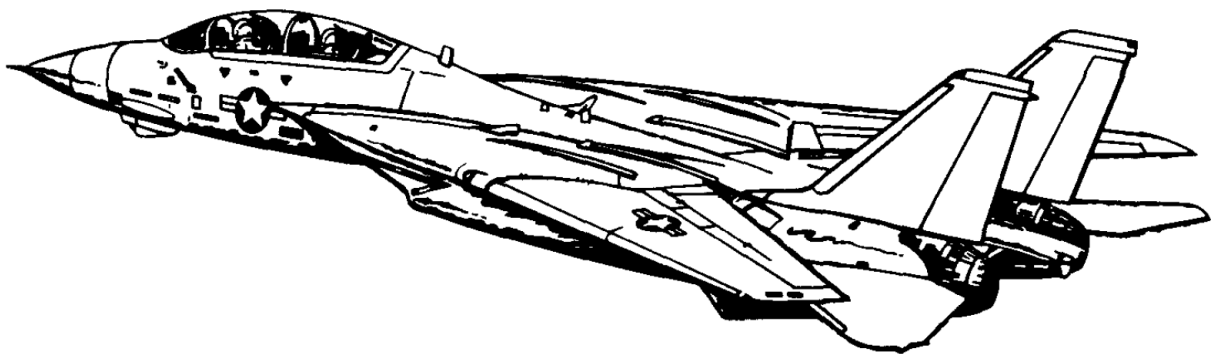




**WEAPONS SYSTEMS
REFERENCE GUIDE
NAVY MODEL F-14D
FOR MICROSOFT FLIGHT SIMULATOR X:
ACCELERATION + VRS TACPACK**



F-14D TOMCAT RELEASE VERSION: 2.10
TACTICAL SOFTWARE VERSION: 1.00
TACPACK VERSION: 1.4.0.9 OR ABOVE



1. INTRODUCTION

Starting from version 2.10, the Grumman F-14D Tomcat Project for Flight Simulator X supports Vertical Reality Simulation's TacPack, which is a commercial, air combat environment for Flight Simulator X.

With respect to the real deal, this release incorporates a lot of fiction and guess-work: reasons for this limitations are three:

1 - Lack of time and resources for the development: this is a freeware project, and has therefore significant budget and time limitations. If you are looking to a higher simulation fidelity, we encourage you to look for commercial products such as the upcoming Aerosoft F-14A package.

2 - Absence of documentation: albeit the Tomcat is a very popular aircraft, and given that it has been decommissioned several years ago, we could not find the Weapons Systems manual, nor the relevant information required to guarantee any level of realism in the pilot/Rio weapon systems interface. However, weapons systems performance (e.g. missiles performances, agility and ranges) are given by the Tacpack environment and are, to the extent of our knowledge, quite accurate and realistic.

3 - Gameplay reasons: where simplifications or guess-work had to be done, we privileged gameplay above everything else.

This reference guide is meant to provide an introduction to the functions supported by the current release. This reference guide will describe ONLY the tactical systems and functions provided by the Tacpack. Please refer to the Flight Manual for flight operations and general aircraft information.

NOTE:

IN THIS RELEASE (Version 2.10) THE MFD SYSTEM IS STILL THE LEGACY F/A-18 HORNET MFD SYSTEM FROM THE ACCELERATION PACKAGE. YOU SHOULD NOT USE THE MFDs FOR RADAR, SMS OR ANY OTHER TACTICAL PURPOSE.

2. REQUIREMENTS

In order to operate the tactical systems depicted in this manual you need to have a registered copy of Vertical Reality Simulation's TACPACK version 1.4.0.9 or above.

The TACPACK is a commercial product from Vertical Reality Simulations: please look at VRS website for more information about it:

www.vrssimulations.com

3. WEAPONS CONFIGURATOR

The first step to operate the weapons systems of the F-14D is, of course, to load weapons. By default the F-14D loads with the following loadout:

2 x AIM-9M Sidewinders

2 x AIM-7M Sparrows

2 x GBU-10 Laser Guided Bombs

1 x Lantirn pod

2 x External Fuel Tanks

Default loadout can be permanently changed by editing the aircraft.cfg weights section, although it is not recommended unless you are an expert user. Should you want to change it we recommend that you make a backup of the file in advance.

NOTE - In this rendition, external fuel tanks are permanently attached to the airframe: they are non-removable and non-droppable.

To load the weapons in the game, a weapons configurator is provided and can be invoked by pressing SHIFT+4.

The configurator does not allow the user to choose an arbitrary load for any given station, but provides a list of presets which include some of the most common operational configurations used in the real world.

The configurator looks as follows:



STORE CONFIGURATION	1A	1B	2	3	4	5	6	7	8B	8A
☐ 1C	-	-	TANK	-	-	-	-	TANK	-	-
☐ 2C1	AIM-9	AIM-9	TANK	AIM-7	AIM-7	AIM-7	AIM-7	TANK	AIM-9	AIM-9
☐ 2C3	AIM-9	AIM-7	TANK	AIM-7	AIM-7	AIM-7	AIM-7	TANK	AIM-7	AIM-9
☐ 3C3	AIM-9	AIM-7	TANK	AIM-54	AIM-54	AIM-54	AIM-54	TANK	AIM-7	AIM-9
☐ 2 X MK-84	AIM-9	AIM-7	TANK	MK-84	AIM-7	-	MK-84	TANK	AIM-7	AIM-9
☐ 4 X MK-83	AIM-9	AIM-7	TANK	MK-83	MK-83	MK-83	MK-83	TANK	AIM-7	AIM-9
☒ 4 X MK-82	AIM-9	AIM-7	TANK	MK-82	MK-82	MK-82	MK-82	TANK	AIM-7	AIM-9
☐ 2 X GBU-31	AIM-9	AIM-7	TANK	GBU-31	AIM-7	-	GBU-31	TANK	LANTIRN	AIM-9
☐ 2 X GBU-10	AIM-9	AIM-7	TANK	GBU-10	AIM-7	-	GBU-10	TANK	LANTIRN	AIM-9
☐ 4 X GBU-12	AIM-9	AIM-7	TANK	GBU-12	GBU-12	GBU-12	GBU-12	TANK	LANTIRN	AIM-9

The configurator is operated by ticking the checkbox nearby the desired configuration. Weapons will be reloaded immediately if allowed by the rules of the current gameplay session.

NOTE – The configurator will NOT work if a valid Tacpack installation is not detected. If you are not using the Tacpack, you can change the weapon loadout by editing the weights of the stations in the Fuel and Payload menu. Please see the flight manual for further information.

NOTE – Weapon load will affect the aircraft performance: weapon weight will add to the aircraft weight

and will reduce the performance, although the additional drag will not be taken in account.

4. SUPPORTED FUNCTIONS

The current tactical software supports the following functions:

AIR TO AIR

Cannon fire, including Radar Gun Director mode

AIM-9M Sidewinder launch, both radar slaved and in visual boresight

AIM-7M Sparrow launch, radar slaved only (backup FLOOD mode not supported)

AIM-54C Phoenix launch, radar slaved only (visual boresight mode not supported)

AIR TO GROUND

Cannon fire, including CCIP Gun Director

Mk.82, Mk.83 and Mk.84 Dumb bombs release

GBU-10 and GBU-12 Laser guided bombs release

GBU-31 bombs release

ELECTRONIC WARFARE

On-board ECM Jammer

Radar Warning Receiver including aural cues

Chaffs and Flares Release

OTHER:

Night Vision Goggles

In flight refuel

Selective stores Jettison

Emergency Jettison

HUD symbology for Nav aids for Tacpack Carriers and Tankers

Most of the functions are operated by clicking on the Virtual Cockpit button. Most of the controls are located exclusively in the Pilot or in the RIO cockpit, and it may be required that the player moves from one to the other during the gameplay. This implementation also includes a set of Keyboard controls, as follows:

Arming/Stores

W	WEAPON CYCLE	Selects a different master mode compatible weapon
CTRL+A	MASTER ARM TOGGLE	Toggles the Master Arm state

CTRL+J	SELECTIVE JETTISON INITIATE	Jettison the currently selected store
CTRL+U	UNCAGE/CAGE TOGGLE	
SHFT+C	BOMB/GPS DELIVERY MODE	Cycles through compatible delivery modes
SHFT+W	WEAPON STEP	Steps to another station containing a similar weapon
SHFT+CTRL+J	EMERG JETTISON	Initiates immediate EMERG JETT (external stores)
SHFT+CTRL+W	WEAPON RELOAD	Availability subject to host preferences in MP
SHFT+CTRL+1	AA GUN SELECT	Enters AA MM, selects AA GUN, GACQ ACM mode
SHFT+CTRL+2	AIM-9M SELECT	Enters AA MM, selects AIM-9M and leaves ACM
SHFT+CTRL+3	AIM-7M SELECT	Enters AA MM, selects AIM-7M and leaves ACM
SHFT+CTRL+4	AIM-54C SELECT	Enters AA MM, selects AIM-54C and leaves ACM

Electronic Warfare

C	CHAFF SINGLE	Deploys a single chaff bundle (req.ALE-47 power)
F	FLARE SINGLE	Deploys a single IR flare (req.ALE-47 power)
J	ECM JAMER TOGGLE	Self-Protection Jammer power

Fuel

I	IFR PROBE TOGGLE	Normal (non emergency) IFR probe toggle
CTRL+D	FUEL DUMP TOGGLE	

Master Mode

M	MASTER MODE CYCLE	Cycles between master modes (A/A, A/S, NAV)
SHFT+CTRL+5	NAV MASTER MODE	Directly selects the NAV master mode
SHFT+CTRL+6	A/A MASTER MODE	Directly selects the A/A master mode
SHFT+CTRL+7	A/G MASTER MODE	Directly selects the A/S master mode

Other

RETURN	DESIGNATE/UNDESIGNATE	In AA MM, design first valid radar track as L&S target. Further depression cycles through all the available radar tracks. In AS MM, designates ground target through the
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boresight of the Virtual HUD.

TRIGGER TRIGGER

In AA MM, fires currently selected weapon

In AS MM, designated ground target via HMD

PICKLE PICKLE

In AS MM, releases currently selected weapon

In AA MM, no function

SHIFT+CTRL+N NIGHT VISION GOGGLES

Enables Night Vision Goggles emulation

NOTE:

In the present release, some functions can only be operated by clicking the controls in the virtual cockpit mode (e.g. Radar Power switch, Laser Arm, ALE-47 power), while some other functions can only be operated by the keyboard (e.g. Weapons selection, Target designation)

NOTE:

In the present release, Multi-crew functionality (shared cockpit) is NOT supported.

5. PILOT COCKPIT

Following image indicates the items in the cockpit that are relevant for tactical functions:



1 – EMERGENCY STORES JETTISON

Clicking this button will jettison ALL the stores (except the external tanks): it is equivalent to press CONTROL+SHIFT+J

2 – MULTI STATUS INDICATOR

This digital displays shows the status of the ordnance:

SW = Sidewinder

SP = Sparrow

PH = Phoenix

AG = Air to Ground Ordnance

nothing = No ordnance attached (note: LANTIRN pod will appear as “nothing”)

NOTE: If correctly loaded, status of the weapons will be either || (ready) or <||> (ready and selected): warmup times and/or mulfuctions are NOT simulated in this implementation. Weapons will always be ready if available.

3 – LOCK CUE

Illuminates if the current A/A missile is LOCKED onto a Target

4 – SHOOT CUE

Illuminates is launch parameters for the selected weapons are such that there is a good chance of hitting the target if the weapon is released now.

NOTE: in real life, this light will flash if the target is within the Rne (“no escape” range). This is not implemented, although the SHOOT cue in the HUD will flash in that condition.

5 – RWR ADVISORY LIGHTS

These light will illuminate if the RWR system detects a threat:

SAM – Surface to Air Missile station detected

A/I – Airborne Interceptor detected

CW – Continuous-wave emitter detected

In real life, when a detected threat fires a missile at ownship, the relevant indicator starts to flash. In this rendition, a SAM missile will show as CW threat.

NOTE: The RWR system must be switched ON in the RIO cockpit for the RWR system to operate. RWR system by default is OFF.

6 – MASTER ARM Switch

Equivalent to pressing CONTROL+A. Please note that actual fire consent logic requires the landing gear to be in the UP/LOCKED position.

7 – Aircraft Master Mode Selection Switches

Pressing one of these buttons will select a given Master Mode. Equivalent to pressing CONTROL+SHIFT+5, 6 or 7.

6. RIO COCKPIT

This paragraph depicts the controls and indicators in the RIO cockpit which are relevant to Tactical operations. The front panel of the Radar Interception Officer looks as follows:



1 – Master Display Switch

This switch activates both the Digital Display and the Programmable Tactical Display. In real life, the DD has its own power switch in the top-left corner.

2 – Sensors Slaving Panel

Not implemented in this rendition. May become operational in future updates.

3 – Digital Display

This display is mainly used to show radar information and to control its functions. The display can operate in the following modes:

RADAR AZimuth/ELevation – this is a typical AzEl radar screen

RADAR ATTack – this is a typical ATTK mode (Azimuth vs. Range). Note that bottom of the screen is

the F-14 line (0-miles distance)

MAP – This is a ground map mode. Note that this is a standard FSX Map mode (GPS). Has an impact to the frame rates.

BIT – Built in-test (gimmick)

NOTE:

In order to operate the controls of the MFD, the user should click the screen in the proximity of the soft-key (much like a touch-screen). This was done to simplify the coding due to lack of development resources and time.

NOTE:

The ELEV softkeys control the Radar Elevation. In real life this is done by a thumbwheel in the RIO joystick. The RANGE softkeys control the Radar Range (unless it is commanded to a fixed range by the Mission Computer)

NOTE:

The range shown in this display is the actual Radar Range. It is commanded to 6Nm, boresight if the pilot selects the Gun, and should switch automatically to 40 Nm if SW or SP is selected, or to 80Nm if PH is selected.

IMPORTANT NOTE:

Lower soft keys control radar modes. Available modes are as follows:

TWS MANUAL – If no track is designated, designates the highest priority as L&S targets and tracks it. Missiles sensors will be slaved to this track, if applicable. Further depression causes the undesignation of the current target, and the designation of another one if available. NOTE: This is basically equivalent to pressing the ENTER key.

TWS AUTOMATIC – Substantially the same as TWS-M for the purposes of the game

PDSTT – Drops all the tracks except the L&S and enters Pulse Doppler Single Target Track. STT mode is REQUIRED for AIM-7 launch. If this mode is not selected when a Sparrow is launched, the radar enters PDSTT automatically – also, if AIM-7 is selected, and an STT mode is selected, radar also enters in Semi Active Radar Homing (SAHR) mode. It is required that the Radar is maintained in PDSTT for whole duration of the Sparrow flight for the missile to hit the target.

RWS – Drops all the targets, including STT, and returns to Range While Search mode

PSTT – Substantially the same as PDSTT for the purposes of the game.

NOTE:

A Maltese Cross in the lower left corner indicates that the radar is not radiating.

4 – Programmable Tactical Information Display (PTID)

In this rendition PTID has the following modes of operation:

NAV – displays FSX Nav aids and radar tracks (NOTE does not display Tacpack objects or Nav aids). Range is selectable but it does not affect the Radar range.

ATTK – this is a typical ATTK display – but the horizontal line in the middle of the screen is the F-14 line (that is 0 Nm range)

BIT – Built in test (Gimmick)

NOTE:

Clicking the lower corners of the display will release CHAFFs and FLARES (provided that ALE-47 is powered)

NOTE:

XO symbol showing on the left side indicates that the radar is not radiating.

5 – Radar Power Switch

This is the main power switch of the Radar.

IMPORTANT NOTE:

By default, the Radar is NOT radiating. You need to turn on this switch to make it work. All radar functions are disabled otherwise, except the MFD ones (which are not linked to the TacPack).

6 – On-board ECM Jammer Switch

7 – Missile Option Panel

This panel is not functional in the current rendition, but for the JETTISON switch which provides Selective Jettison of the current selected weapon.

All missiles will follow the default trajectories (typically LOFTed).

8 – RWR ADVISORY LIGHTS

These light will illuminate if the RWR system detects a threat:

SAM – Surface to Air Missile station detected

A/I – Airborne Interceptor detected

CW – Continuous-wave emitter detected

In real life, when a detected threat fires a missile at ownship, the relevant indicator starts to flash. In this rendition, a SAM missile will show as CW threat.

NOTE: The RWR system must be switched ON in the RIO cockpit for the RWR system to operate. RWR system by default is OFF.

Additional controls are placed in the side consoles (see pictures on the following pages)

9 – Laser Arm Switch

This switch turns on the Laser targeting system. The laser beam is shined onto the A/S designated target, if any.

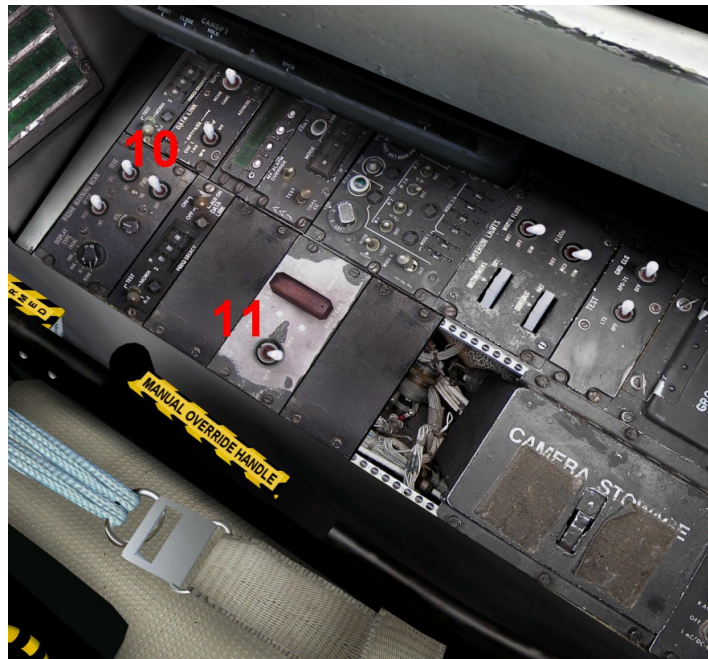
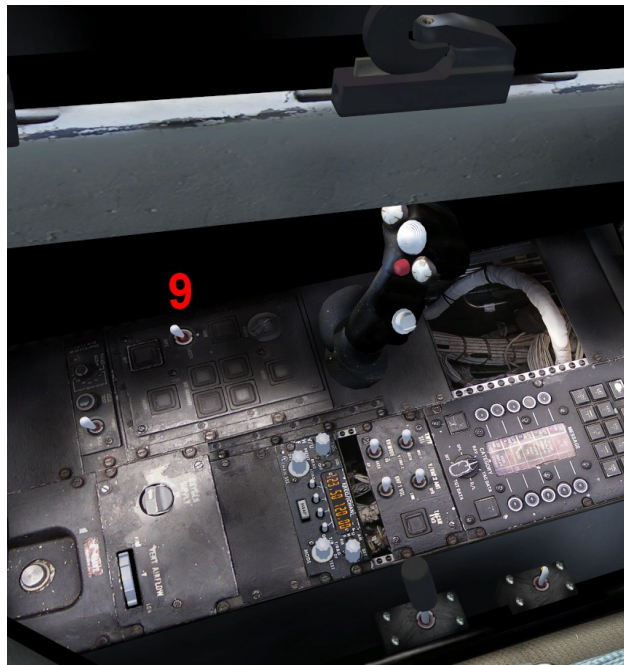
NOTE: You must turn on this switch for Laser Guided Bombs to effectively seek their target. Otherwise they will be basically launched in free-fall.

10 – Radar Warning Receiver Switch

This switch turns on the RWR system. Unless this switch is turned ON, the threat advisory lights and aural cues will not be available to the crew.

11 – AN/ALE-47 Dispenser Switch

This switch turns on the AN/ALE-47 Chaff/Flares dispenser switch. Unless this switch is turned ON, Chaffs and Flares cannot be released.



8. MISSING FUNCTIONS & KNOWN BUGS

Due to development resources and time constraints, following functions are not implemented in the current release:

- FLIR Imaging and controls
- Nav-aids for the boat and for the refuel tanker are supported only as HUD symbology: you need to tune NAV1 to the Tacan of the Carrier (or the Tanker) to get steering cue, distance and ETE. Carrier ILS will be automatically tuned if the Carrier Tacan is
- Missile Options
- Proper graphics for GPS/Laser guided weapons (at the moment, A/G model will show CCIP graphics regardless of the weapon guidance)

We hope we will have time, in future, to add those functions and more – probably in the form of patches for Tacpack users.

Also, there is a known bug in Tacpack 1.4.0.9: the ranges reported by the missiles to the displays are for NON LOFTED trajectories only. Hence they are much lower than the actual missile performance: this is especially true for the AIM-54 (which reports about 20Nm). Missile performance is correct, and, for example, you can hit targets at 50+ Nm with the Phoenix.

