

NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS

CNATRA P-495 (NEW 10-22)



STUDENT GUIDE



DAY2201A

**PRACTICE COCKPIT
MANAGEMENT SELF-STUDY**

TH-73A

2022



DEPARTMENT OF THE NAVY

CHIEF OF NAVAL AIR TRAINING
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Subj: STUDENT GUIDE, DAY2201A PRACTICE COCKPIT MANAGEMENT
SELF-STUDY

1. CNATRA P-495 (New 10-22) PAT, "Student Guide, Day2201A Practice Cockpit Management Self-Study," is issued for information, standardization of instruction, and guidance to all flight instructors and student 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 of Naval Air Training (CNATRA) website.

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

A. P. RYBAR
By direction

This instruction is cleared for public release and is available electronically only via Chief of Naval Air Training Issuances Web site, <https://cnatra.navy.mil/pubs-secure.asp>.

STUDENT GUIDE
FOR
TH-73A ADVANCED HELICOPTER TRAINING SYSTEM
DAY2201A
PRACTICE COCKPIT MANAGEMENT
SELF-STUDY
TH-73A



TERMINAL LEARNING OBJECTIVE

Terminal Learning Objective (TLO):

Upon completion of this self-study, the SNA will be able to configure the TH-73A cockpit to perform familiarization maneuvers.

HOW TO USE THIS STUDENT GUIDE

1. This self-study student guide is intended for use in the simulator to improve your checklist proficiency, cockpit setup, and in-flight maneuvers. This is a self-study event with a Contract Instructor (CI) available to help set up the simulator and slew the helicopter as needed, but this is not a graded event.
2. This guide is provided to emphasize key maneuvers and concepts, but the Student Naval Aviator (SNA) may use the event to practice any previously introduced items.
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, feel free to ask the CI for clarification.
5. This student guide is a good reference for future practice using the desktop avionics trainer, partial task trainer, and simulator.

CHANGE SUMMARY

The following changes have been previously incorporated into this document.

CHANGE NUMBER	REMARKS/PURPOSE

The following interim changes have been incorporated into this change/revision:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE	ENTERED BY	DATE

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CHAPTER ONE

STARTUP AND GROUND PROCEDURES

100. INTRODUCTION

During this section of the guide, you will practice the procedures to prepare for a flight. This guide will emphasize the procedures for a few steps that need amplification. For all other steps, use the NATOPS Pocket Checklist (PCL). Practice the following checklists:

- Engine Pre-Start Checklist
- Engine Start
- Systems Check

101. SET UP THE PFD/MFD DISPLAY UNITS

Per the NATOPS Engine Pre-Start Checklist Steps 30–31, (Figure 1-1), power on the Genesys display units and set the MFD to FULL ENGINE for engine start. Then, check for exceedances.

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 30–31

To display the FULL ENGINE option on the MFD:

1. On the MFD, press **KNOB 1 or 2 (E1 or E2)** to open the Display menu.
2. Rotate **KNOB 1 or 2 (E1 or 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.

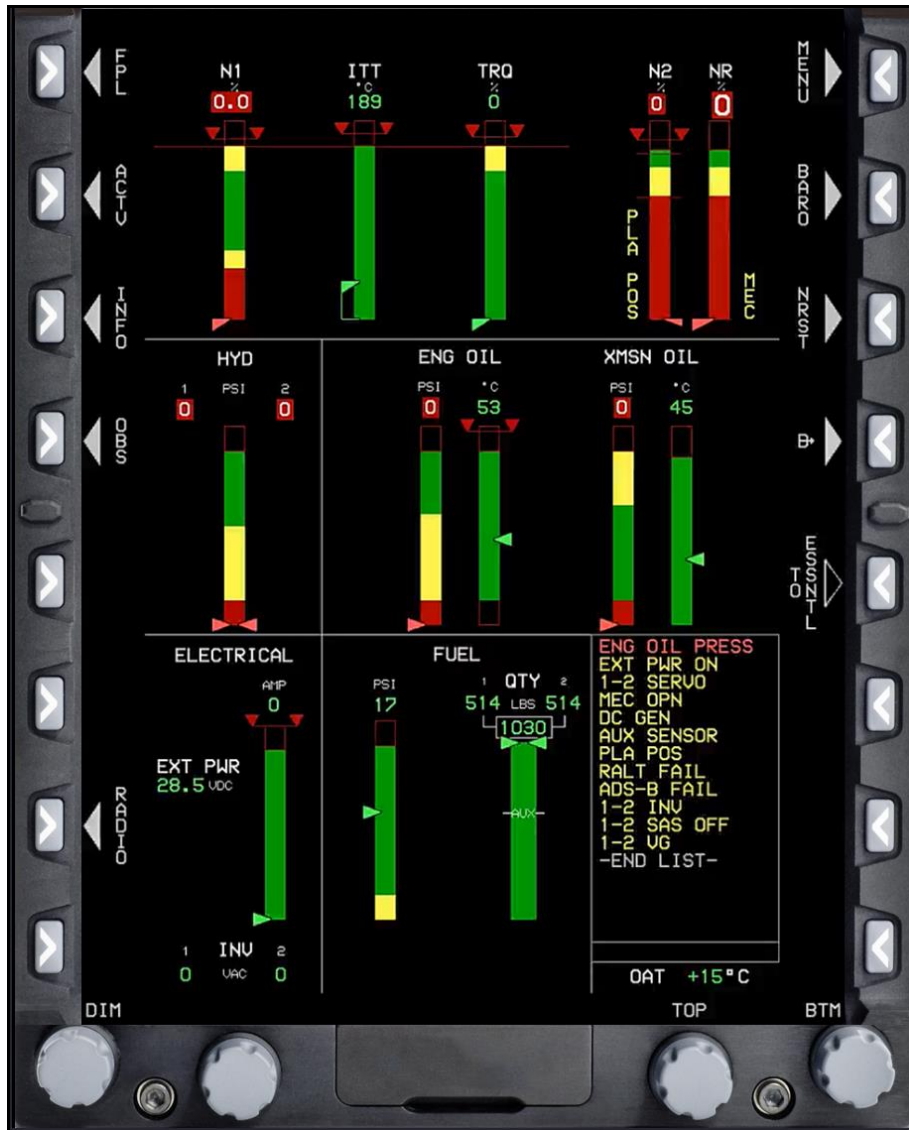


Figure 1-2 FULL ENGINE Display on MFD with Normal Indications Prior to Start

To check for exceedances:

To view exceedances, the MFD must display FULL ENGINE or HALF ENGINE.

1. On the MFD, press the **MENU (R1)** button.
2. Press the **EXCD (R4)** button if it is available.
 - A gray menu displays any exceedances. As noted in NATOPS, the CAS IN AIR exceedance is a nuisance alert that requires no corrective action.

102. ENGINE START

Using the NATOPS PCL, run through the following:

- Engine Start Checklist

103. SET UP PFD/MFD AS REQUIRED

SCENARIO:

Per the NATOPS Systems Check, Step 13, (Figure 1-3) set up for flight. In this scenario, you will set up the PFD (Figure 1-4) and MFD (Figure 1-5) display units in basic attitude, Horizontal Situation Indicator (HSI), HALF ENGINE, and AUDIO/RADIO options.

†13. COMM/NAV — Checked.

- a. Pilot and Copilot audio control panel switches — EMER. Verify pilot/copilot ICS PTT. Verify pilot transmit with COM 2 and copilot transmit with COM 1.
- b. Pilot/Copilot audio control panel switches — NORM.
- c. Standby Indicator — Check for valid/correct attitude, heading, altitude and airspeed indications.
- d. Setup PFD/MFD as required.
- e. Create/activate flight plan, as required.
- f. Set Nav sources, radios, and transponder, as required.
- g. Verify Radalt within 0-5 ft.

Figure 1-3 NATOPS Systems Check, Steps 13, a–g

On the PFD, set the top area to the basic attitude display:

1. On the PFD, press the **MENU (R1)** button.
2. Press the **DCLTR (R4)** button within 10 seconds to enter the **DCLTR** menu.
3. Rotate **KNOB 1 (E1)** to cycle through the options.
4. Press **KNOB 1 (E1)** while highlighting the desired settings. This will place a check next to the items that are activated.
5. Select **ANLG AGL** (Analog Radar Altimeter), **BASIC** (Basic Attitude Gyro), and **TURN IND** (Turn Indicator) on.
 - A check mark displays to confirm that each selection is on and the data displays in the top area of the PFD.
6. Select **DONE** at the bottom of the menu or **EXIT (R1)**.

On the PFD, set the bottom area to HSI:

1. Set PFD top display to the **BASIC** attitude gyro.
2. On the PFD, press **KNOB 1 (E1)**. Scroll to **HSI**, then press **KNOB 1 (E1)** again to select.
3. Now set up the **HSI** display. Select **MENU (R1)**, then **DCLTR (R8)** (Declutter) for the bottom display.
4. Rotate **KNOB 1 (E1)** to highlight and select:
 - a. **PTR TCN1** (TACAN needle on HSI)
 - b. **LIN RAD ALT** (linear radar altimeter)
5. Select **DONE** at the bottom of the menu or **EXIT (R1)**.

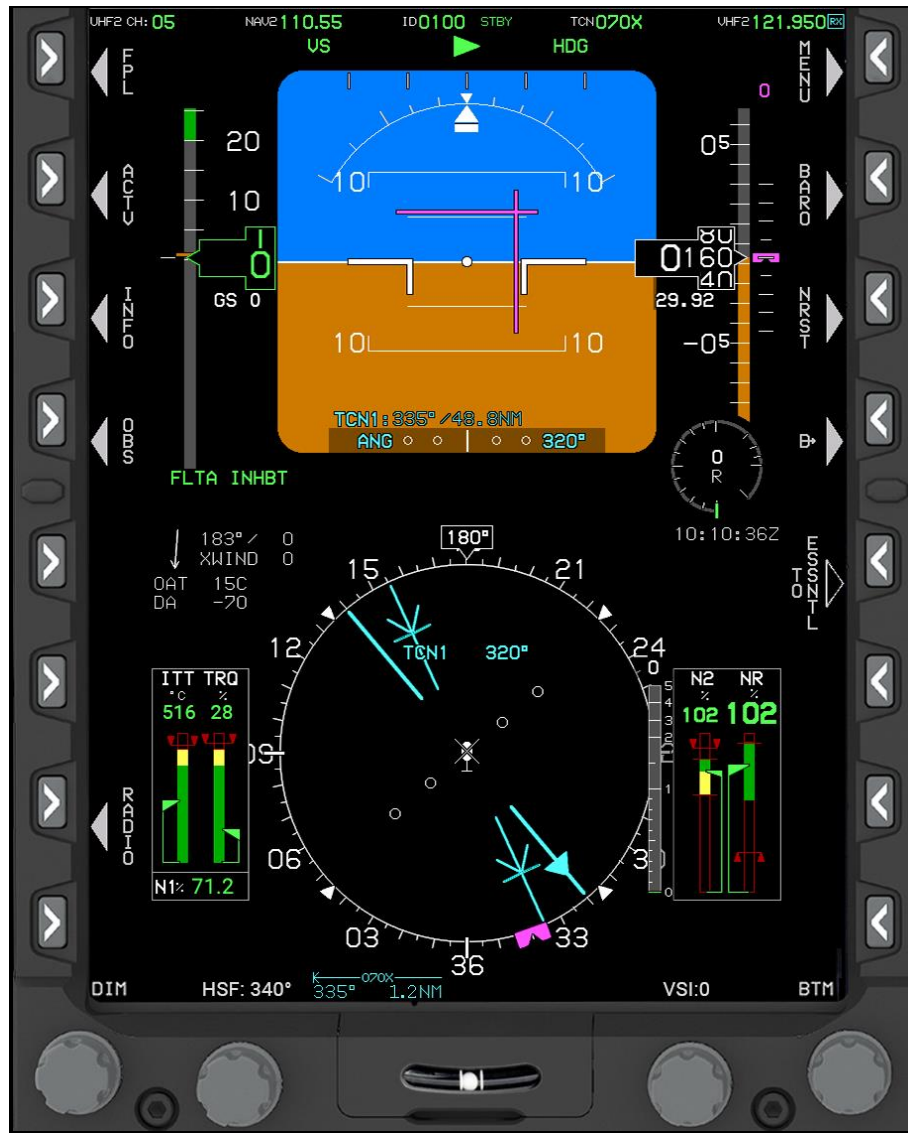


Figure 1-4 Standard PFD Display

On the MFD, set the top area to **HALF ENGINE**:

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.
 - The menu closes and the selected option displays in the top area of the MFD.

On the MFD, set the bottom area to **AUDIO/RADIO**:

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 1-5 Standard MFD Display

104. CREATE AND LOAD A FLIGHT PLAN

SCENARIO:

Load a basic flight plan from Naval Air Station (NAS) South Whiting Field to Navy Outlying Field (NOLF) Choctaw, 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.
3. Press **KNOB 1 (E1)** to start a new flight plan.

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

1. Press the **ADD (R6)** button to display the 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:

1. Press the **ADD (R6)** button to display the **SEARCH** menu.
2. Rotate **KNOB 1 (E1)** to highlight the letter or number of the preferred waypoint identifier and press to select the option. Repeat this step to enter the rest of the waypoint identifier.
3. Press **KNOB 1 (E1)** to advance to the next waypoint identifier field.
4. Press **KNOB 1 (E1)** to add the entered waypoint to the flight plan.
5. Continue adding waypoints to the flight plan, as necessary.

To save and activate a flight plan:

1. Press the **SAVE (R8)** button to save the flight plan to the system.
 - The **FLIGHT PLAN** 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.
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.

105. SET UP A NAV SOURCE

To set up a NAV source:

1. On the MFD, press the **OBS (L4)** button (Figure 1-6).
2. Press the **NAV (Current NAV source) (L2)** button.
3. Rotate **KNOB 1 (E1)** to **NAV VLOC 2** option and press select.
 - Set the HSI for the runway in use. Set the heading bug to the direction of current winds.
4. Press the **OBS (L3)** button on the PFD.
5. Rotate **KNOB 1 (E1)** to desired heading for runway and press to select.
6. Rotate **KNOB 3 (E3)** to set heading bug to current wind direction.
7. Press the **EXIT (R1)** button.

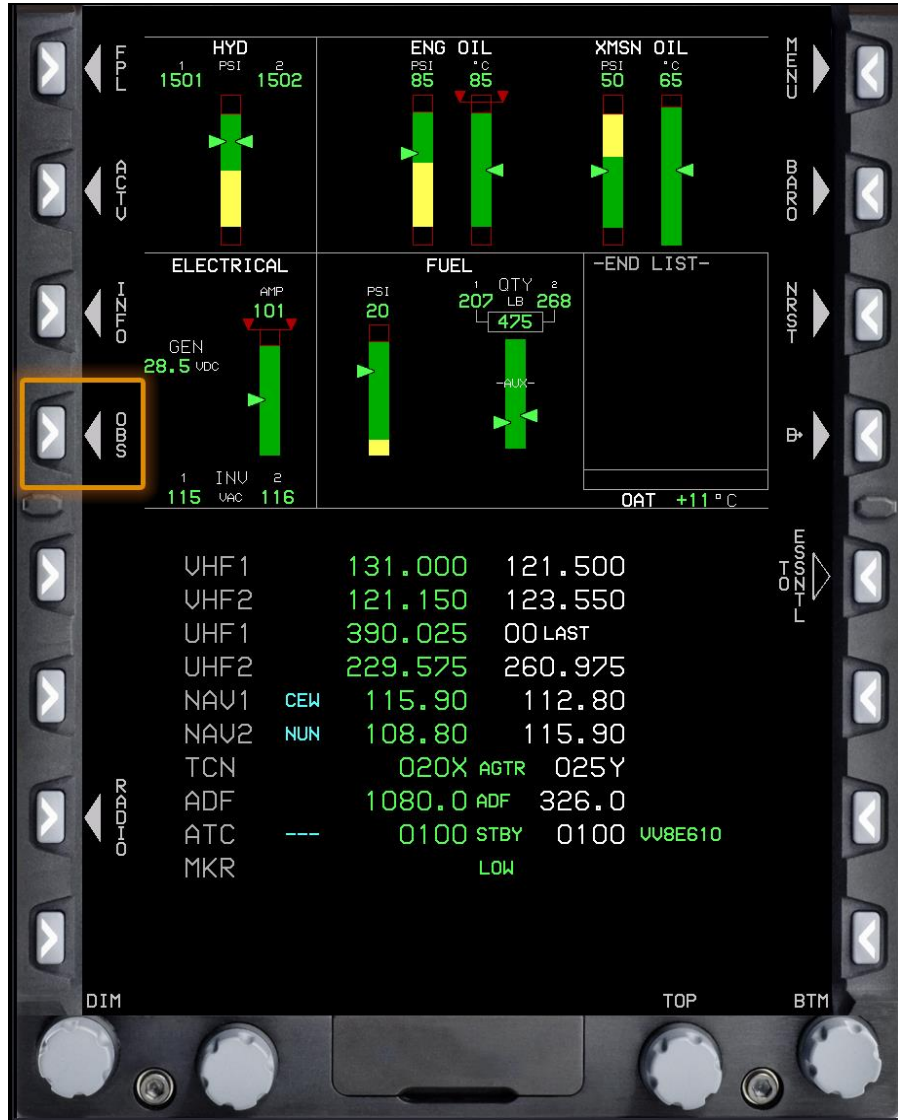


Figure 1-6 OBS Button

106. TUNE THE RADIOS

SCENARIO:

You must now tune the VHF1 and VHF2 radios to Instructor Common (121.95) in the active and to Pensacola Approach (124.85) in the standby.

To tune the VHF radios:

1. From the MFD, press the **RADIO (L7)** button.
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.

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).

To tune the UHF radio:

1. From the MFD, press the **RADIO (L7)** button.
 - The **RADIO** menu displays.
2. Rotate **KNOB 1 (E1)** to highlight the UHF1 radio.
3. Press the **CH MODE (R4)** button to change the radio from manual entry mode to channel mode to access the local UHF preset frequencies.
 - The frequency displays in the left column and the channel number displays in the right column. You will only see the active frequency displayed.
4. Rotate **KNOB 2 (E2)** to select the channel.
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.
 - a. The UHF2 and VHF2 active frequencies are displayed at the top of the right seat PFD in the radio frequency panel.
 - b. The UHF1 and VHF1 active frequencies are displayed at the top of the left seat PFD in the radio frequency panel.

107. SET THE FLIGHT ID AND TRANSPONDER CODE

SCENARIO:

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

To set the transponder code:

1. From the MFD, press the **RADIO (L7)** button.
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**.

To set the flight ID:

1. Press the **EXP (L7)** button.
2. Rotate **KNOB 1 (E1)** to the **FLT ID** option.
3. Rotate **KNOB 2 (E2)** to change the flight ID and press to advance to the next digit.
4. Press the **EXIT (L1)** button to return to the **AUDIO/RADIO** menu.

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CHAPTER TWO IN-FLIGHT MANEUVERS

200. INTRODUCTION

During this section of the guide, you will practice several maneuvers at altitude to practice basic air work in flight.

201. TAKEOFF

Using the NATOPS PCL, run through the following:

1. Takeoff Checklist
2. Once takeoff checks are complete, ask the CI to position you at 3,000 feet MSL at 60 KIAS.

202. SINGLE AXIS INPUT IN FORWARD FLIGHT

This maneuver is meant to break down each control input while in forward flight to emphasize which air work parameters change as a single axis input is made. By the end of the maneuver, you should have a better understanding of why all control inputs work together to maintain basic air work.

Trim the aircraft at 60 KIAS and 3,000 feet MSL:

1. Make each control input as stated. After each input, pause to note the aircraft reaction, then move on to the next input.
2. Apply input to the cyclic.
 - a. Apply forward cyclic to achieve 90 KIAS. Note the Rate of Descent (ROD).
 - b. Apply forward cyclic to achieve 120 KIAS. Note the increase in the ROD.
 - c. Level off and maintain 120 KIAS. Note the torque increase required to achieve level flight.
 - d. Apply aft cyclic to achieve 90 KIAS. Note the Rate of Climb (ROC).
 - e. Apply aft cyclic to achieve 60 KIAS. Note the increase in the ROC.
 - f. Apply aft cyclic to achieve 30 KIAS. Note the decrease in the ROC.
 - g. Level off and achieve 100 KIAS. Note the torque.

- h. Roll into a 30-degree Angle of Bank (AOB) turn. Note the ROD.
 - i. Increase the collective to level off. Note the increase in torque.
 - j. Roll wings level. Note the ROC. Reduce the collective to level off. Note the decrease in torque.
3. Apply input to the collective.
 - a. Raise the collective by 10–15 percent torque. Note the helicopter response in the pitch, roll, and yaw axes.
 - b. Lower the collective by 10–15 percent torque. Note the helicopter response in the pitch, roll, and yaw axes.
 4. Once complete, return to straight and level flight.

203. FAMILIARIZATION LEVEL SPEED CHANGE

Practicing the level speed change will develop your ability to anticipate the control inputs necessary as airspeed changes are made. Changing airspeed with a constant heading and altitude will require power adjustments and ball control to maintain balanced flight.

Turn to a cardinal heading, then:

1. Establish cruise flight at 60 KIAS and 3,000 feet MSL.
2. Accelerate to 120 KIAS, coordinating power and pedal inputs.
 - a. Lead with power. Maintain heading and altitude.
 - b. Apply left pedal to compensate for increased torque.
3. Stabilize momentarily at 120 KIAS.
 - a. Scan the Vertical Speed Indicator (VSI) to maintain altitude.
 - b. Maintain heading with pedal inputs throughout the maneuver.
4. Decelerate to 60 KIAS, coordinating power, cyclic, and pedal inputs.
 - a. Lead with forward cyclic to avoid ballooning and gaining altitude.
 - b. Maintain altitude with collective and nose attitude.
 - c. Maintain heading and balanced flight with pedals.

2-2 IN-FLIGHT MANEUVERS

204. TURN PATTERN – FAMILIARIZATION STAGE

The turn pattern (Figure 2-1) develops your ability to anticipate the control inputs necessary during various AOB turns. For example, high-AOB turns will require extra power to maintain altitude and pedal inputs to center the ball to maintain a balanced flight. This maneuver should primarily use an outside scan of the horizon to hold altitude and AOB but reference the instruments as necessary.

Turn to a cardinal heading, then:

1. Set 90 KIAS at 3,000 feet MSL.
2. Initiate a turn in either direction with a 15-degree AOB for 90 degrees of heading change.
3. Approaching 90 degrees of heading change, reverse the turn at a 15-degree AOB in the opposite direction.
4. Approaching the original heading, reverse the turn and roll into a 30-degree AOB turn for 180 degrees of heading change. Approaching 180 degrees of turn, reverse the turn at a 30-degree AOB toward the original heading.
5. After the second 30-degree AOB turn, reverse the turn and roll into a 45-degree AOB turn for 360 degrees of heading change. Approaching the 360 degrees of turn, reverse the turn at a 45-degree AOB to the original heading.
6. After the second 45-degree AOB turn, roll wings level on heading, altitude, and airspeed.

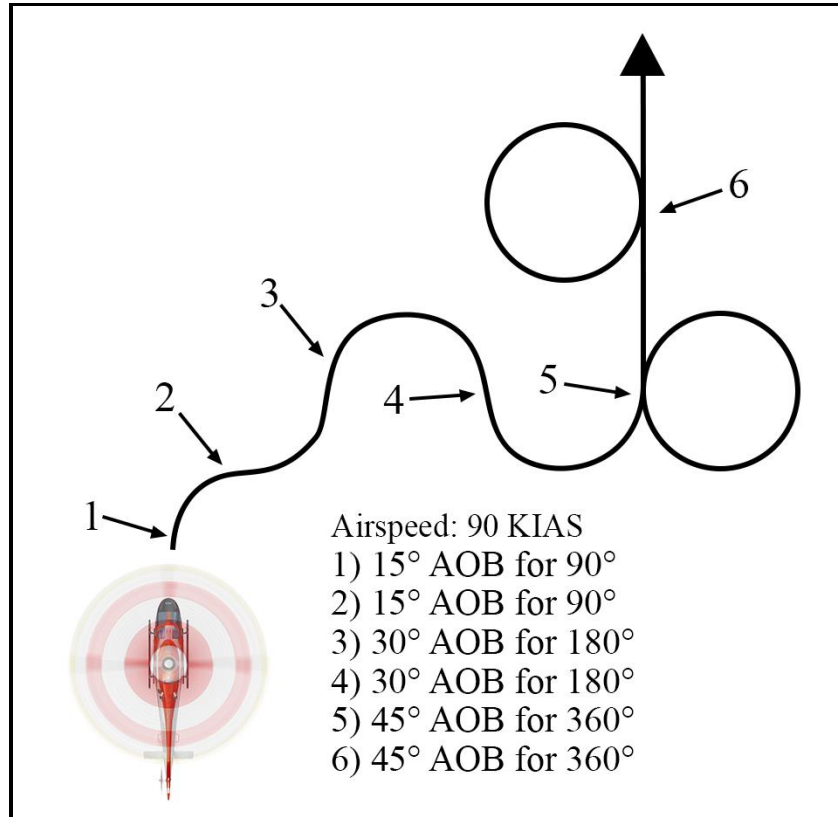


Figure 2-1 Turn Pattern

205. SHUTDOWN

Ask the CI to slew you to KNDZ flight line for aircraft shutdown.

Using the NATOPS PCL, run through the following:

- Shutdown Checklist