HORNET
NAVAL STRIKE FIGHTER

Spectrum HoloByte

FLIGHT MANUAL

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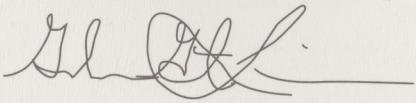

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Spectrum HoloByte, Inc.

HORNET
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To reach our Customer Support board in the Game Publishers B Forum, type **GO GAMBPUB** at any "!" prompt. Then select "Section 3" for Spectrum HoloByte. In addition to posting and reading messages, you can download files (demos, updates, troubleshooting tips, etc.) from the "Libraries (Files)" menu. If you're looking for head-to-head opponents, look for other *Hornet: Naval Strike Fighter* players in the Modem Games Forum by typing **GO MODEMGAMES**. You can send electronic mail to Customer Support at 76004,2144.

If you are not already a member of CompuServe, you can call CompuServe toll-free at 1-800-848-8199 and ask Representative #142 for your free introductory membership and $15 usage credit. Besides online support of *Hornet: Naval Strike Fighter* and our other Spectrum HoloByte products, CompuServe offers many other services including communications, hardware/software support, travel, reference libraries and more.

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Spectrum HoloByte. In addition to posting and reading messages, you can download files (demos, updates, troubleshooting tips, etc.) from the "Games RoundTable Libraries." You can also send electronic mail to Customer Support at HOLOBYTE.

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If you are having problems with *Hornet: Naval Strike Fighter* we can best help you if (1) you are at your computer when you call, and (2) you have the following information handy:

- Version number or serial number of *Hornet: Naval Strike Fighter*
- Your computer's brand and model
- Your computer's BIOS brand and version number
- Total RAM installed in your computer
- Name and version number of your operating system (MS-DOS or DR DOS)
- Name and version number of your memory manager (such as QEMM or 386Max)
- Video card brand and model name
- Mouse brand and version number of mouse driver
- Sound card brand and model name
- Contents of AUTOEXEC.BAT and CONFIG.SYS files
- Type **MEM /C** at the DOS prompt and copy down the onscreen listing

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CHAPTER

1

INTRODUCTION

The mission of the "Hornet" aircraft is to keep the peace in the air and on the ground. If necessary, Hornet pilots can clear the air of enemy fighters. The main purpose of the F/A-18 Hornet, however, is to attack ground targets.

The Hornet shares many features with its cousin, the F-16 "Falcon." Both are multipurpose, "fly-by-wire" aircraft that serve in the air forces of several NATO countries. Both planes use a similar, and very large, arsenal of air-to-air and air-to-ground weapons.

One feature that distinguishes the Hornet from the F-16 is its base of operations. The Hornet flies from an aircraft carrier. Also, it has some unique instruments to suit its air-to-ground mission.

Hornet: Naval Strike Fighter puts you in the cockpit of this light, maneuverable aircraft. *Hornet* is a companion to your copy of *Falcon 3.0* or *MiG-29*. When you install *Hornet*, you get a new aircraft, a new theater of operations and additional features, including an aircraft carrier.

In this package

Your *Hornet* package should contain:

- Three 1.44MB 3½" disks
- *Hornet Flight Manual*
- *Hornet Briefing for MiG-29 Pilots*
- *Hornet* Quick Reference Card
- Theater map of Bosnia-Hercegovina
- Registration card

Before you start

Have you already installed *Falcon 3.0* or *MiG-29*? If not, don't go any further. Your computer must have a working copy of *Falcon 3.0* or the stand-alone version of *MiG-29* in order to run *Hornet*.

Hornet has the same basic hardware and software requirements as *Falcon 3.0* or *MiG-29*. If your system

can run *Falcon 3.0* or *MiG-29*, all it needs to run *Hornet* is a little more space on your hard drive. For detailed requirements, see the next section.

System requirements for *Hornet*

Hornet requires:

- *Falcon 3.0* or *MiG-29* installed on your hard drive
- 12MHz 80286 compatible computer
- 1MB RAM minimum
- 603K (614,472 bytes) of free conventional memory
- DOS 5.0 or DR DOS
- VGA graphics
- One 1.44MB 3½" disk drive
- Hard drive with 7MB free

We recommend the following peripherals to enhance game play:

- Joystick, dual joysticks, CH FlightStick Pro, ThrustMaster Flight Control System (FCS) or rudder pedals
- ThrustMaster Weapons Control System (WCS)
- Mouse
- Ad Lib, Sound Blaster, Roland MT-32 or Roland LAPC-1 sound card
- 2MB RAM with EMS (expanded memory)
- Expanded memory manager such as EMM386, QEMM or 386Max
- Null-modem serial cable or 2400 baud modem for two-player communications
- Novell NetWare or Novell NetWare Lite network for multiplayer communications

For optimum performance, you should have the following:

- *Falcon 3.0* or *MiG-29* installed on your computer

- *Operation: Fighting Tiger* installed on your computer
- 33MHz or faster 80486 compatible computer
- 4MB RAM with EMS (expanded memory)
- 603K (617,472 bytes) of free conventional memory
- DOS 5.0, DOS 6.0 or DR DOS 6.0
- 16-bit VGA graphics
- One 1.44MB 3½" disk drive
- Hard drive with 7MB free
- Dual joysticks, CH FlightStick Pro with rudder pedals, or ThrustMaster FCS and WCS with rudder pedals
- Sound Blaster and either a Roland MT-32 or Roland LAPC-1 sound card

Installing *Hornet*

Your copy of *Hornet* comes with an installation program that automatically sets up the game on your hard drive. During the installation process, *Hornet* requires 7MB of free space on the hard drive that contains *Falcon 3.0* or *MiG-29*. Once it's installed, *Hornet* only needs 5.5MB.

Installing *Hornet* will update your copy of *Falcon 3.0* to version 3.03 and your copy of *MiG-29* to version 1.02. These updated versions of *Falcon 3.0* and *MiG-29* will be communications-compatible with *Hornet*. Please see Chapter 7: Communications for more information.

If you want to install *Operation: Fighting Tiger*

If you have *Falcon 3.0* and *Operation: Fighting Tiger*, you must install in the following order:

1. *Falcon 3.0*
2. *Operation: Fighting Tiger*
3. *MiG-29: Deadly Adversary of Falcon 3.0* (the add-on version)
4. *Hornet*

If you have the stand-alone version of *MiG-29* and *Operation: Fighting Tiger,* you must install in the following order:

1. *MiG-29*
2. *Operation: Fighting Tiger*
3. *Hornet*

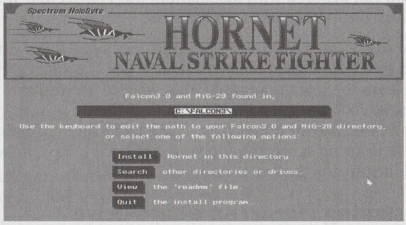
Do not attempt to install *Operation: Fighting Tiger* after you install *Hornet.* If you have already installed *Hornet* and wish to add *Operation: Fighting Tiger,* you must re-install everything in the above order.

When re-installing, you must delete all the old files and subdirectories in your FALCON3 or MIG29 directory before you begin the re-installation.

Starting the Install program

To install *Hornet* on your hard drive, start your computer and then follow the procedure below.

1. Insert *Hornet* Disk 1 into drive A or B.
2. From the DOS prompt, type **A:** or **B:** as appropriate and press [Enter].
3. Type **INSTALL** and then press [Enter]. The *Hornet* installation procedure begins. Here's the screen you should see:



In general, you use the Install program by selecting items on menus or pressing buttons. You can do either operation using the mouse or keyboard. For instance, on the main screen above, you can choose one of the

menu items by pressing the [↓] key until it is highlighted. Then press [Enter].

To select a menu item with the mouse, move the mouse pointer over the line and double-click the mouse button. (That is, press it twice in quick succession.) You can also click the item once and then click the Okay button.

The Install program has a number of options besides installing the software. Before you begin the installation process, you may want to take a look at the Read Me file, a text file containing important, up-to-the-minute information. Select the View Readme menu option to see this document.

Many options in the Install program take you through a series of tasks and screens. Many screens have a Go Back button that takes you to the previous screen. You can press the [Esc] key for the same effect.

Viewing system requirements

If you're in doubt about the ability of your system to run *Hornet*, select the View Requirements option. You will then see a list of hardware and software items.

If any items on the list appear highlighted in red, you won't be able to install the software without making changes to your system. If an item appears in yellow, you can proceed with installation, but *Hornet* may not work until you make the changes.

In many cases, the Install program can suggest a change to fix a highlighted problem item. Click the Suggest Fix button to view the suggestion. It may advise you to make changes in your system startup files, AUTOEXEC.BAT or CONFIG.SYS. These and other changes, like deleting excess files on your hard drive, have to be done outside the Install program in DOS.

Installing *Hornet* on a hard drive

The following procedure copies the *Hornet* files from the floppy disks to your hard drive.

1. If you haven't already done so, run the Install program as described in the section *Starting the Install program.*

2. Select the Install Hornet option. The window that appears shows a list of system requirements.

3. Since we're assuming that your system is ready for *Hornet*, click Okay to continue with the installation. The install program will then search for *Falcon 3.0* or *MiG-29*.

4. Choose the name of a subdirectory to contain *Hornet*. To accept the default name, just click Okay.

   Click Continue if you want to install Hornet in another directory, then enter the name of the directory you want to install Hornet to.

5. You will then see a summary screen showing the source and destination drives and subdirectories. The destination directory must contain an installed version of *Falcon 3.0* or *MiG-29*.

   Click Install. When the Install program finishes with one disk, it stops and asks you to swap disks. Remove the one currently in the drive, replace it with the next one in the series and click Okay.

Starting *Hornet*

Once you've installed *Hornet*, you're ready to fly! To start the game, follow these steps:

1. Go to the disk drive and subdirectory containing *Hornet*. For example, if *Hornet* was installed to D:\FALCON3, type the following at the DOS prompt:

   D: [Enter]
   CD \FALCON3 [Enter]

2. To run *Hornet*, type:

   HORNET [Enter]

After an animated opening sequence and the title screen, the next thing you see is the War Room.

Once you get to the War Room, you should know what to do based on your experience with *Falcon 3.0* or *MiG-29*. The rest of this manual covers the unique features of *Hornet*. Most of these have to do with the airplane itself and the new theater of operations, Bosnia-

Hercegovina. If you have questions about a feature of the game that doesn't appear in this manual, consult your *Falcon 3.0 Flight Manual* or *MiG-29 Reference Manual.*

Note: Included in the *Hornet* package is a special report for *MiG-29* owners entitled *Hornet Briefing for MiG-29 Pilots.* This document will cover any differences between *MiG-29* and *Hornet* that are not covered in either this *Hornet Flight Manual* or the *MiG-29 Reference Manual.*

About the Hornet

The McDonnell Douglas F/A-18 "Hornet" is a single- or two-seat, twin-engined strike fighter flown by the U.S. Navy and Marine Corps, and the air forces of Canada, Australia, Spain and Kuwait. Designed for air-to-air and air-to-ground missions, it can perform maritime air superiority, fighter escort, air defense suppression, close air support, and day or night strikes. Its ability to perform all aspects of Navy and Marine Corps missions and to employ precision-guided weapons gives tactical planners unprecedented flexibility in mission planning.

Originally a Northrop design, the prototype Hornet was designated the YF-17 and competed with the YF-16 in the Light Weight Fighter (LWF) and Air Combat Fighter (ACF) programs. The LWF program was a research exercise begun in 1972 to test the viability of cheaper, lighter and more agile fighter designs. The program was upgraded to the ACF program, a full development program, when pressure from the Eastern bloc military buildup required a new generation of fighter aircraft.

After extensive competitive trials in 1974, the Navy chose the YF-17. (The Air Force chose the YF-16, which became the F-16 Fighting Falcon.) After further development, the YF-17 became the F/A-18 Hornet.

While McDonnell Douglas builds the F/A-18 as a whole, the airframe itself is still Northrop's. The Hornet rides twin General Electric F404 smokeless afterburning turbofans, and Hughes provides the look-down, shoot-down radar.

The Hornet first flew on November 18, 1978. It entered operational service with the Navy and Marine Corps in 1983 as a replacement for the A-7 light-attack jet and the F-4 Phantom II fighter. Today, the Navy and Marine Corps have nearly 850 Hornets in 49 squadrons. More than 1,180 F/A-18s have been delivered worldwide. The Navy operates 30 squadrons from bases in Florida and California, while the Marine Corps operates 19 squadrons from bases in California, South Carolina and Hawaii.

The F/A-18 was designed to be both reliable and maintainable, ready for duty ashore or at sea. In Navy and Marine Corps operations, the F/A-18 is demonstrating three times better mission availability at half the maintenance of other fleet aircraft.

Since its introduction, the Hornet has been continually improved. In 1987, F/A-18C and D models introduced new self-defense capabilities, including the ability to carry the Advanced Medium-Range Air-to-Air Missile (AMRAAM) and the infrared imaging Maverick air-to-ground missile.

Standard air-to-air combat armament for today's F/A-18 includes two heat-seeking AIM-9 Sidewinder missiles on the wingtips, two radar-guided AIM-120 AMRAAMs on the fuselage stations, and an internally-mounted M61A1 20mm gun with 570 rounds of ammunition.

Air-to-ground weapons can be carried on centerline, inboard or outboard stations. Up to 15,500 lbs. of payload can be carried on nine external stores stations. Ferry range exceeds 1,800 nm.

The Hornet's first combat action was in Libya in 1986. Navy and Marine Corps F/A-18s deployed on-board the USS Coral Sea flew combat air patrol missions and knocked out a Libyan surface-to-air missile site at Sirte.

During Operation Desert Storm in 1990–1991, more than 200 U.S. and Canadian Hornets flew continuous missions in support of the Coalition's drive to liberate Kuwait from occupation by Iraq. F/A-18s participated in virtually every conceivable mission area and shot

down two Iraqi fighters. U.S. Hornets flew more than 11,000 sorties and recorded availability rates of 99%.

The Hornet's ability to convert rapidly between fighter and attack modes was demonstrated on January 17, 1991, in an aerial encounter between two F/A-18s from the USS Saratoga and two Iraqi MiG-21s. The F/A-18s were fully loaded for an attack mission with 8,000 lbs. of bombs. The Hornet pilots switched to fighter mode, shot down the MiGs, switched back to attack mode, hit their assigned ground targets, then returned safely to the Saratoga.

F/A-18s were deployed in the Persian Gulf region again in 1992 as part of Operation Southern Watch to enforce the Coalition's no-fly zone in Iraq. Hornets from the aircraft carrier USS Kitty Hawk flew combat air patrol and suppression of enemy air defense missions over southern Iraq in January 1993. In December 1992, F/A-18s from the Kitty Hawk supported U.S. relief efforts in Somalia as part of Operation Restore Hope.

In *Hornet*, you will be flying the F/A-18 in combat in any of the theaters from *Falcon 3.0, MiG-29* or *Operation: Fighting Tiger* (if you have that game), plus a seventh theater straight from today's headlines: Bosnia-Hercegovina. Flying missions from your home on the carrier USS Theodore Roosevelt, you will experience what today's Navy and Marine Corps pilots must face as vital front-line elements of the United States' global peacekeeping effort.

CHAPTER

2

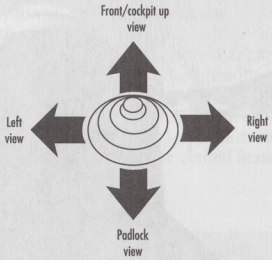
COCKPIT

As a Hornet pilot, you rely on many of the instruments, controls and weapons you learned to use while flying the F-16 in *Falcon 3.0* or the Fulcrum in *MiG-29*. Some of these appear unchanged in the Hornet cockpit. For example, the stick and throttle work the same way.

Other items offer similar functions in a slightly different form. The airspeed indicator on the Falcon and Fulcrum HUDs is an analog scale; it's a digital display in the Hornet. Finally, some Hornet features, such as the configurable cockpit displays, are unique.

Cockpit views

In *Hornet*, you can view game action from inside or outside your plane as you do in *Falcon 3.0* or *MiG-29*. All three simulations use the same controls to switch views. You can change your viewpoint with the keyboard or the trim switch on the ThrustMaster Flight Control System or the CH FlightStick Pro.



The *Hornet* cockpit offers some features that don't appear in *Falcon 3.0*. It has three multifunction displays instead of one. To accommodate the extra instrumentation, the *Hornet* cockpit is divided into two parts.

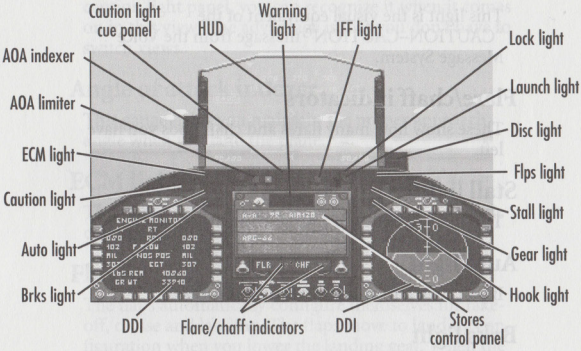
By default, the upper part of the cockpit appears on your screen. This view shows the head-up display and the two digital display indicators. It's called the look-up view, and it corresponds to the normal forward view in *Falcon 3.0* or *MiG-29*.

The third display is called the HI (horizontal indicator), and shows either the HSI (horizontal situation indicator) or the COMED (combined map/electronic display).

To switch between the look-up and look-down views, press the K key or the 5 key on the numeric keypad.

Cockpit look-up view

Here's the standard cockpit view in *Hornet*:



The head-up display (HUD) and the two digital display indicators (DDIs) are complex enough to warrant their own chapters. See Chapter 3: Multifunction Display Group and Chapter 4: Head-Up Display for more.

Stores control panel

This panel shows which systems are active and which weapon is selected.

Launch light

This light comes on when an enemy launches a radar missile at you.

Lock light

If your plane is locked in a radar beam, this light comes on.

Warning light

This light is a visual counterpart of the "WARNING–WARNING" message that comes from the Voice Message System.

Caution light

This light is the visual equivalent of the "CAUTION–CAUTION" message from the Voice Message System.

Flare/chaff indicators

These show how many flares and chaff pods you have left.

Stall light

This light comes on if your airplane has stalled.

Auto light

If you switch to autopilot, this light turns on.

Brks light

When you use your speed brakes, you see this light.

Disc light

During takeoff, this light indicates that the nosewheel steering system has disconnected. It comes on when your plane leaves the ground and stays on until you raise the landing gear.

Gear light

This light shows that the landing gear is down.

Hook light

This light shows that the tailhook has been lowered in preparation for landing on an aircraft carrier.

Caution light cue panel

This group of lights shows you which systems are damaged. Although the individual lights here don't have labels, their placement is the same as in the caution light panel in the right view, described below. For instance, if you know where the ENG light is on the caution light panel, you can recognize it when it comes on in this view. The advantage is that you don't have to switch views.

Angle of attack indexer

This gauge helps you maintain the proper approach angle when you land the plane.

ECM light

This light comes on when you activate your electronic countermeasures pod.

Flps light

The flaps automatically configure themselves for takeoff, cruise and landing. The flaps move to landing configuration when you lower the landing gear. When the gear is raised, they move to normal configuration. The gear should be down and the flap light should be off for takeoff configuration.

IFF light

The Identify Friend or Foe light helps you identify another aircraft. For details on the IFF system, see your *Falcon 3.0 Flight Manual* or your *MiG-29 Reference Manual.*

G-limiter light

This light shows the status of the Hornet's G-limiter. If you need to perform a maneuver that would produce more than the 7.5 Gs that the limiter allows, you can

turn the G-limiter off. Press O (the letter) to override the G-limiter.

AOA limiter

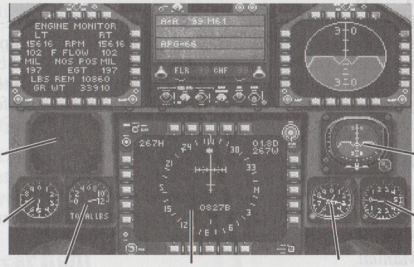
The Hornet is capable of achieving angles of attack in excess of 50°. The NATOPS manual specifically prohibits maneuvers with an AOA of more than 25° except in certain specific cases or emergencies. The maneuverability of the aircraft in this state is dangerously reduced.

When engaged, the AOA limiter limits the Hornet's angle of attack to 25°. When this system is active, the AOA limiter light is red. If the light is green (which is the default condition), the system is disengaged. Turn the AOA limiter on or off by pressing Shift O.

The AOA limiter does not exist in the real F/A-18. We have included it in this program because it is not yet possible in a computer simulation to provide the physical sensations that warn a real pilot when the aircraft is approaching dangerous angles of attack.

Cockpit look-down view

Here's the lower half of the *Hornet* cockpit:



You get this view when you press the K key or the 5 key on the numeric keypad. In the look-down view, you can see both digital display indicators and the horizontal indicator, described in the next chapter. This view also contains a number of backup instruments that duplicate functions of the HUD and DDIs.

Standby radar warning receiver (RWR)

If you have one of the DDIs set to RWR mode, this display is blank. Otherwise, it shows the same information that you would see on a DDI in RWR mode. It has lights to warn of radar lock (yellow) and missile launch (red).

Note to *Falcon 3.0* players: The RWR is the Navy equivalent to the Air Force's TWI (threat warning indicator). Keep this in mind when you see the RWR mentioned in this manual.

Standby airspeed indicator

This gauge shows the airspeed in hundreds of knots.

Standby fuel indicator

This information is also available on the DDI in engine monitor mode. The standby gauge shows the remaining fuel in thousands of pounds.

Standby attitude display indicator (ADI)

This "artificial horizon" shows the plane's pitch and roll attitude relative to the ground. It works like the ADI mode of the DDI.

Standby barometric altimeter

This gauge is a "three needle" altimeter. The short, medium and long pointers show altitude in multiples of 10,000 ft, 1,000 ft and 100 ft respectively.

Standby rate of climb indicator

This gauge shows your vertical speed in thousands of feet per second. The scale runs from -50,000 ft/min to +50,000 ft/min.

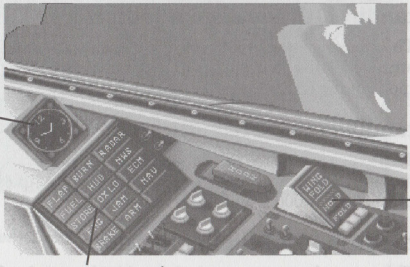
Left view

When you look out the left side of your Hornet, here's what you see:

The AVTR controls work just like the ones in *Falcon 3.0* and *MiG-29*. The instrument to the left of the AVTR is a backup compass. The landing gear light glows red when the gear is up and green when is it down.

Right view

Here's the view from the right side of your Hornet:



The Wing Hold panel shows you the status of your F/A-18's wings. The Hold light is normally lit green. When you fold the wings (by pressing Ctrl W), the Fold light will illuminate red. In addition, the analog clock displays the time of day.

One or more of the 15 caution lights will illuminate if your aircraft sustains damage. Each of these lights indicate that the system in question is inoperable. These lights correspond in position to the caution light cue panel in the front view.

FLAP caution light

The FLAP caution light indicates that your wing flap mechanisms have been damaged and are frozen in their current state.

BURN caution light

When the BURN caution light illuminates, it means that your afterburner has been damaged. Your plane will immediately drop from any afterburner stage to 100% military power. You will have a more difficult time escaping from an area quickly or completing high-speed maneuvers.

RADAR caution light

The RADAR caution light turns on when the radar display is no longer operational. You will no longer be able to achieve a radar lock on air-to-air and air-to-ground targets. Heat-seeking missiles, however, will still be able to lock on.

FUEL caution light

When the FUEL caution light turns on, it indicates that you have a leak in your fuel system (although not the severity of the leak). Check the Engine monitor to see how much fuel is being lost.

HUD caution light

The HUD caution light will illuminate when your HUD has been completely knocked out. You will no longer see any HUD information so you must rely on secondary instruments.

NWS caution light

The NWS caution light comes on when your nosewheel steering system has been damaged. Nosewheel steering damage is usually caused by not following required takeoff procedures, landing too hard, or being hit by enemy gunfire. When the NWS system has been damaged, you will have a difficult time steering the plane once it has landed.

STORE caution light

The STORE caution light indicates that you will be unable to launch or jettison any external stores you have loaded on your F/A-18. This includes all air-to-air and air-to-ground weapons, external fuel tanks and ECM pods. If you are planning on fighting, you have only the use of your cannon.

OX LO caution light

The OX LO caution light illuminates when enemy gunfire pierces your Hornet's canopy. This damage causes a drop in cabin pressure, which limits your maximum ceiling to 10,000 ft. Flying above this will cause you to blackout, even if you are flying straight and level.

ECM caution light

The ECM caution light comes on when your ECM pod has been destroyed. You will no longer be able to turn on your ECM pod to spoof enemy missiles and radar.

ENG caution light

The ENG caution light indicates that your engine has been damaged beyond repair. Engine shutdown causes your engine to drop to 0% RPM, and your airspeed will begin to decrease.

JAM caution light

The JAM caution light means that your cannon is jammed and no longer works. When your gun is jammed, only your internal gun is damaged. Any other weapons are not affected.

NAV caution light

The NAV caution light will light up if the map display is no longer functional. In addition, you will not see the waypoint caret on your HUD. Without the map, you will have to rely on the autopilot and terrain landmarks to navigate.

BRAKE caution light

The BRAKE caution light indicates that your speed brakes have been damaged are now stuck in their current position. If your speed brakes were open, your speed brakes will be frozen in that position. If your speed brakes were closed, you will not be able to rely on the speed brakes to slow your plane down.

ARM caution light

The ARM caution light illuminates when your arming mechanism has been damaged. This means that you will not be able to arm any air-to-air or air-to-ground weapons. Any cluster bombs, iron bombs and rocket launchers, though, will still operate properly. However, you will need to switch to your cannon for a dogfight or strafing.

WING caution light

The WING caution light turns on when your wings have been structurally damaged, usually due to pulling excessive Gs.

IAM caution light

The IAM caution light means that your caution is jammed and no longer works. When your IAM is jammed, only your internal aim is damaged. Any other weapons are not affected.

NAV caution light

The NAV caution light will light up if the map display is no longer functional. In addition, you will not see the way-point caret on your HUD. Without the map, you will have to rely on the autopilot and terrain landmarks to navigate to enemy gunfire. When the NAV system has been damaged, you will have a difficult time navigating to your waypoints, landing too hard, or heading straight into enemy gunfire.

BRAKE caution light

The BRAKE caution light indicates that your speed brakes have been damaged and now are stuck in their current position. If your speed brakes were open, your speed brakes will be frozen in that position. If your speed brakes were closed, you will not be able to turn on the speed brakes to slow down. Damaged speed brakes will have trouble opening and are to-ground weapons, external fuel tanks and ECM pods. If you are planning on using your speed brakes, only the use of your camera.

ARM caution light

The ARM caution light illuminates when your arming mechanism has been damaged. Your ARM caution light will not be able to arm any air-to-air or air-to-ground weapons. Any dropped bombs and LGTs will still operate properly. However, fuzing mechanisms will still operate properly. However, you will need to switch to your caution for a dogfight. Fuzing is 10,000 feet long allows that will cause premature or no fuzing.

WING caution light

The WING caution light turns on when your wings have been structurally damaged, usually due to pulling excessive Gs. When the wings no longer be able to pull on your ECM pod to spoof enemy missiles and radar.

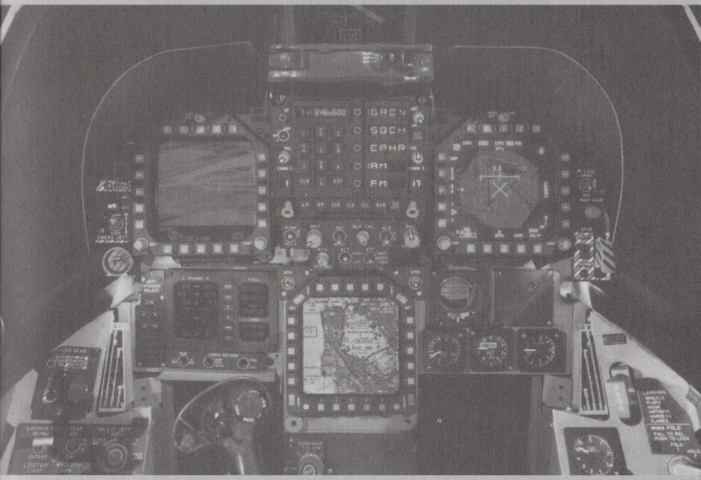
ENG caution light

The ENG caution light indicates that your engine has been damaged beyond repair. Engine shutdown causes your engine to drop to 0% RPM, and your airspeed will begin to decrease.

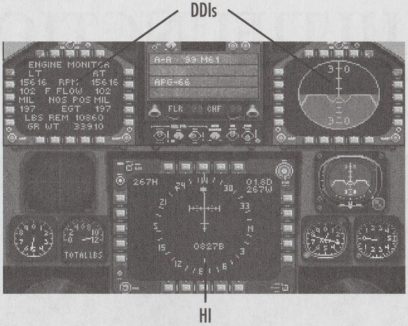
CHAPTER

3

MULTIFUNCTION DISPLAY GROUP



The cockpit of the Hornet features three large screens which can be adjusted by the pilot to show a variety of information. This Multifunction Display (MFD) group comprises two digital display indicators (DDIs) and the horizontal indicator (HI). All three appear in the cockpit look-down view, while the look-up view shows the DDIs but not the HI. See Chapter 2: Cockpit for information on switching views.



Of the three, the HI is the most specialized. It's a navigational aid that helps you fly along the planned route between waypoints. The two DDIs are more versatile. They show vital information from a number of sources.

Digital display indicators

The two screens on the right and left sides of the Hornet cockpit are the digital display indicators. Both DDIs can display text and graphic data in five modes:

- Engine monitor
- Radar
- Maverick missile
- Radar warning receiver (RWR)
- Attitude display indicator (ADI)

You can switch either DDI to any one of these modes at any time. The only restriction is that you can't set both

DDIs to the same mode at once. For instance, you might want the right one to act as a radar display and the left one to show radar warning information. You couldn't have two engine monitors at the same time, however.

When you enter the cockpit, the left DDI shows engine data and the right one is the ADI. Together, the two displays give you the necessary information for takeoff.

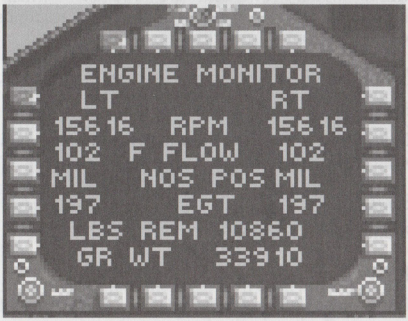
Each DDI has a keystroke control that switches to the next mode in the order they appear in the list above. Use these keys to switch DDI modes:

- Press [Shift] [;] to switch the left DDI to the next mode.
- Press [Shift] ['] to switch the right DDI to the next mode.
- Press [Shift] [K] to swap displays between the two DDIs.

The following sections describe the five DDI modes.

Engine monitor

This text display shows the state of the Hornet's twin engines.



On this display, lines three through six show readings for the individual engines. Each line contains one of the function codes in the list below. Numbers on either side of the code correspond to the current readings for the respective engine. For example, if you see a line like this:

490 EGT 500

it means that the engine gas temperature of the left engine is 490 while the right engine is operating at 500.

Here are the engine monitor codes:

RPM

Revolutions per minute. When the engines are running on military power, the RPM scale shows the number of turbine revolutions from 0 to 19520 (full military power). The number indicates actual RPM and not a percentage.

F FLOW

Fuel consumption (flow) in pounds per minute.

NOZ POS

The nozzle position of the engine. The possibilities are MIL for military power and AB1 through AB5 when the afterburners are lit (each AB number corresponds to an afterburner stage).

EGT

Engine gas temperature in degrees Celsius.

The two remaining lines show information that applies to the aircraft as a whole:

LBS REM

Pounds of fuel remaining.

GRS WT

The airplane's gross weight.

Radar

You can configure the radar in *Hornet* for the level of realism you want. Use the CONFIG display in the War Room to choose one of the three radar types.

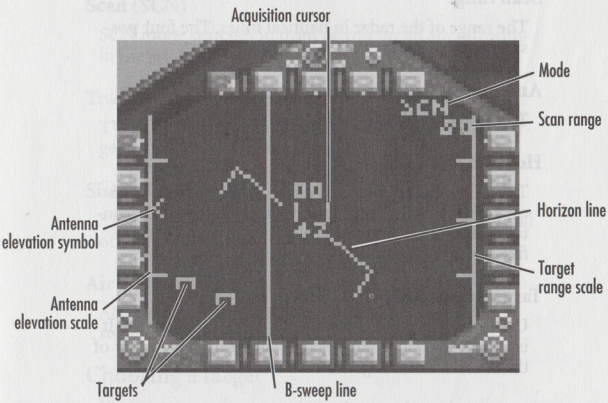
If you're a beginner, select one of the simplified radar types: the Situation Awareness Display (SAD) or the Situation Awareness Mode (SAM). If you want the radar in the game to behave as accurately as possible, choose the High Fidelity Radar (HFR) configuration.

In all three cases, the radar works like it does in *Falcon 3.0*. The display and the terminology are a bit different, though. See the following sections for details.

Note: If you're used to flying the MiG-29, consult your *Hornet Briefing for MiG-29 Pilots* first.

Display

Here is a picture of the Hornet radar:



In this illustration, the radar is in Scan mode, one of the four modes of the High Fidelity Radar. Scan mode has one unique feature on the display: the **B-sweep**

line. This line moves back and forth as the radar antenna moves through its horizontal range.

The rest of the symbols in the above illustration appear in all radar modes in *Hornet*.

Mode

The current operating mode of the radar. The possibilities include:

- **SAD:** Situation Awareness Display
- **SAM:** Situation Awareness Mode
- **SCN:** Scan
- **TWS:** Track While Scan
- **STT:** Single Target Track
- **ACM:** Air Combat Mode

Scan range

The range of the radar in nautical miles. The four possible ranges are 10, 20, 40 and 80 nm.

Antenna elevation symbol

This mark shows the vertical position of the antenna.

Horizon line

This line moves as you maneuver the aircraft. Its vertical position indicates your vertical attitude; its horizontal position indicates your roll attitude. It is tied to a fixed velocity vector.

Target range scale

Use this scale to judge distances on the radar display. It is divided into four parts, each representing a quarter of the current scan range.

Antenna elevation scale

The antenna elevation symbol moves along this scale as the radar antenna scans up and down. The scale goes from +30° to -30° with 0 at the center. It is divided in 10° increments.

Target

Aircraft within radar range appear as inverted "U" symbols on the radar display. When you lock the radar onto a particular target, it flips over into a "U" shape.

Acquisition cursor

These two vertical lines let you select your target from the various blips on the radar display. Two numbers appear above and below this cursor. The top one is the minimum altitude coverage of the radar scan pattern. The bottom one is the maximum altitude coverage.

HFR modes

The High Fidelity Radar has four submodes, each appropriate to a particular stage of an engagement. You switch between these modes as you fly and encounter enemies. HFR includes the following modes:

Scan (SCN)

SCN mode searches in front of you for all aircraft within the set distance.

Track While Scan (TWS)

TWS modes keeps scanning, but tracks a particular target and displays information about it.

Single Target Track (STT)

STT mode locks the radar onto one target, excluding all other targets.

Air Combat Mode (ACM)

ACM mode finds the first target within 10 miles and switches to STT mode.

Choosing a target

When you search an area for enemies, you typically begin with the radar in Scan mode. If your radar isn't already in this mode, press F5.

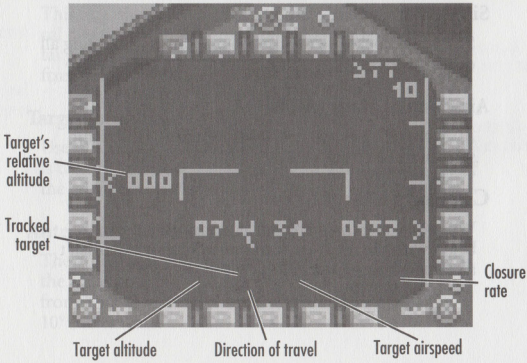
While you're scanning, you may want to take a closer look at a particular target. To set up a target for tracking, first move the acquisition cursor over it by pressing the T key. Every time you press T, the cursor moves to the next target on the radar.

When you have the target you want in the cursor, press Z to switch to TWS mode. In this mode, the radar continues to scan other targets, but it pays close attention to the one it's tracking. If the target moves out of range, the radar automatically increases its range to keep the target in sight. If the other targets leave, the radar automatically switches to STT mode.

When you're convinced a particular target poses a threat, lock it up in STT mode. The method you use to get to STT mode varies depending on the current state of the radar.

- If you're in Scan mode, move the acquisition cursor to a target and press the Z key twice.
- If you're in TWS mode, press Z once.

In some cases, the radar goes into STT mode automatically. As noted above, this happens if you're in TWS mode and all the other targets go out of radar range. Also, the Air Combat Mode is basically a shortcut method for finding the closest target and switching to STT mode.

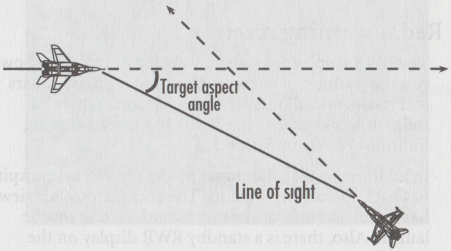


A number of changes occur in STT mode. They appear on the previous illustration.

The B-sweep line will disappear because the radar is constantly interrogating that contact. When you switch to STT mode, the **tracked target** symbol changes from an inverted "U" to an upright "U" or half-box. The number on the left scale now displays the target's relative altitude in thousands of feet. The scale on the right is the distance to target, and the number on that scale is the closure rate in knots.

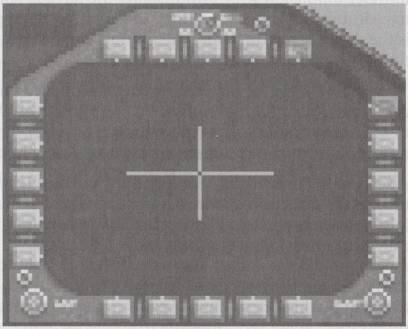
Two numbers appear on either side of the tracked target. The number on the left is the target's true altitude to the nearest thousand feet above mean sea level. The one on the right is the target's airspeed in tens of knots.

Also, a small line or "tail" appears on the locked target to show its **direction of travel** relative to you. The "tail" (also known as the target aspect angle pointer) graphically displays the target's aspect angle. The target's aspect angle is the angle between your line of sight to the target and the target's velocity vector. If you're used to the F-16, this can be confusing since the Navy measures aspect angle 180° opposite from the Air Force. This means, for example, that if the target's tail is pointing straight down, the target is facing you head-on. If the target's tail is pointing straight up, the target is heading directly away from you, regardless of where it is on the radar screen.



Maverick

To get this display on a DDI, you must have a Maverick missile selected as the current weapon. If you have another weapon selected, the monitor will be blank. Switch to the Maverick monitor by pressing Shift ; or Shift '.



The Maverick DDI mode is like the corresponding display in *Falcon 3.0*. An advantage *Hornet* has over *Falcon 3.0* is that you can view both the radar and the Maverick display simultaneously, one in each DDI.

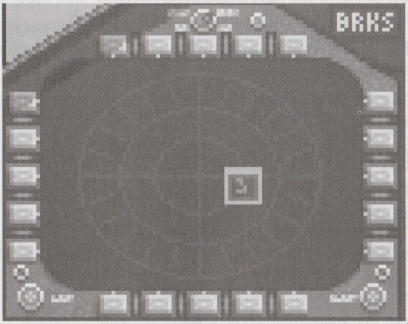
Note: If you're used to flying the MiG-29, consult your *Hornet Briefing for MiG-29 Pilots* first.

Radar warning receiver

The RWR display is a passive warning device that shows you the position of enemy aircraft radars, SAM radars and radar-guided missiles within approximately 30 miles. It works exactly like the F-16's threat warning indicator (TWI) in *Falcon 3.0*.

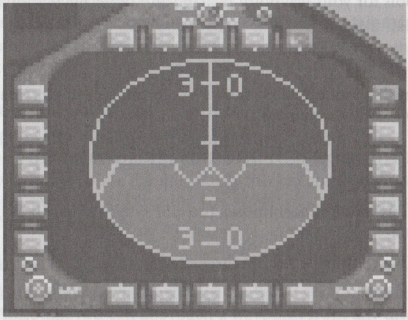
In addition to the DDI threat mode, the *Hornet* cockpit has backup warning systems. The cockpit look-up view has lights that indicate enemy radar lock and missile launch. Also, there is a standby RWR display on the look-down view.

Note: If you're used to flying the MiG-29, consult your *Hornet Briefing for MiG-29 Pilots* first.



Attitude display indicator

This display shows the orientation of the plane relative to the horizon.



The ADI is divided into two parts representing the sky and the ground. The stationary line through the middle represents the wings of your plane. As you turn to the left or right, the ADI's "artificial horizon" tilts accordingly. It rises or falls when you dive or climb.

The ADI is useful when the skies are overcast or whenever you can't see the real horizon.

Like the RWR, the ADI has a backup system. It's in the look-down view to the right of the cockpit.

Horizontal indicator

The HI is the third multifunction display in the cockpit. It's a navigation aid that helps you follow your flight plan. The HI uses information from a network of radio beacons to pinpoint the location of your aircraft. It converts this data into symbols and graphics that, in effect, let you look down on your plane from above.

The HI display operates in three modes:

HSI symbolic display

This mode places your Hornet at the center of a compass circle. When you turn, the compass rotates to show your current heading. The display includes symbols for your waypoint bearing and other navigational parameters. These are explained below.

Map mode

In this mode, the HI shows a color map of the terrain beneath your aircraft.

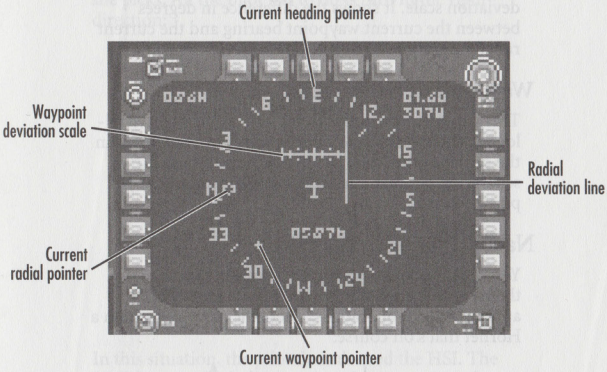
Combined HSI and navigational map mode

This mode superimposes the HSI symbols on top of the map.

To switch between the three modes, press C.

HSI (horizontal situation indicator)

In its default mode, the HSI looks like this:



Your Hornet is represented by the aircraft symbol at the center of the display. The other main items of interest are:

Current heading pointer

Also known as the "lubber line," this line remains fixed at the top of the display while the compass circle rotates to show where you're going.

Current waypoint pointer

This is the bearing to the current waypoint. If this marker is lined up with the current heading pointer, you know you're flying towards the waypoint. However, you may not be following your flight plan. The difference can be fatal.

Current radial pointer

This is the approach path, or "radial," to the waypoint. Although you can approach a waypoint from any direction, some are safer than others. Your flight plan specifies a particular radial for each waypoint.

Radial deviation line

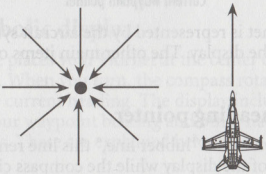
This marker slides back and forth across the waypoint deviation scale. It shows the difference in degrees between the current waypoint bearing and the current radial heading.

Waypoint deviation scale

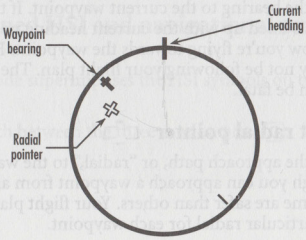
This scale extends from -10° to +10°. When you're following the radial to the current waypoint, the line is in the center of the scale. In other words, there are 0° of separation between the radial heading and the waypoint bearing.

Navigating with the HSI

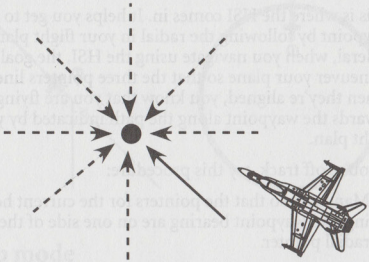
You can approach a waypoint from any direction. In theory, every waypoint has an infinite number of approach paths or "radials." Here they are, along with a Hornet that's off course:



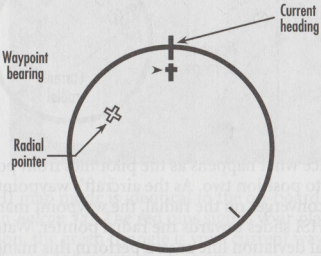
The arrows are the radials that lead to the waypoint. If the off-course pilot in this diagram glanced at the HSI, it would look something like this:



If the pilot wants to head towards the waypoint by the straightest route, it doesn't matter which radial he or she picks. All the pilot has to do is turn in the right direction:



In this situation, the pilot doesn't need the HSI. The HUD's waypoint indicator gives the necessary information to make the turn. However, for purposes of illustration, here's what the HSI would look like after the pilot turned toward the waypoint:



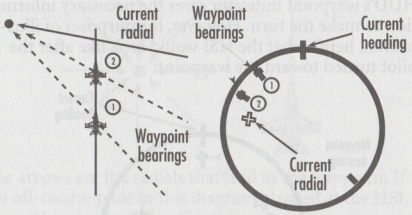
Notice that the waypoint bearing marker is lined up with the "lubber line" or current heading symbol. Also notice that the radial marker isn't lined up.

Your flight plan specifies a particular approach path for each waypoint in a mission. There's a good reason for choosing one radial over the others. The shortest path to the waypoint may also be the path that takes you over a SAM emplacement to certain doom.

This is where the HSI comes in. It helps you get to the waypoint by following the radial in your flight plan. In general, when you navigate using the HSI, the goal is to maneuver your plane so that the three pointers line up. When they're aligned, you know that you are flying towards the waypoint along the path indicated by your flight plan.

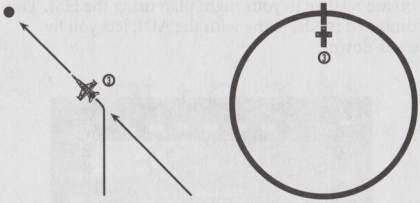
If you're off track, try this procedure:

1. Maneuver so that the pointers for the current heading and waypoint bearing are on one side of the radial pointer.
2. Turn and fly towards the radial. The next diagram shows the pilot's action and the results on the HSI:



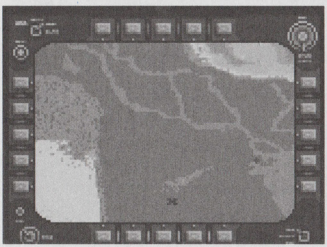
Notice what happens as the pilot flies from position one to position two. As the aircraft's waypoint bearing converges on the radial, the waypoint marker on the HSI slides towards the radial pointer. Watch the radial deviation line as you perform this maneuver. If it moves towards the center of the scale, you know you're headed in the right direction.

3. When the radial and waypoint markers are aligned, turn to bring them both in line with the heading pointer. Here's the outcome:



Map mode

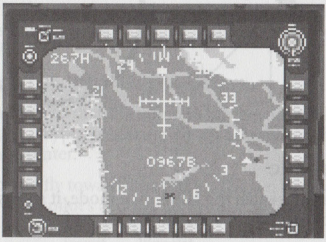
When you switch the HI to map mode, it shows a color map of the terrain beneath your aircraft:



The HI map mode is identical to the on-board map display in *Falcon 3.0*. The red plus sign is your plane's position, the green triangle is your current waypoint, and the red "X" is your home base.

Combined HSI and navigational map mode

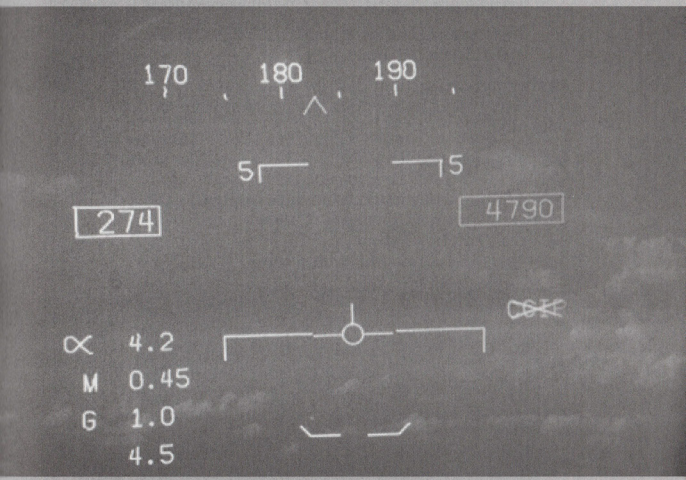
Finally, here's the HI mode that combines the other two displays. When you are in this mode, you can see where you are relative to the world using the map and where you are relative to your flight plan using the HSI. This combined mode, along with the ADI, lets you fly heads-down.



CHAPTER

4

HEAD-UP DISPLAY



The head-up display (HUD) shows vital information from your flight and weapons control systems. Although this data is available on other instruments, the HUD puts it where you really need it: right in front of you. You can read the data on the HUD while looking through the canopy of your Hornet. In a dogfight, the HUD can save your life.

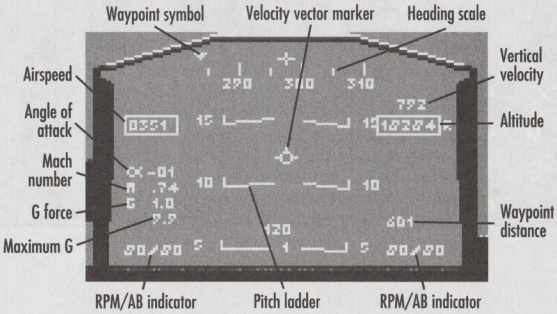
The information on the HUD changes as you go from job to job in a mission. The list below shows the various HUD modes:

- **Air-to-air mode**: Press [Enter] to select an air-to-air weapon and activate this HUD mode.
- **Air-to-ground mode**: Press [Backspace] to activate a bomb or other air-to-ground weapon and see this HUD mode.
- **Instrument Landing System (ILS)**: Press [\] to activate ILS landing mode.

The following sections describe these modes, as well as the basic HUD features that stay the same from mode to mode.

HUD basics

The following illustration shows the features that are displayed in all HUD modes.



These features include:

Heading scale

The aircraft's magnetic heading appears on a 360° scale that rotates as you turn the aircraft. A small, stationary cross above the scale marks the current heading.

Waypoint symbol

This symbol indicates the direction of the current waypoint. When the waypoint symbol is centered on the heading scale, your plane is flying directly towards the waypoint.

Airspeed

The number in this box is the airspeed as calibrated by the air data computer (ADC).

Altitude

This box shows barometric altitude (your altitude above sea level) or radar altitude (your altitude above the ground). You can toggle between barometric and radar altitude by pressing Ctrl A. If the switch is in the radar position, an "R" appears next to the altitude display to indicate that it contains radar data. If the radar data is invalid, the HUD shows barometric data and a flashing "B." Your HUD will automatically display barometric altitude when you are above 5,000 ft. Above 59,999 ft, the display changes to "XXXXX."

Angle of attack

The alpha symbol (α) on the HUD indicates the angle of attack in degrees.

Mach number

The letter "M" indicates the speed of your aircraft as a fraction of the speed of sound.

G force

The letter "G" indicates the current strain of G forces on the aircraft. The readout will never go above 9.9 Gs even if you override the G-limiter and pull more Gs.

Maximum G

This indicator measures the highest Gs your plane has pulled during this flight. It is activated the first time you exceed 4 Gs.

Velocity vector marker

This indicator marks the spot in the outside world that your plane is flying towards. When you make directional changes to the aircraft, the velocity vector marker will move to show you the direction you are currently heading.

Vertical velocity

The number above the altitude box is the rate in tens of feet per minute at which your plane is climbing or descending. A negative number indicates descent.

Pitch ladder

You can see the vertical flight path of your plane by noting the position of the vertical velocity indicator on the pitch ladder. The "rungs" on the ladder mark your position relative to the horizon in 5° increments. The pitch ladder rungs "bend" in relation to the vertical velocity.

Waypoint distance

This number is the distance to the next waypoint. The code next to the number shows your current goal. For example, if it says "D3," you're heading towards the third waypoint.

RPM/AB indicators

The values on the lower left and right corners show the status of the respective engines. A number from 0 to 100 indicates engine RPM as a percentage of maximum (MIL). The number on the left shows the current RPM status; the number on the right shows the throttle setting. The number on the left should catch up to the number on the right as the engine spools up. If you

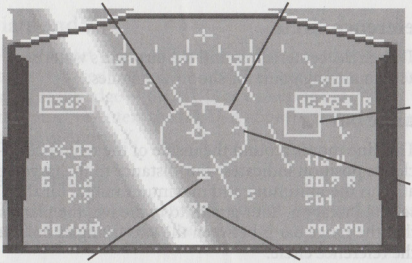
engage the afterburners, the display changes to show the burner stage. Each engine can have a value from AB1 to AB5.

Air-to-air HUD mode

In air-to-air (A-A) combat, the HUD helps you find your target and bring it into the range of your weapons. There are two variations on this HUD mode, one for the Sidewinder and AMRAAM missiles and one for the cannon. When you select one of these as your current weapon, the HUD automatically switches to the appropriate display mode. It shows targeting information for the missile or gun and tells you when conditions are right to fire your weapons.

HUD for A-A missiles

The next illustration shows the A-A HUD as it appears when you select the Sidewinder missile as the current weapon. The HUD display for the AMRAAM missile is basically the same.



This version of the HUD contains the following elements:

Target designator (TD)

This box identifies the radar's line of sight to the target. The TD appears in all three A-A weapon modes. When the target moves out of the HUD, the TD disappears. Instead, the HUD displays the target locator line and the diamond X symbol (see below).

Weapon type and quantity

The code on the left indicates which A-A weapon is active. The codes are

- **9P:** AIM-9P "Sidewinder" rear-aspect infrared missile
- **9M:** AIM-9M "Sidewinder" all-aspect infrared missile
- **120:** AIM-120 AMRAAM missile
- **GUN:** M61A1 20mm cannon

The digits beside the code indicate the number of remaining missiles or cannon rounds.

Reference circle

This circle, centered around the airplane's waterline, acts an aiming point for shooting missiles.

Range bar

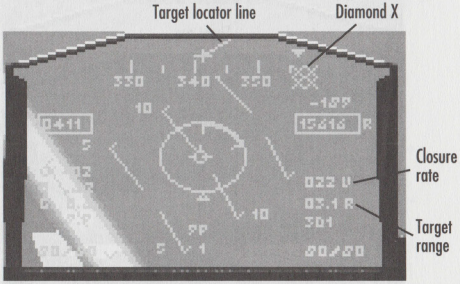
This line moves around the inside of the reference circle. Its position indicates your distance to the target relative to the minimum and maximum ranges for the selected weapon. Your goal is to maneuver the plane so that the range bar is between the two triangles outside the reference circle.

Minimum launch range

This triangle, at the 2:30 position outside the reference circle, marks the lower limit of the range for successfully launching your missile. If the target is any closer, the missile can't hit it.

Maximum launch range

This triangle, at the 6:00 position, marks the upper limit of the range for a successful missile launch. If the target is any farther away, the missile is unlikely to hit it.



Target locator line

When the radar is tracking a target outside the HUD, this line points in the target's direction.

Diamond X

As the target passes out of the HUD, the target designator is replaced by the diamond X symbol. This symbol stays at the edge of the HUD as a steering aid. When the target re-enters the HUD, it appears at the position of the diamond X.

Target range

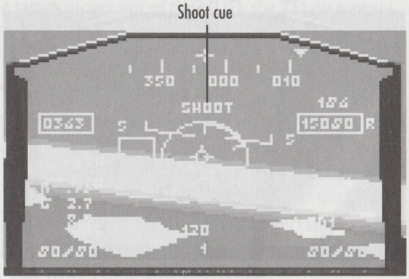
This is the distance between you and the target to the nearest tenth of a nautical mile.

Closure rate

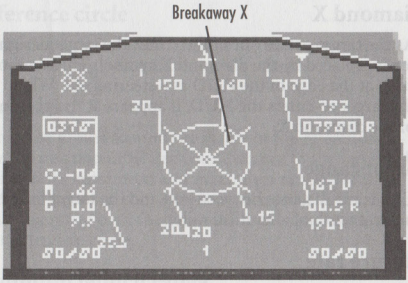
This number is the speed in knots at which you and the target are approaching or moving away from each other. A positive number is the "closing velocity" or the rate at which the two aircraft are getting closer. A nega-

tive number is the "opening velocity" or the rate at which the two aircraft are getting further.

In addition to the above items, the HUD provides two more cues to let you know if the conditions are right for firing your weapon. Here's one:



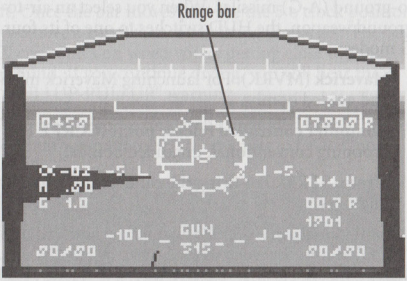
The **shoot cue** comes on when the target is in range and every other launch condition is satisfied. When you see it, pull the trigger!



The "X" means you're inside the selected missile's minimum range. It tells you to break off the attack, choose a shorter range weapon, or maneuver your plane until the enemy is vulnerable.

HUD for A-A cannon

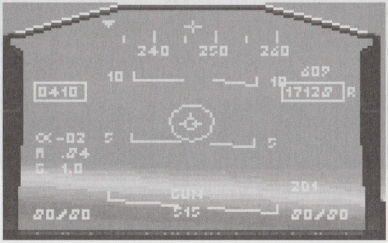
If you pick the cannon as your weapon of choice for airborne combat, the HUD display looks like this:



The number under the "GUN" code tells how much ammunition you have. When you run out, this number reads "XXX."

Inside the reference circle, a range bar shows the distance to the target. The bar counts down from 12,000 ft counterclockwise where each clock point is 1,000 ft. For example, if the range bar is at 3 o'clock, the target is 3,000 ft away. The effective range for the gun is 3,000 ft, although the maximum range is 5,000 ft.

If you turn off the radar or if it's disabled, you can still aim and fire the cannon. Naturally, the HUD won't display a range bar or other targeting information that comes from the radar. Instead, it shows a simple aiming reticle that looks like this:



Air-to-ground HUD mode

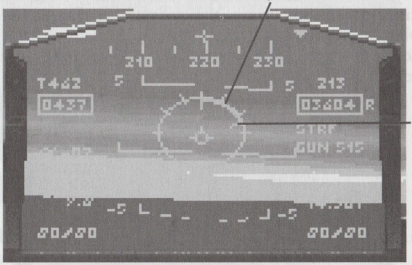
Since the Hornet is primarily a strike aircraft, you spend a lot of time dropping bombs and launching air-to-ground (A-G) missiles. When you select an air-to-ground weapon, the HUD switches to one of its four A-G modes:

- **Maverick (MVRK)**: For launching Maverick missiles and guided bombs.
- **Computer controlled release point (CCRP)**: For dropping conventional, unguided bombs.
- **Strafe (STRF)**: For firing the cannon and launching unguided rockets.
- **Anti-radiation (A-R)**: For launching anti-radiation guided missiles (such as the Shrike or HARM).

For the most part, these variations on the HUD behave like their counterparts in *Falcon 3.0*. The displays for the Maverick and anti-radiation missiles show cross hairs that lock on to the target and follow it across the HUD.

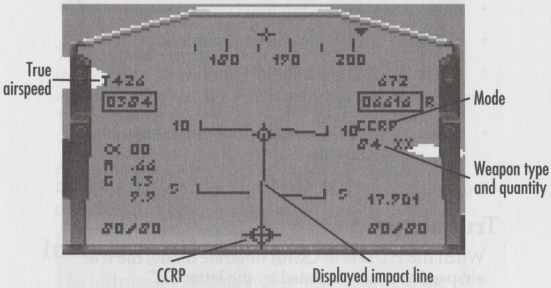
Note: If you're used to flying the MiG-29, consult your *Hornet Briefing for MiG-29 Pilots* first.

When you choose the cannon or rocket pod, the HUD displays a reference circle for aiming purposes:



If your radar is active, the **range bar** indicates the slant range or distance to the ground inside the reference circle. The range bar counts down from 12,000 ft counterclockwise where each clock point is equivalent to 1,000 ft. Once the bar moves past the the 5 o'clock position, you have a good chance of hitting the target. The break X cue comes on when you're getting close to the ground. If you continue diving, you will hear the "PULLUP-PULLUP" warning.

When you choose one of the unguided bombs as the current weapon, the HUD changes to CCRP mode:



In this mode, the HUD contains the features that appear on the following list. Some appear in other A-G HUD modes.

Mode

Aside from CCRP, the modes can be MVRK (Maverick), STRF (A-G cannon or rockets) or A-R (anti-radiation missile, such as the Shrike or HARM).

Weapon type and quantity

The code at the top indicates the current weapon. The bottom number is the remaining bombs, missiles or cannon rounds.

- 65B — Maverick AGM-65B TV-guided missile
- GBU — GBU-15 guided bomb unit
- 65D — Maverick AGM-65D infrared-guided missile
- DUR — BLU-107/B Durandal anti-runway bomb
- 82H — Mk82 high-drag iron bomb
- 82 — Mk82 iron bomb
- 83 — Mk83 iron bomb
- 84 — Mk84 iron bomb
- CBU — CBU-84 cluster bomb unit
- GUN — M61A1 20mm cannon
- LAU — LAU rocket
- 88A — AGM-88A HARM anti-radiation missile
- 45A — AGM-45A Shrike anti-radiation missile

True airspeed

When the HUD is in CCRP or strafe mode, the true airspeed appears preceded by the letter "T."

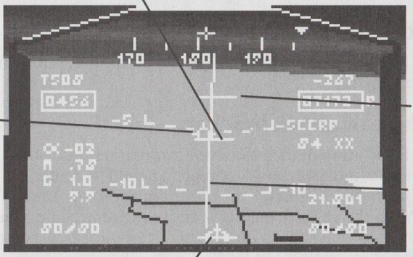
Computer controlled release point (CCRP)

The CCRP marker shows the point where a bomb will hit if you designate the target at that point. If the impact point is outside the HUD, no CCRP marker appears.

Displayed impact line

Before you designate a target, this line appears as a steering aid. Use it to maneuver the aircraft so you can position the CCRP cross over the target.

Once you designate a target placing the CCRP marker on it and by pressing the Spacebar or joystick button, the HUD changes to the following display:

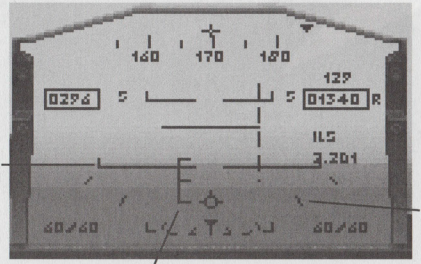


The **azimuth steering line** (ASL) is always parallel to the horizon. It's a steering aid that helps you keep the aircraft level as you approach the weapons release point. The **displayed impact line** (DIL) helps you stay on course to the weapons release point.

As you approach the target, the **release cue** moves down the DIL. When it intersects the ASL, the computer will automatically release the bombs.

Instrument landing system

The instrument landing system helps you land the Hornet. It comes on when you press [\]. Here it is:



The unique features of the ILS are:

Horizon bar

This "artificial horizon" helps you orient the plane during landing.

Angle of attack bracket

The position of the velocity vector marker on this bracket indicates your approach angle. The center of the bracket represents the optimum approach angle. When the velocity marker is above the center line, your angle of attack is too high. When it's beneath the center line, your angle is too low.

Bank angle scale

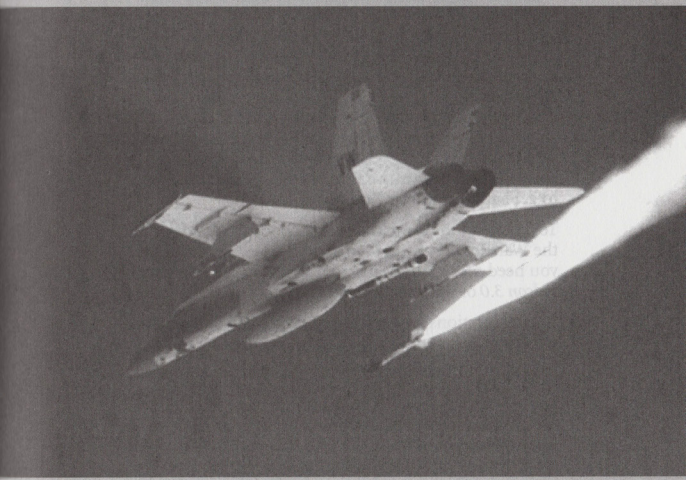
A triangular pointer moves across this scale to show your bank angle. The tick marks along the scale divide it at 5°, 15°, 30° and 45°.

For information on landing the Hornet, refer to the next chapter.

CHAPTER

5

AIR COMBAT TRAINING



As a veteran of *Falcon 3.0* or *MiG-29*, you already know how to fly a fighter jet on your computer. You know the controls, the maneuvers and the tactics. Much of that knowledge carries over to *Hornet* intact. We don't have to tell you which key to press if you want to light your afterburners. You don't need any pointers on avoiding enemy radar or exchanging a defensive position for an offensive one.

However, you do need a chance to become familiar with your new airplane. This chapter provides the opportunity. It has four lessons that teach you the basics of air combat in your Hornet:

- Lesson 1: Takeoff and landing
- Lesson 2: Air-to-air missile practice
- Lesson 3: Air-to-ground combat (smart weapons)
- Lesson 4: Air-to-ground combat (bombing)

Each lesson is a training mission that takes place in the Red Flag area. To make sure these missions work correctly, you need to set the difficulty level of the game to Intermediate. Click on the CONFIG monitor on the War Room and, when you get to the Difficulty Levels screen, click the Intermediate button. Then click Done to get back to the War Room.

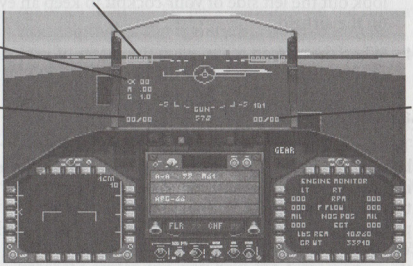
To fly one of these missions, first choose a squadron on the War Room screen, then go to the Red Flag area. If you need more information on Red Flag, refer to your *Falcon 3.0* or *MiG-29* documentation.

The instructions for each lesson direct you to load a particular mission file. You may recognize these missions if you worked through the Air Combat School curriculum in the *Falcon 3.0* or *MiG-29* documentation. This chapter takes you through some of the same procedures to illustrate unique points about your F/A-18 Hornet.

Lesson 1: Takeoff and landing

In this lesson, you practice the two most crucial skills that any pilot must master. You begin on the runway of Nellis Air Force Base. The lesson shows you how to take off, circle the airfield and land on a runway.

Once you're in Red Flag, load the file REVIEW1, and go through the standard procedures for assigning pilots and armament. When you click the Takeoff button on the Armament screen, here's what you see:



Notice that one of the DDIs is in Engine monitor mode. Since this mode is particularly useful during takeoff and landing, it appears by default.

Take off

Open up the throttle until the RPM indicators on the bottom of the HUD read "100/100." Then light the afterburners. When the airspeed indicator on the HUD reaches 150 knots, pull back on the stick. Raise your landing gear and climb to 15,000 ft. Then level off and cut the afterburners.

Circle the airfield

You're flying south away from Nellis. The heading indicator on your HUD should read 180°.

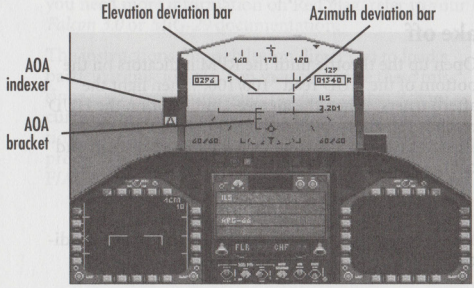
On this short jaunt, you'll turn your F/A-18 to the left and circle around until you're approaching the landing strip. Follow these steps:

1. Bank left until your heading reads 90°. Then level off. Fly in this direction for a minute or so.
2. Bank left again until your heading is 0°. As you fly in this direction, look out the left side of your cockpit and watch the airfield go by. Continue flying straight on for a minute or so.
3. Bank left again until your heading is 270°. Again, look out the left side of your cockpit to keep an eye on the airfield.
4. When the airfield is almost at the center of your field of view, bank left to a heading of 180°.

Landing

This lesson uses the standard "racetrack method" for landing the plane. You'll line your F/A-18 up with the runway, fly over it, circle around by making two 180° turns and come in for your final touchdown. At this point, you should be headed south towards the airfield. To make your approach and land the plane, follow these steps:

1. Switch the HUD to ILS mode. The cockpit should look like this:



2. Descend until you are 10,000 ft and 10 miles from the runway. You should be traveling at about 450 kts. As you begin your approach, use the ILS as a guide to correct the horizontal and vertical orientation of your plane. When the elevation deviation and azimuth deviation bars form a cross, you're on target.

3. Continue your approach. When you're five miles from the runway, slow to 270 kts. At two miles, slow to 250 and drop your landing gear. The flaps will come on automatically.

4. When you're aligned with the runway, fly over it and make a 180° turn. Fly back parallel with the runway, maintaining an 800 ft altitude, and go past it by about two miles. Then, make another 180° turn and head back in.

5. Again, maneuver the plane so that the elevation deviation and azimuth deviation bars form a cross. Also, keep an eye on the two angle of attack indicators. The AOA indexer, the three lights to the left of the HUD, works like the one in *Falcon 3.0*. The AOA bracket on the HUD performs a similar function. Look at the position of the velocity vector marker next to the bracket. When the marker is next to the bracket's center line, you have the correct angle of attack. If you want to see the AOA in degrees, switch the HUD out of ILS mode by pressing [Enter] or [Backspace]. The AOA will appear on the left of the HUD.

6. With the two bars on the ILS forming a cross, reduce your airspeed until it's between 160 and 190 kts. Make sure your angle of attack is at least 8°.

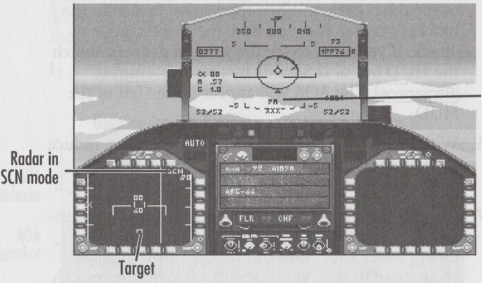
7. Aim the velocity vector for the beginning of the runway and come in for a landing. When you touch down, lower your nose and reduce speed. Engage your speed brakes. When you come to a stop, switch on your wheel brakes.

Lesson 2: Air-to-air combat

In this lesson, you confront a Mirage III fighter. As you chalk up a kill, you'll learn about the F/A-18's air-to-air missiles and HUD display. You'll also get some experience with the radar display on the DDI. Although you can fly this mission using one of the simplified radar modes, it's a good idea to practice with the High Fidelity Radar. The High Fidelity Radar contains a lot of information that you need to absorb at a glance during combat. To use the High Fidelity Radar, go to the Difficulty Levels screen and click the RADAR switch until you see the HFR setting.

When you're ready to shoot down an enemy fighter, go to the Red Flag area and load the file LESSON5. After you click Takeoff on the Armament screen, follow these steps:

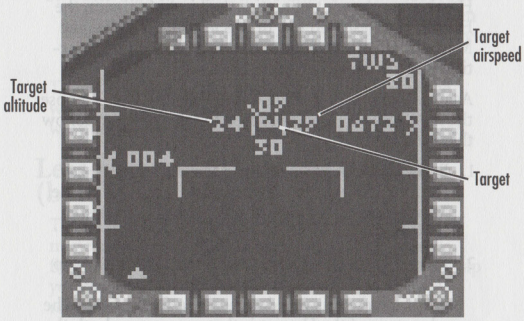
1. Press [Enter] twice to select the Sidewinder AIM-9M as your weapon.
2. Press [F5] to set your radar to Scan mode. At this point, your screen should look something like this:



The upside-down "U" symbol is the Mirage.

3. Press [T] to move the acquisition cursor over the target symbol.

4. Press Z to switch the radar into Track While Scan mode. Here is the result:



Notice that the target changes to an upright "U" symbol. Also, keep an eye on the numbers that appear around the target. The one on the right is the target's airspeed in knots, divided by ten. The left-hand number is the target's altitude to the nearest thousand feet above sea level. The numbers above and below the acquisition cursor represent the radar's minimum and maximum altitude coverage, respectively.

5. Follow the Mirage until it comes into firing range. As you maneuver, watch how the range symbols on the HUD change. As you approach the Mirage, the range bar within the reference circle moves counter-clockwise. When it moves between the two triangles outside the circle, you're in range. Maneuver the TD box inside the reference circle for the optimum missile PK (probability of kill).

6. When the word "Shoot" appears on the HUD, fire your missile.

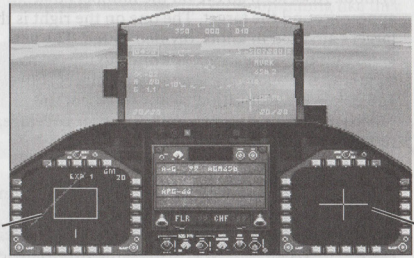
Once you've destroyed the Mirage with the Sidewinder missile, try working through the mission again using the AMRAAM.

Lesson 3: Air-to-ground combat (smart weapons)

Here's your chance to practice the kind of mission the Hornet was designed for. In this lesson, you'll use the Maverick missile to eliminate some tanks on the practice range at Nellis Air Force Base.

As usual, start off by going to the Red Flag area. Choose the file LESSON7A and proceed to takeoff. Then follow these steps:

1. Press [Backspace] to select the Maverick missile as your current weapon. Switch your right DDI to the Maverick monitor so it displays the characteristic cross hairs.
2. Press [F7] to switch the other DDI to Ground Map (GM) radar. You can use the GM radar to locate ground targets as you do when you fly the F-16. The advantage of the Hornet is that you can see both the GM radar and the Maverick display simultaneously:



3. To see the terrain map of the territory beneath you, press [5] on the numeric keypad and then press [C]. The horizontal indicator switches to its color map mode. Press [5] again to return to the look-up view.
4. Point your nose down until you see a line of dots on the ground beneath you. These are the tanks you want to destroy. When you see them, maneuver the

airplane until the Maverick cross hairs on the HUD lock onto a tank.

5. Since the Maverick is a fire-and-forget missile, you can immediately fire by pressing [Spacebar] and then target the next tank by pressing [T]. Fire on as many tanks as you can.

There are plenty of other targets on the Nellis range waiting for your Mavericks and other air-to-ground weapons. Try using your cannon and rocket pod, too.

Lesson 4: Air-to-ground combat (bombing)

This is your opportunity to take out a major target: a nuclear facility. You'll fly your Hornet along a predefined flight plan using your horizontal indicator to help you navigate. When you reach the nuke plant, you'll reduce it to rubble with Mk84 iron bombs.

By the way, don't assume you'll be alone up there just because you're on a strike mission. You may get some extra practice in air-to-air combat on your way to or from the nuclear plant. Be prepared.

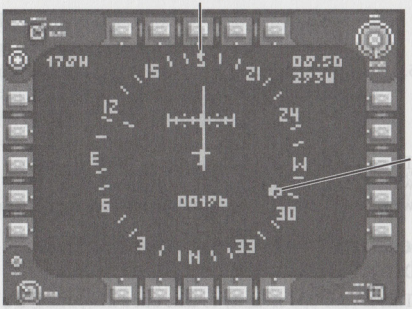
In the Red Flag area, select the file REVIEW2. In this mission, you begin on the runway at Nellis. Follow the directions below to complete your mission:

1. Take off and climb to 10,000 ft. If you need a review of takeoff procedures, refer to Lesson 1 earlier in this chapter.

2. Select the AIM-9M as the current weapon. If you encounter any hostile aircraft during this mission, engage and destroy them.

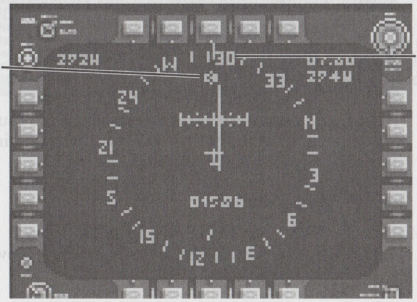
   At this point, you need to turn to head towards your first waypoint. Although you could use the waypoint marker on the HUD, try navigating with the horizontal situation indicator (HSI) for practice. The next few steps show how.

3. Press [5] on the numeric keypad to get the look-down view, which includes the HSI. Here it is, showing your current heading of 180°:



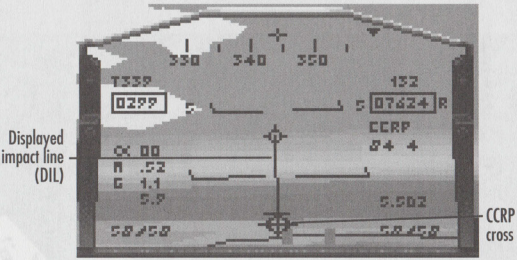
Notice that the waypoint and radial markers are merged into a solid cross. On this mission, you don't have to follow a particular radial to your destination. Just point the plane towards the waypoint and fly. For detailed instructions on using the HSI to navigate using radials, see Chapter 3: Multifunction Display Group.

4. Turn to your new heading of 300°. As you bank the plane, notice that the HSI compass turns. Turn until the waypoint cross lines up with the heading marker at the top of the compass. When you're on track, the HSI should look something like this:



5. Press 5 again to return to look-up view. Continue flying on this course until you reach the first waypoint.
6. At the waypoint, change your heading to 0°. This course takes you towards the nuclear plant.
7. When you are within 10 miles of the plant, select the Mk84 bomb as your current weapon. The HUD changes to CCRP mode:

   Notice the displayed impact line (DIL). The DIL runs from the velocity vector to the center of the CCRP cross. Use it for reference as you maneuver the plane to get the CCRP on target.



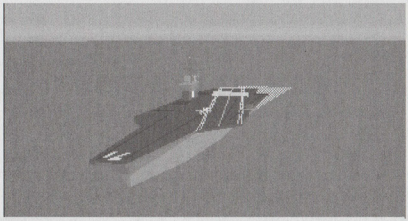
8. Head towards the nuclear plant at an altitude of around 2,000 ft.
9. Maneuver the plane so that the CCRP is at the base of one of the towers. When it's in position, press Spacebar to designate the target.
10. Fly steady and watch the release cue move down the DIL.
11. When the release cue intersects the azimuth steering line, the bombs will drop.
12. Pull up and look out the back of your cockpit to see if you hit the target. If not, circle back and try again.
13. When you've destroyed the nuclear plant or run out of bombs, change course and head for home.

CHAPTER

6

CARRIER OPERATIONS

As the premier strike fighter of the U.S. Navy and Marine Corps, the Hornet is a carrier-based aircraft. Almost all missions in *Hornet* begin and end on the USS Theodore Roosevelt.



Aside from the campaign missions in *Hornet*, the aircraft carrier also appears in Instant Action. In Red Flag, there is a carrier deck complete with arrestor wires and other landing aids. If you want to practice carrier-based takeoffs and landings, these areas provide a good opportunity. Once you enter Instant Action, you can find the carrier to your left, in the Persian Gulf just west of Failaka Island and southwest of Kuwait City. To try Field Carrier Landing Practice (FCLP) in Red Flag, select LESSON4 from the available missions and use the simulated carrier deck at the airfield to land.

Carrier takeoffs and landings

Carrier operations are a major part of the Hornet's mission and capabilities. It is, therefore, essential that every Hornet pilot learn how to take off from and land on an aircraft carrier.

As you will see, takeoffs are not particularly difficult, comparatively speaking. Landings, however, are quite tricky. Here, step by step, is everything you need to know to launch from and land on a carrier.

Takeoff

The takeoff procedure for carrier operations is fairly straightforward. As long as everything is done in the right order, anyone can do it even the first time through.

Preparation

To set up for a carrier launch, select a squadron and theater in the War Room. Since most Hornet missions are carrier-based in every theater except Pakistan, you can select any of the other theaters to set up a carrier launch.

Select the Commit button. The usual campaign screens will go by. Just skip on ahead through all the mission preparation screens; after all, this is just a practice launch, not a full-blown campaign mission. You may want to select the Clear All Weapons button on the Armament Screen to avoid any extra weight or drag.

Launch

To get enough lift to take off, the Hornet has to be traveling at around 150 kts. The deck of an aircraft carrier, however, is not quite long enough to allow the F/A-18 to reach takeoff speed on engine power alone.

Built into the deck of every carrier is an aircraft launching system called a catapult. With the aid of a catapult, and with the engines going at full afterburner, the Hornet can generate sufficient lift for takeoff.

Increase the throttle (press [+]) and go to full afterburner (press [/] to light the afterburner, then press [>] four times to get to full afterburner). Hold the stick all the way back and press [Alt] [C] to activate the catapult. You will accelerate rapidly. As soon as you reach the end of the deck, ease the stick back to neutral to maintain a climb angle of about 10°.

Now that you're free of the deck, retract the gear (press [G]). Be aware that your cockpit view will suddenly shift upwards when the gear retracts. (When the gear is down, you are assumed to be close to the ground, so

the view shifts downward.) Be careful not to pull the nose too high.

Congratulations, you're airborne!

Landing

Carrier landings are quite a bit more difficult than launches. The normal difficulties of landing are compounded by the fact that your airstrip is extremely short and is moving.

Preparing to land

In a campaign mission, your final waypoint defaults to "LAND." This final waypoint is usually 10 nm astern of the carrier. Use your horizontal situation indicator (HSI) to approach along the correct path.

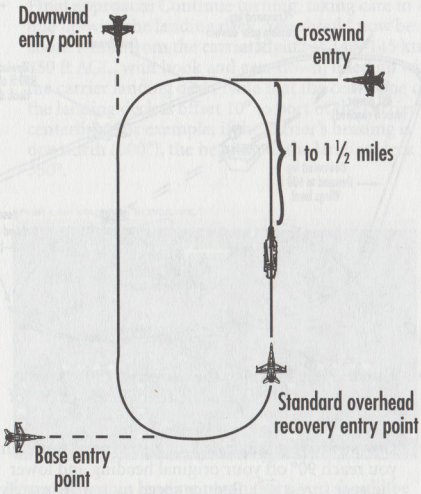
At 5,000 ft AGL, 20 nm from the carrier, begin descending at about 33 ft/sec (check your vertical velocity indicator on the HUD) at a speed of Mach 0.8. At 8 nm, you should be at 1,200 ft. Reduce your airspeed to 250 kts.

There are two ways to land on a carrier in *Hornet*. The first method is called a visual landing. In a visual approach, you enter a "racetrack" landing pattern around the carrier.

Visual (or pattern) landings

To properly execute a pattern landing, you must be able to see the carrier to orient yourself. If you cannot see the carrier, engage your ILS and follow it to the carrier for an instrument landing. See *Instrument (or straight-in) landings* later in this chapter for details.

As you approach the carrier, the Carrier Air Traffic Control Center (CATCC) will direct you to enter the pattern at one of the points shown by the following diagram.



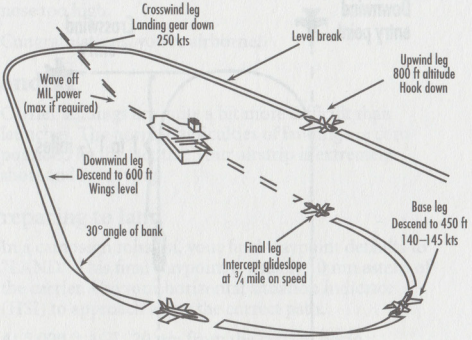
So, if the CATCC instructs you to enter the pattern on the crosswind leg, you should approach the carrier from the starboard side, passing 1 to 1½ nm in front of the bow to enter the pattern. See the carrier landing pattern diagram for altitude and speed information for each leg.

Entering the pattern from astern

The preferred approach is from astern, entering the pattern at the standard overhead recovery point (the upwind leg).

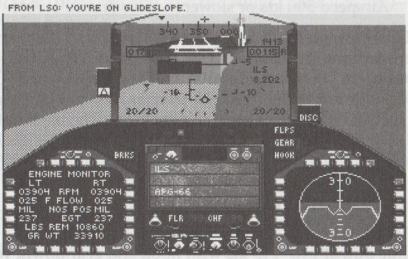
At 4 nm, you should be at 800 ft AGL, traveling at 250 kts. Drop the tailhook (press [H]) and level out.

You will fly over the deck of the carrier, turn 90° into the crosswind leg, then turn 90° into the downwind leg, then turn 90° into the base leg, and finally turn 100° into the final approach.



- **Upwind leg:** Pass over the carrier at 250 kts, note your heading, then turn left at about 25° or 30° of bank angle.
- **Crosswind leg:** Turn without changing altitude until you reach 90° off your original heading and lower the gear (press G). Reduce speed to approximately 180–200 kts.
- **Downwind leg:** Continue your turn until your heading is exactly the opposite of what it was on the approach. Descend to 600 ft AGL. As you approach the end of the downwind leg, the CATCC will inform you that you are cleared to land. Do not turn onto the base leg until after you receive this call. This message does not mean that it is time to turn; it just means you are being handed off to the landing signal officer (LSO) for final approach instructions.
- **Base leg:** When you're about 3/4 to 1 mile beyond the stern of the carrier (look out your left view to spot the carrier), bank left again at the same angle you did the first time. As you turn onto the base leg, descend to about 450 ft AGL and slow to 140–145 kts. During the base leg, the LSO will inform you whether or not the deck is clear (see *LSO messages* later in this chapter).

- **Final approach:** Continue turning, taking care to line up with the landing deck. You should now be about a mile from the carrier, flying at 140–145 kts, 450 ft AGL, with hook and gear down, lined up with the carrier landing deck. Note that the centerline of the landing deck is offset 10° to port of the carrier centerline. For example, if the carrier's heading is due north (000°), the heading of the landing deck is 350°.



If you are within landing parameters, you should be receiving instructions from the LSO (see *LSO messages* later in this chapter). If you aren't receiving LSO messages, you can request landing instructions from the LSO by pressing Alt H. Skip ahead to *Final approach and touchdown* later in this chapter.

If you're outside landing parameters, don't be a hero. If the LSO signals a wave-off, abort the landing and go around again for another attempt.

Instrument (or straight-in) landings

The second carrier landing method is called an instrument landing. In an instrument landing, it is assumed that you cannot see the carrier and are, therefore, unable to enter the landing pattern. Your plane's ILS and the landing signal officer (LSO) guide you in on a straight-in approach.

If it's at night, you're low on fuel, or your plane's maneuverability is impaired, you should opt for a straight-in landing instead of a pattern landing.

At about 10 miles from the carrier, be within the following parameters:

- Within a 45° cone behind the landing deck (22.5° on either side of the centerline of the landing deck)
- Between 1,200–5,000 ft AGL
- Airspeed 300 kts or slower

Then turn on the ILS by pressing [\] and call the carrier's landing signal officer (LSO) by pressing [Alt] [H]. Maintain your lineup, and at about six miles, the LSO will talk you in on a straight-in approach and landing (see *LSO messages* later in this chapter). The bars on the ILS show where you are in relation to the proper glideslope and flight path.

Final approach and touchdown

Assuming you are lined up with the landing deck, one mile out, at 140–145 kts with hook and gear down, you are ready for touchdown.

Make minor adjustments with stick, rudder and throttle to get yourself on the proper alignment, glideslope and airspeed. There are several landing aids to guide you in; see *LSO messages* and *The meatball* below. If you want to use the ILS, see Lesson 1 in Chapter 5: Air Combat Training, which explains the ILS in detail.

During the final stages of landing, the flight controls are seemingly reversed. At slow airspeeds, the throttle controls altitude while the stick controls speed.

When you are so close to stall speed, pulling back on the stick will not cause you to gain altitude; what it will do is lower your airspeed and increase your rate of descent. When you increase throttle, you slow or stop your rate of descent.

As you adjust your final approach, use the throttle for altitude control and the stick for speed control. If you are going too fast, ease back on the stick. If you are too high, ease back on the throttle.

Above all, do not overcontrol. Use very small, gentle movements of the controls to adjust your approach.

As you touch down, open the throttle. If the tailhook misses the arresting wire for some reason, you'll need the power to get back off the deck. If this were a real carrier, there's nothing past the end of that short deck but saltwater and fish.

Once your tailhook catches an arresting wire, you will decelerate rapidly. Close the throttle, set the wheel brakes (press W) and fold the wings (press Ctrl W)—you're home.

"Bolters"

The term "bolter" applies to a carrier landing where the tailhook fails to catch an arresting wire. If you find yourself outside of the speed, altitude or angle of attack parameters given here, be ready to immediately give it the gas, pull up, and try again.

LSO messages

As you're trying to set that jet on what looks like a moving postage stamp, your best friend is the landing signal officer (LSO). As you turn in for a final approach, the LSO will inform you of your status with the following messages.

Transmission	Meaning
"The deck is fouled."	The deck is obstructed such that it is unsafe to land.
"The deck is clear."	The deck is clear of obstructions. It is safe to land.
"Check your lineup."	Your aircraft is not properly lined up for landing.
"Drop your gear."	Lower your landing gear (press G).

"Drop your hook."	Drop your tailhook (press [H]).
"Gear down, hook down, roger ball."	Your landing status is verified: your gear is down, your tailhook is down. Begin following the meatball.
"Level your wings."	Your plane is banking. Level out.
"You're on glideslope."	You are on the proper glideslope for landing.
"You're a little high."	Your aircraft is above the proper glideslope for landing.
"You're a little low."	Your aircraft is below the proper glideslope for landing.
"You're drifting left."	Your plane is to the left of centerline.
"You're drifting right."	Your plane is to the right of centerline.
"Wave-off."	Abort your landing; go around again. This is mandatory
"Bolter!"	You missed the arresting wires. Power up immediately, lift off and go around again.
"Power!"	Your aircraft is underpowered or your rate of descent is too high. Increase throttle immediately.
"Climb!"	Pull back on the stick immediately to gain altitude. You are dangerously low.

After a successful landing, the LSO will grade your landing and tell you which wire you caught, with the three wire being preferred. The landing grades are:

Grade	Meaning
Perfect Pass	You maintained an optimum glideslope and lineup throughout the landing approach.
Good Landing	You had minor deviations in the landing approach, but made good corrections.
Fair	You had minor deviations in the landing approach.
No Grade	Your approach was below average (for example, you dropped your hook or lowered your gear late), but you landed safely.
Unsafe	There were gross deviations in your landing approach inside of 2,000 ft and/or you ignored the wave-off call.

Calling the LSO

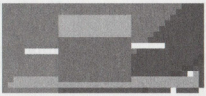
If the LSO is not giving you landing instructions, it is probably because you are so far outside landing parameters that it doesn't look like you're trying to land. To request landing instructions from the LSO, press

Alt H. Remember, the LSO only gives you final approach instructions. Don't bother calling the LSO until you are within reasonable landing parameters.

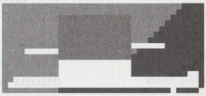
The meatball

The carrier is equipped with special deck lights (called the "meatball" or "ball" by pilots) that show you whether you are above or below the proper glideslope. The meatball is a stack of three lights, two red and one green, with lenses that create a different optical effect depending on your glideslope.

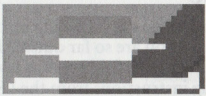
You will not be able to see the meatball until you are within a mile of the carrier, and even then it may be difficult to discern. Look just to the left of the landing strip.



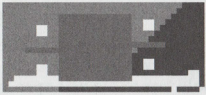
If you see the red light above the green lights, you are above the glideslope. Descend until you see only the green lights.



If you see the bottom red light below the green lights, you are below the glideslope. Ascend until you see only the green lights.



If you see only the green lights in the middle, you are right on the glideslope.



The yellow lights on either side of the meatball are called the "wave-off" lights. They tell you to abort your landing, possibly due to a fouled deck or other hazardous landing condition. If you see these lights, abort your landing and go around again.

Autopilot landings

The easiest way to land is to use the autopilot. Press [A] at any time to engage the autopilot, which will do a standard visual landing. If you want a straight-in autopilot landing, you need to use the automated carrier landing system (ACLS).

The ACLS can be engaged any time you are within the following parameters:

- Between 37 nm and 6 nm from the carrier
- Within a 45° cone behind the landing deck (22.5° on either side of the centerline of the landing deck)
- Between 1,200–5,000 ft AGL
- Airspeed 300 kts or slower

To engage the ACLS:

- Activate the ILS (press [\])
- Engage the autopilot (press [A])

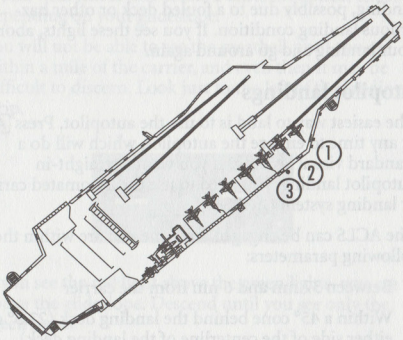
The ACLS will then guide you in for a straight-in, hands-off landing.

Wingmen and landing

If you have wingmen, you must take extra care when landing. As soon as you reach the final waypoint of your mission, your wingmen will begin lining up for

the landing sequence. They will space themselves out to give each other time to land. You have time to land before the first of your wingmen arrives, but if you take too long, the rest of your flight will arrive.

If you do land first, be sure to taxi off the landing strip to make room for your wingmen. As the first plane down, you should taxi to the first open space. The following illustration shows the order in which aircraft should be parked.



The LSO and multiple aircraft

The LSO only gives course correction messages to the aircraft that is on final approach. If you are not on the final approach leg and you hear course corrections on the radio, ignore them; they are directed towards your wingman.

Once the rest of your flight has entered the landing pattern, it may be best to circle awhile as they land. Then, once they are all safely on deck, you can land yourself.

CHAPTER

7

COMMUNICATIONS

You can play *Hornet* with human allies or enemies by linking your computers in "head-to-head" mode. Two people can fly together or against each other using a direct connection, modem or Novell NetWare-compatible network. Two to six people can play over a Novell Netware network.

The basic communication features of *Hornet* are the same as those of *Falcon 3.0* or *MiG-29*. For information on configuring your modem or network, dialing the phone and setting communication parameters, see your *Falcon 3.0* or *MiG-29* manual.

When you play in head-to-head mode, each computer must have a registered copy of one of the following programs:

- *Hornet*
- *MiG-29* version 1.02
- *Falcon 3.0* version 3.03

All of these programs can communicate with one another. For the purposes of this manual, we assume that at least one player is running *Hornet*.

Falcon 3.0 and *MiG-29* compatibility

Since *Hornet* is only communications-compatible with version 3.03 of *Falcon 3.0* and version 1.02 of *MiG-29*, both *Falcon 3.0* and *MiG-29* must first be updated to the latest versions before beginning head-to-head games.

When you install *Hornet* to your FALCON3 or MIG29 directory, your copies of *Falcon 3.0* and *MiG-29* are automatically updated to version 3.03 and 1.02, respectively.

An updater has been provided on Disks 1 and 2 to update *Falcon 3.0* and *MiG-29* for communications compatibility. You may freely distribute copies of Disks 1 and 2 to other *Falcon 3.0* and *MiG-29* owners for this purpose. Please do not distribute copies of Disk 3.

Updating *Falcon 3.0* and *MiG-29*

Foolow the instructions below to update your copy of *Falcon 3.0* or *MiG-29*.

1. Insert *Hornet* Disk 1 into a floppy drive.
2. If you put the disk in drive A, type **A:** and press [Enter]. If you put the disk in drive B, type **B:** and press [Enter].
3. At the A: or B: prompt, type **SHUPDATE** and press [Enter].
4. On the screen that appears, you will be given the choice to "Continue…" or "Quit." Select "Continue…" to go on.
5. A warning message appears, informing you that all your old squadrons will be deleted if you continue the update.
6. The update program now searches your hard drive for *Falcon 3.0* or *MiG-29*. When it finds either game, the updater will say, "Falcon 3.0 found in <directory name>" or "MiG-29 found in <directory name>." You can edit this path if it is incorrect.
7. At the bottom of this screen are four buttons: "Install," "Search," "View" and "Quit." "Quit" aborts the update. "View" brings up the Read Me file. "Search" continues the search for other copies of *Falcon 3.0* and *MiG-29*. "Install" continues the update.
8. Select "View" and read the Read Me file, which contains last-minute information. Then select "Install."
9. The update program will begin to update your copy of *Falcon 3.0* to version 3.03 and your copy of *MiG-29* to version 1.02.
10. Partway through, your computer will beep and ask you to insert Disk 2.
11. When the updater is finished, it will beep. Press any key to return to DOS.

Type **CHECKVER** from your FALCON3 or MIG29 directory to confirm that your copy of *Falcon 3.0* or *MiG-29* has been successfully updated.

The Caller

In any head-to-head game, one player must take charge of the communications process. This player—the Caller—should have the fastest computer.

If any of the players are using *Falcon 3.0*, one of them must be the Caller. Otherwise, the Caller must be one of the players running *Hornet*. This is the only difference between the two programs in a communication session. To the Caller, *Falcon 3.0* players appear identical to *Hornet* players.

Head-to-head game formats

There are many ways to join with other players in head-to-head games. The two basic scenarios for head-to-head play are:

- Duels, where all players are adversaries
- Campaigns, where players cooperate against the enemy

Both scenarios accommodate all three game programs simultaneously. For instance, in a six-player campaign, two of the players might run *Hornet*, two *Falcon 3.0* and two *MiG-29*. This situation is a *multigame* scenario. Naturally, *single-game* scenarios, in which all the players use one game program, work fine.

When you combine the possibilities for games and scenarios, you come up with these types of head-to-head encounters:

- Single-game duels
- Multigame duels
- Single-game campaigns
- Multigame campaigns

The final variable is the number of players. Each situation in the above list can accommodate two to six players.

Duels

A duel is a free-for-all in which one player emerges victorious. The game continues until a single aircraft remains or until the players quit.

In a duel, all *Falcon 3.0* and *Hornet* players carry four AMRAAMs, two AIM-9Ms, two AIM-9Ps and an ECM pod. All *MiG-29* players have two R-27Rs, two R-73s and two R-60s. If the Caller turns off the Limited Arms setting on the Difficulty Levels screen, all players have every available weapon in unlimited quantities.

In a multiplayer duel, the IFF indicator recognizes which players are friends and which are enemies. If you're a Hornet pilot, your IFF recognizes Falcons and other Hornets as friends and MiGs as enemies. MiGs appear friendly to other MiGs, with Falcons and Hornets as the enemy.

Single-game duels

If all the players in a duel have *Hornet* (or if all of them have one of the other two games), it's simple to set up a duel. One player, the Caller, initiates the communication session.

If there are just two players, the duel begins when both players press ACCEPT or SAVE SETTINGS on the Communications Setup screen.

In a multiplayer duel, the game begins when all the players have accepted the invitation from the Caller. The duel ends when there is only one survivor or when the Caller ends the duel by pressing Alt Q (to start a new duel) or Alt X (to exit to DOS).

Multigame duels

When duelists use different game programs, there are some extra considerations for setting up a head-to-head encounter.

The main rule to remember is the one about the Caller's game. (See *The Caller* above for a recap of this rule.) If one of the pilots in a multigame duel has

Falcon 3.0, that player must be the Caller. Otherwise, the Caller must have *Hornet*. This rule holds for multigame duels regardless of the number of players.

If there are any *MiG-29* players in the crowd, the protocol becomes a bit more complex. When MiGs are present, the software divides the players into sides with Falcons and Hornets opposing MiGs. This division is crucial when playing a campaign in head-to-head mode. Even though there aren't any "sides" in a duel, the protocol applies when you set up the communication session.

There is an additional rule of protocol when MiGs are involved. The Caller must invite all Falcon pilots first, then Hornet pilots, followed by the MiG players.

Furthermore, if two or more players have *MiG-29*, one of them must act as the "Master MiG." The Master MiG's computer is a communications hub for the other MiG players. For this reason, the Master MiG should be the MiG player with the fastest computer.

The next section shows how to combine all of these variables when you set up a head-to-head session with a mixture of Falcons, Hornets and MiGs.

Setting up a multiplayer/multigame duel

Voice communication is very important in a multiplayer/multigame duel. The players should be within earshot or available by phone during the setup period.

First, each player must decide which plane to fly (that is, which game program to run) and let the others know. When the players agree on who flies what, the next step is to choose a theater. Everybody must agree on this choice, too.

Finally, the players select a Caller and a Master MiG. It's the Caller's responsibility to make sure that the rest of the players join the game in the correct order. The sequence *must* be as follows:

1. Caller (a *Falcon 3.0* player if there is one)
2. All other *Hornet* and/or *Falcon 3.0* players
3. Master MiG

4. All other *MiG-29* players

Once all the preliminary details are settled, and the Caller knows when to invite each player, the communication process begins. It works like this:

1. Before connecting, all players select the same settings for Connection, Game Type and Baud Rate.
2. The Caller sets the Mode switch to CALL. All other players select ANSWER.
3. The Caller clicks ACCEPT.
4. All *Falcon 3.0* and *Hornet* players choose ACCEPT or SAVE SETTINGS.
5. The Caller sees a box with the network names of all the other players. The Caller invites another player to join by choosing a name and pressing OK. The Caller must invite only *Falcon 3.0* players first, and then *Hornet* players second.
6. After all the *Falcon 3.0* and *Hornet* players have accepted, the Master MiG should then choose ACCEPT or SAVE SETTINGS.
7. The Caller invites the Master MiG.
8. Once the Master MiG has accepted, the other *MiG-29* players select ACCEPT or SAVE SETTINGS.
9. The Caller then invites any remaining *MiG-29* players.
10. When all players have accepted, the Caller selects EXIT to begin play. In a six-player game, play starts immediately after the sixth player accepts.

The *MiG-29* flight leader should click the TAKEOFF button first, followed by the *Falcon 3.0* or *Hornet* leader within 10 to 20 seconds.

Campaigns

In a head-to-head campaign, the players fly missions in a theater of war. Unlike duels, players cooperate against the enemy. If all the players fly on the same side (for instance, if they all have *Falcon 3.0* or *Hornet*), the computer controls the enemy. In a game mixing Falcons, Hornets and MiGs, the players take sides.

Each side in a head-to-head campaign has a flight leader. In single-game campaigns, the Caller is the flight leader. In multigame campaigns, the Caller is the Falcon/Hornet flight leader and the Master MiG is the MiG flight leader.

The process of setting up a head-to-head campaign is like the procedure for a duel. The Caller must invite the players to join in the order shown in the last section.

Once all the players are in the game, a series of campaign news screens appears. Then the players get their instructions for the mission.

At this point, the other players on each side sit back and watch as the flight leader plans the mission. He or she sets the waypoints, arranges the flights and wingmen and finally assigns weapons. When the flight leader clicks TAKEOFF, the action begins.

The mission in a multigame campaign brings both groups of players into contact. For example, if the Falcon/Hornet pilots are assigned to bomb a bridge, the MiG-29 pilots might be assigned to fly CAP (combat air patrol) over the same bridge.

CHAPTER

8

THEATER BRIEFING

"Unfortunately, we are not normal people."

— Bosnian Serb leader Radovan Karadzic

Bosnia-Hercegovina: The enigma and the terror

The dream of a unified Yugoslavia is over. Idealism couldn't hold it together; neither could Communist dictatorship.

The "land of the South Slavs" began to unravel in 1991 with the secession of two territories, Croatia and Slovenia. A third territory, Bosnia-Hercegovina, followed a year later and plunged immediately into civil war.

Today, Bosnia, as it's known for short, is sliding into the final stages of self-destruction. The war is driven by ancient hatreds that outsiders strain to understand. Ethnic groups who kept an uneasy peace under Communism are settling old scores with a savagery that has led many to comparisons with the Holocaust.

As Bosnia unravels, the world watches in disbelief and frustration. Liberals and conservatives, facing unquestionable evil on a huge scale, cry "not again" in agreement. Can the Western powers do anything to stop further bloodshed? If it's too late for Bosnia, is there any way to prevent similar tragedies in Kosova and Macedonia? If there are any answers, they begin in the past.

Historical roots

The Balkan region has always been one of history's fault lines. In the fourth century, when the Roman Empire split into eastern and western halves, the boundary ran down the middle of the area now known as Bosnia-Hercegovina. When Rome fell, the region changed from an imperial boundary into a religious one.

In 1052, the first great schism of Christianity separated Roman Catholics in the west from the Orthodox in the east. A large part of the Bosnian population rejected both forms of Christianity in favor of the Gnostic teachings of the Bogomil sect. When the Ottoman Turks conquered the region in 1463, many of these Bosnians converted to Islam.

The religious divisions remain today. Of the inhabitants of the former Yugoslavia, 41%, primarily Serbs, are Eastern Orthodox. 32% are Roman Catholic, with the Croats making up the majority, and 12% are Muslim. The Bosnian Muslims, whose culture is similar in many ways to their Serb and Croat neighbors, have suffered the most in the current tragedy.

Bosnia in the World Wars

At the birth of the modern world, Bosnia was again caught between empires. The decline of Ottoman power provided an opening for the Austrian Empire, which annexed Bosnia in 1908. Bosnian Serbs chafed under Austrian rule. When a Serb assassin killed Austrian Archduke Franz Ferdinand in Sarajevo, the capital of Bosnia, the result was World War I.

After the war, Bosnia was incorporated into the Kingdom of Serbs, Croats and Slovenes, the forerunner of modern Yugoslavia. This Serbian-dominated monarchy, unstable and unpopular from the beginning, was already in ruins when the forces of Hitler and Mussolini arrived in 1941.

In the Balkans, the war unleashed ethnic violence that rivaled the excesses of the Nazis. Hitler's Croat puppets, the Ustashi, carried out a campaign of genocide against the Serbs. An organization of Serb partisans, the Chetniks, responded with equal bloodlust. By the end of the war, two million Yugoslavs were dead, half of them at Yugoslav hands.

Outsiders who wish to understand the current crisis must begin with World War II. The memory of genocide explains the current lust for revenge. It is a memory that cuts both ways. All of the parties in the current tragedy have been both aggressor and victim.

Tito's Yugoslavia...and afterwards

The leader of the anti-fascist Partisan Resistance Movement was a Croat strongman named Josip Broz. To history, he is "Tito," his code name in the illegal Croat Communist Party.

When the Nazis left Yugoslavia in 1944, Communist partisans took power with great popular support. Their leader Tito set up a Marxist state with a difference. For a postwar Communist country, Tito's Yugoslavia was remarkably independent. During his long command, Tito kept Yugoslavia free of Soviet domination while maintaining ties with the Western democracies. He performed a similar balancing act at home, playing one ethnic group off another. For decades, Tito's personal power, combined with the fear of a Soviet invasion, held Yugoslavia's inner demons at bay.

In 1974, Tito became "President for Life"... and died six years later. His Marxist government tottered on until Communism itself fell apart.

Democracy comes to the Balkans

In 1990, the republics of Yugoslavia held democratic elections. Bosnia, Croatia, Slovenia and Macedonia elected non-Communist governments. These new movements held national and ethnic interests above any ideal of Yugoslav unity.

On the other hand, Serbia's repackaged Communists, led by President Slobodan Milosevic, wanted to keep the Yugoslav federation intact. Their primary motive was fear. If the central authority collapsed, what would happen to the 25% of Yugoslavia's Serbs who live outside Serbia? Memory runs deep in the Balkans.

Croatia and Slovenia declared unilateral independence in June 1991. War began immediately. When it ended in January 1992, one-third of Croat territory was in Serb hands. Bosnia declared independence a month later.

The resulting conflagration of Serbs, Croats and Muslims horrified the world. It is a war of vengeance directed largely at civilian targets. Snipers and artillery have decimated Sarajevo and other cities. Of the 24 million people in prewar Yugoslavia, 3.5 million are now refugees.

Campaign rationale

It is the year 1994. After repeated and unsuccessful appeals to the Western powers, the Bosnian Muslims receive military aid from their fellow Muslims in Turkey. The specter of Turkish influence in Bosnia provokes an immediate reaction from Turkey's ancient rival, Greece. When the Greeks threaten to intervene on the side of the Serbs, the conflict seems poised to escalate into global war.

Finally, the United Nations intervenes and sends peacekeeping troops to Sarajevo and other besieged areas in Bosnia. For a moment, the world holds its breath.

Meanwhile, Serbia appeals for international aid to assist its scattered kin in Bosnia and Croatia. Russia responds by selling dozens of MiG-29s to Serbia for hard currency. The Bosnian Serbs, encouraged by the apparent

support of Greece and Russia, move in for the final kill.

As the pictures on the nightly news become increasingly gruesome and apocalyptic, NATO commits several Marine units and a carrier task force, led by the USS Theodore Roosevelt (CVN-71), to Bosnia-Hercegovina. It is hoped that this additional aid will allow the U.N. peacekeeping forces to go on the offensive and become peace*makers*.

The goal of your campaign is to force the Serbs and Croats to accept a cease-fire and come to the bargaining table. Your strategy is to drive them back to their original positions, and further if possible.

In a Hornet-only campaign, you will be based on the USS Roosevelt in the Adriatic Sea. In a combined arms campaign, where you fly alongside Air Force F-16s (see Chapter 7: Communications), you will be based in Sarajevo.

Campaign objectives

The only hope for a lasting resolution to this crisis is if Serbia can be made to accept a cease-fire and come to the negotiating table. To do this, the U.N. forces must first break the Serbian choke hold on central Bosnia, then drive into Serbia itself until the Serbs agree to stop fighting.

The key points in the U.N. battle plan are mobility, self-defense and protection of civilians. To meet these goals, your squadron will have to accomplish the following tasks:

- Protect Sarajevo and other major urban centers from Serbian shelling and bombing. The mountains around Sarajevo are especially important, as artillery in those positions can lay a heavy barrage on many civilian areas and U.N. bases.
- Keep the roads and bridges clear and under U.N. control. Serbian troops that take control of these vital transportation arteries will have to be forcibly removed.

- Protect all friendly air bases. The Serbian forces have the advantage of numbers and air defenses; the U.N.'s only edge is its air superiority. U.S. air power is critical to the U.N. battle plan, so keep those runways open.
- When the advance into Serbian territory begins, your squadron will be tasked with Wild Weasel (SEAD) and bombing missions to eliminate the Serbian air defenses and infrastructure. If you can penetrate the complex, Russian-style Serbian air defense network and destroy vital supply and transport centers, the Serbians will realize their vulnerability and will be much more likely to agree to a cease-fire.

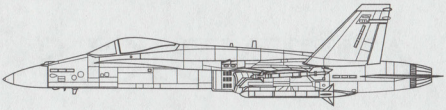
In all cases, precision weapons delivery is critical! Given the grievous harm already done to the infrastructure and population centers of Bosnia-Hercegovina, further damage from stray ordnance could be catastrophic.

APPENDICES

Appendix A

Technical Specifications

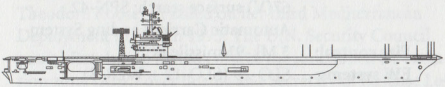
F/A-18 Hornet



Type:	Carrier- and land-based strike/fighter
Length:	56 ft 0 in
Wingspan:	37 ft 6 in
Wing area:	400 sq ft
Takeoff weight:	51,900 lb (attack mission) 36,710 lb (fighter mission)
Max weight:	56,000 lb
Max payload:	15,500 lb
Engines:	Two General Electric F404 GE-402 EPE turbofans each rated at 17,600 lb static thrust with afterburner
Top speed:	Mach 1.8 level flight, 920 knots at 35,000 ft
Max climb:	35,000 ft/1.5 min
Ceiling:	50,000 ft
Corner velocity:	400 kts (sustained)
Turn radius:	1,592 ft (instantaneous)
Turn rate:	25 deg/sec (instantaneous) 18 deg/sec (sustained)
Max range:	1,800 nm
Combat radius:	290 nm
Max fuel:	10,860 lb (internal) 6,732 lb (external)
Flight controls:	Quadruple-redundant, full digital fly-by-wire
Avionics:	AN/APG-65 multi-mode digital air-to-air, air-to-ground tracking

radar. AN/ALR RWR. AN/ALQ-126B ECM. FID 2035 horizontal situation display. AN/ALQ-165 Jammer. Two AN/AYK-14 digital computers. AN/ASN 130A inertial navigation system. AN/AVQ-28 HUD.

USS Theodore Roosevelt CVN-71



Builder:	Newport News Shipbuilding
Laid:	31 October 1981
Launched:	27 October 1984
Commissioned:	25 October 1986
Displacement:	77,606 tons light 97,574 tons full load
Payload:	2,970 tons of aviation ordnance; 3.5 million gallons of aircraft fuel
Length:	1,040 ft waterline 1,092 ft overall
Beam:	134 ft
Flight deck:	250⅚ ft
Angled deck:	9-degrees 3 ft canted to port; 796⅔ ft long
Hangar deck:	684 ft long; 108 ft wide; 26½ ft high
Draft:	385½ ft
Propulsion:	4 steam turbines; 280,000 shp; 4 shafts
Reactors:	2 pressurized-water A4W
Fuel cores:	Service life of 23 years; providing nearly 2 million nm steaming
Speed:	30+ knots
Manning:	3,162 2,020 Air Wing
Aircraft:	24 F-14 Tomcats; 24 F/A-18 Hornets; 10 A-6E Intruders; 4 KA-6D Intruders;

	4 E-2C Hawkeyes; 4 EA-6B Prowlers; 10 S-3A Vikings; 6 HH-60H Seahawks.
Catapults:	4 steam Mk 13-1
Elevators:	4 deck edge; 85 x 52 feet; 130,000 lbs capacity
Missiles:	3 Mk-29 8-tube NATO Sea Sparrow launchers
Guns:	4 Mk-16 20 mm Phalanx CIWS
Radars:	SPS-48C 3-D air search; SPS-49 air search; SPS-64(V) navigation; SPS-67(V) surface search; SPN-42 Automatic Carrier Landing System
Fire control:	3 Mk-91 missile FCS
EW systems:	SLQ-29 (SLQ-17 + WLR-8)

The Theodore Roosevelt is the fourth ship of the Nimitz-class of aircraft carriers. The contract for the construction of the ship was awarded to Newport News Shipbuilding on September 30, 1980. Construction began on October 8, 1980, and less than a year later President Reagan signed an Executive Memorandum naming the CVN-71 after the 26th President of the United States. USS Theodore Roosevelt was commissioned and placed into active Navy service on October 25, 1986.

Roosevelt has a combat displacement of 97,000 tons and is 1,040 feet in length at the waterline. The area of the flight deck is 1,092 ft long by 257 ft wide. Two aircraft catapults are located forward and two on the angled deck amidships. Using all four catapults, it is possible to launch aircraft one every 20 seconds.

USS Theodore Roosevelt spent almost half of 1988 underway, much of the time for two- and three-week carrier qualifications and operational training exercises. In early March, "TR" operated with all of the squadrons of Carrier Air Wing Eight (CVW-8), comprising 85 tactical aircraft, for the first time. On December 30, 1988, Roosevelt was underway for her first operational deployment to the Mediterranean Sea.

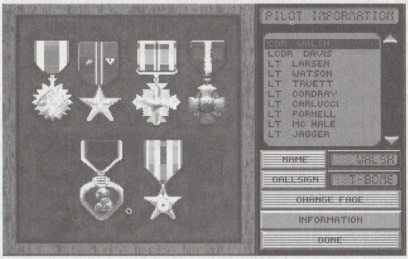
On December 28, 1990, Theodore Roosevelt left Norfolk, Virginia for her second Mediterranean Deployment and for Operation Desert Storm. TR entered the air war against Iraq on January 19, 1991. CVW-8 flew an unprecedented total of 4,209 sorties, more than any other carrier in the war. TR strike aircraft dropped 4,843,233 pounds of ordnance with uncanny accuracy, until a cease-fire was ordered on February 28th. Roosevelt completed her six-month deployment and was relieved by the USS Forrestal Battle Group on June 28, 1991.

Theodore Roosevelt sailed on her third Mediterranean Deployment in March 1993. The U.N. Security Council passed Resolution 836 to enforce the sanctioned air exclusion zone (AEZ) over Bosnia and Secretary of Defense Les Aspin approved an order directing U.S. aircraft to join NATO's support of the U.N. Protection Force in Bosnia. In response to the order, USS Theodore Roosevelt transited the Suez Canal to begin Operation Deny Flight in the Adriatic Sea. The carrier launched about 1,000 sorties over Bosnia. This represents 12–18 sorties out of a total of 80–90 sorties launched daily.

Appendix B

Naval Medals

The following medals may be awarded to *Hornet* pilots. They are listed in order of merit (except for the Purple Heart, which is described at the end).



Navy Medal of Honor

The Navy Medal of Honor is the highest award that the Navy or Marines can bestow. It is given in the name of Congress to persons who distinguish themselves by extreme bravery, risking their lives above and beyond the call of duty, while in actual combat with an enemy of the United States or its allies.

The Medal of Honor is a very rare award and is only given in extraordinary circumstances.

Navy Cross

The Navy Cross is awarded for tremendous heroics that don't quite justify a Medal of Honor. It is given to any person serving with the U.S. Navy or Marines when engaged in action with an enemy of the United States or when serving in conjunction with allied forces engaging opposing foreign forces.

The primary difference between this award and the Medal of Honor is the degree of heroism and actions taken.

Silver Star

The Silver Star is awarded to a member of any branch of the U.S. Armed Forces for gallantry when engaged in action with an enemy of the United States or when serving in conjunction with allied forces engaging opposing foreign forces.

Distinguished Flying Cross

The Distinguished Flying Cross is awarded to a member of any branch of the U.S. Armed Forces who has demontrated "heroism or extraordinary achievement while participating in an aerial flight." The requirements for this award need not include the engagement of enemy forces.

Bronze Star

The Bronze Star is awarded to members of any branch of the U.S. Armed Forces who have distinguished themselves by heroic or meritorious achievement or service, not necessarily involving participation in aerial flight, when engaged in action with an enemy of the United States or when serving in conjunction with allied forces engaging opposing foreign forces.

Air Medal

The Air Medal is awarded to members of any branch of the U.S. Armed Forces who have distinguished themselves by meritorious achievement while in active flight. This award is given for both combat and non-combat actions.

Purple Heart

The Purple Heart is awarded to any member of the U.S. Armed Forces who is injured while in combat. It is also given posthumously to the next of kin for those who died from their wounds or were killed in action.

Earning medals

A pilot may receive any medal after only one sortie, but it is more likely that a medal will be awarded after repeated successful flights. Pilots earn recognition for such things as shooting down enemy fighters or bombers, assisting in an air-to-air kill, destroying or damaging your primary targets, and for completing your mission.

Appendix C

Glossary

ACLS – Automatic Carrier Landing System. The system for automatic landing of aircraft onto the carrier's deck. Steering commands are sent to the aircraft via data link for a total hands-off landing.

ACLS window – an area in space (normally about six miles from touchdown) in which an aircraft is acquired by radar for ACLS control.

ACM – Air Combat Mode radar mode.

ADI – attitude display indicator.

Air Wing – the complete complement of aircraft on board an aircraft carrier.

Amidships – in the middle of a ship.

Angle of attack – angle of the wing to the flight path of the aircraft; determines amount of wing lift at a given speed.

ASL – azimuth steering line.

Aspect angle – angle created by the intersection of your line of sight to the target and the target's velocity vector.

Astern – behind a ship.

Ball – the primary optical landing aid, also known as FLOLS.

Barometric altitude – the altitude measured by air density.

Base recovery course – the ship's magnetic heading during flight operations.

Beam – the widest point of a ship's hull.

Bolter – an unsuccessful landing in which the tailhook fails to catch an arresting cable.

Bow – the front of a ship.

Brown shirt – the plane captain.

Carrier Air Traffic Control Center (CATCC) – the centralized agency responsible for the status-keeping of all carrier air operations and control of all airborne aircraft.

Carrier control area – a circular airspace around the ship and under the cognizance of CATCC.

Cat (catapult) – steam-powered system used to accelerate aircraft to flying speed during launch.

CIC – Combat Information Center.

COMED – combined map/electronic display.

Cross-deck pendant – the portion of the arresting cable which stretches across the deck and engages the hook.

CVW – abbreviation for Carrier Air Wing. See *Air Wing*.

Cyclic Ops – alternating launches and recoveries.

DDI – digital display indicator.

DIL – displayed impact line.

Displacement – the amount of water (in tons) that a ship's hull replaces in any body of water.

Dropline – a row of orange lights extending vertically down the stern from the centerline, which enables the pilot to make adjustments in lineup on final approach.

Final bearing – the magnetic bearing assigned by CATCC for final approach. It is an extension of the landing area centerline.

FLOLS – Fresnel Lens Optical Landing System. The primary optical landing aid, called the "ball."

Fouled deck – any condition in which the carrier deck is not ready to receive aircraft.

Glide path – the path of descent to landing.

Glideslope – an electronic or optical beam, marking the glide path.

G-limiter – the system that sets an absolute G limit on maneuvers.

Green shirt – a deckhand whose duties involve readying aircraft for launch, securing them to the catapult, etc.

HI – horizontal indicator.

Hook – the arresting hook which is lowered from the tail of the aircraft for the landing approach and which catches the arresting cable.

HSI – horizontal situation indicator.

Island – the portion of the ship's superstructure above the flight deck.

Knot – abbreviation for nautical mile or 1.15 statute miles.

LSO – Landing Signal Officer, responsible for all aircraft recoveries. The LSO judges the quality of each approach, guides and critiques pilot landings.

Meatball – See *Ball*.

MFD – multifunction display.

NATOPS – Naval Air Training and Operating Procedures Standardization. Every naval aircraft has a NATOPS manual which explains the aircraft systems and operating procedures.

Pickle switch – a switch by which the LSO illuminates the wave-off lights to abort a landing attempt.

Port – nautical term for left.

Purple shirt – a deckhand in charge of fueling aircraft.

Radar altitude – the altitude measured by a radar beam.

Red shirt – a deckhand that handles ordnance.

RWR – radar warning receiver.

SAD – Situation Awareness Display.

SAM – Situation Awareness Mode.

SCN – Scan radar mode.

SEAD – suppression of enemy air defenses.

Spot the deck – to look at the deck rather than the ball during landing.

Starboard – nautical term for right.

Stern – the back of a ship.

STT – Single Target Track radar mode.

TACTS – Tactical Air Combat Training System.

Tailhook – See *Hook*.

Trap – a successful, arrested landing aboard an aircraft carrier.

TWS – Track While Scan radar mode.

Vultures Row – an observation deck on the island from which flight operations can be seen.

Wave-off – a signal from LSO to pilot aborting a landing. Compliance by pilot is mandatory.

White shirt – a deckhand responsible for inspecting aircraft about to be launched.

Yellow shirt – the director of movement of aircraft on the flight deck.

Appendix D

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The *Hornet* Team

Front Row (L to R): Kurt Boutin, Gabe Turk, Robert Cieri, Dan Deremiah, Heather Mace, Kuswara Pranawahadi, Jack Gibbons

Back Row (L to R): Russel Reiss, Eric Grotke, Steve Blankenship, Lawrence Kevin, Jim Voytilla, Andy Edlen, Michael Mancuso, Anthony Chiang, Gary Stottlemyer, Paul Mogg, J. White, Kyle Brink, Derwin Wyatt, Robert Giedt, Evan Birkby

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