 4 and 5 as necessary.
7. When no further deletions are required, press **EXIT (R1)**.