Lock On: Modern Air Combat 1.1

Quick Start Manual

INSTALLING THE GAME

Before you get started, it is critical that you make sure your system meets the minimum system requirements listed below. You must first install the Lock On: Modern Air Combat files to your hard drive. To install the game, insert the CD into the CD-ROM drive and click the Install option on the pop-up window. If you have disabled the Windows Autorun function, browse to the appropriate CD drive and double-click the Setup icon. Follow the on-screen prompts to complete the installation. Once the game has been installed, run the installation executable for the 1.1 add-on. This will automatically upgrade Lock On to version 1.1.

Minimum Specifications

In order to play Lock On 1.1 on your computer, your system must meet the following criteria:

- **Computer**: Pentium 4 with 2 GHz processor or the equivalent
- **Memory**: 512 MB of RAM
- **Operating System**: Windows 2000/XP
- **DirectX**: DirectX 8.0 or higher
- **Video Card**: 128 MB DirectX 8.0 compatible 3D card
- **CD-ROM**: 4X or better
- **Audio**: DirectX 8.0 compatible sound card
- **Internet/Network Play**: TCP/IP (56 kbps or better) Internet or LAN connection

Lock On includes the option to install DirectX 8.1 or higher. Lock On can also run with later versions of DirectX that can be downloaded from:
http://www.microsoft.com/windows/directx/

Uninstalling

If you wish to remove Lock On 1.1 from your system you have several options. Insert the game CD and select the Uninstall option from the Autorun Menu, or from the Windows Start Menu choose Settings and select Control Panel. In the Control Panel, select Add/Remove Programs, left click on Lock On: Modern Air Combat, and click the Add/Remove button. Uninstalling will remove the game and all its components; however, any files that you have added or modified will be retained.

Electronic Documentation and Website

A detailed Pilot's Reference Manual is located in the "Documents" directory in your Lock On: Modern Air Combat root directory. This Manual provides detailed instruction on features not covered in this manual.

Point your browser to http://forum.lockon.ru/index.php for the latest product updates, information, frequently asked questions and lively discussion with fellow Lock On 1.1 enthusiasts.

This product has been rated by the Entertainment Software Rating Board (ESRB). For information about the ESRB rating, or to comment about the appropriateness of the rating, please contact the ESRB at 1-800-771-3772.

INTRODUCTION

Feel the power of commanding a modern jet fighter. Fly a variety of combat aircraft in the most graphically rich, aurally intense game environment ever created for a combat flight simulator. Lock On 1.1 combines a broad scope of game play that exciting missions, immersive combat, and in-your-face-action. Choose from a variety of U.S., Russian, and German jets that range from the tank-killing A-10A and Su-25T "Frogfoot", to air superiority fighters like the F-15C and Su-27 "Flanker". Packed with intense missions, realistic flight dynamics, and flexible game options, Lock On 1.1 provides the ultimate experience for both novice and veteran flight simulation fans.

- **Nine flyable aircraft**: Two U.S. (A-10A, F-15C), five Russian (Su-27, Su-33, Su-25, Su-25T, MiG-29A, MiG-29S), and one German (MiG-29A)
- **The Black Sea region**: Includes the Crimean Peninsula and the western Caucasus, the setting for a hypothetical conflict
- **Multiple campaigns:** Fly for the US or Russian air forces in a wide variety of missions
- **Stunning 3D objects and terrain:** The best looking world ever created for a flight simulation. Everything from aircraft, to tanks, to buildings are unmatched in detail
- **An incredibly detailed area:** Dynamic lighting effects and more than 180,000 buildings, 50,000,000 trees, 21 cities, 1,700 towns and villages, 500 bridges, 18 airfields, and 8 naval bases.
- **Realistic sound effects:** Audio environment includes communication with wingmen, AWACS, tankers, tower/approach controllers
- **A full range of single player missions:** Training, quick start, a fast battle planner, single missions, and campaign
- **Multiplayer for up to 32 players:** over a LAN, or at least six over the Internet, depending on connection
- **Scalable realism and difficulty levels**: Beginner and expert pilots are included and customizable.
- **Mission Editor**: A full function mission and Campaign Editor, utilizing

highly accurate and detailed satellite images, in which you can create endless variations of campaign, single and multiplayer missions.

STARTING THE GAME

If you selected to add a Lock On 1.1 icon to your desktop during the 1.1 installation process, you can double-click the icon to begin the game. If you do not have the Lock On 1.1 icon on your desktop, select Lock On: Modern Air Combat from the Start Menu Programs in the Ubisoft folder.

Main Menu

After loading Lock On 1.1, the Main Menu will appear. From the Main menu, you can navigate to the following game areas:

Navigation Bar

Along the left side of the Main Menu is the Navigation Bar. This bar, composed of ten buttons, allows you to quickly navigate to other portions of the game. The Navigation Bar is common to several other menu screens and will allow you to quickly navigate the menus of Lock On 1.1. The Main Menu Navigation bar allows you to jump to the following areas:

- **Show Tracks (SHOW).** Allows the player to view pre-recorded track and AVI movie files.
- **Training (TRNG).** Training allows you to learn beginner and advanced flying skills in the A-10A, F-15C, Su-27, Su-25T, and Su-25.
- **Open Mission (OPEN).** This Windows-based interface allows you to select single-player and multiplayer missions, track files (mission replays), and missions that you have created and saved using the build-in Mission Editor.
- **Mission Editor (EDIT).** The Mission Editor is a powerful tool that allows you to create a wide variety of missions, from simple to complex.
- **Network Play (NTW).** This allows you to directly access the Network play menus from the Main Menu
- **Campaign (CAMP).** The campaign is a game in itself and allows you to take the role of a combat pilot in a set linked set of missions.
- **Fast Battle Planner (FBP).** Using an array of battle variables, you can quickly and easily assemble scenarios to fly and save for later replay
- **Options (OPT).** The Option menu provides a wide array of graphic, audio, difficulty, and cockpit choices to match your gameplay-style.
- **Encyclopedia (ENCL).** The large array of weapon systems included in Lock On 1.1 are represented here along with pertinent data
- **Pilot Log Book (LOG).** The log book contains pilot career information including medals, promotions, and career statistics for your review.

Quick Start Aircraft Panes

This right portion of the screen consists of seven panes, each showing a different

flyable aircraft. By clicking the Fly button beneath the aircraft you wish to fly, you will be immediately placed in the cockpit of the aircraft you chose. You will have a full load of weapons and some defenseless targets nearby.

Exit Button

Clicking the Exit button at the bottom of the screen will exit out of the game and return you to your Windows desktop.

OPTIONS

The Option screens allow you to customize Lock On: Modern Air Combat to suit your system and game play preferences. In the top right of the screen is the Options navigator dial. By clicking around the dial, you can adjust your settings in the various areas: Input, Audio, Difficulty, Graphics, and Cockpit.

Exiting

To Exit the Options screen, click on the yellow X at the top right corner of the screen. This will return you to the Main Menu. You can also press the Cancel button at the bottom of the screen.

Saving settings

Once you have made your changes, you must click the OK button at the bottom of the screen. Until you click OK, your changes will not be saved.

IMPORTANT: When changing Difficulty and graphical" Scenes" settings, you must press the Save button to retain your changes.

INPUT

If the default settings for Lock On do not match your particular input devices, go to the Options section and set the dial to INPUT.

BUTTONS / AXIS Switch

In the upper left hand corner there is a two way switch BUTTONS and the top and AXIS at the bottom. If you wish to view and customize your keyboard and joystick buttons, ensure that the switch is set to BUTTONS. If you wish to view and customize the axis response of your joystick, throttle and rudder, place the switch in the AXIS position.

DEVICE

To the left of the BUTTONS / AXIS switch is a drop menu entitled DEVICE. Select the device you wish to view or edit from the list. Note that all devices are active when playing; selecting a device here only allows you to edit and customize it.

For example: if you wish to customize certain key functions on your keyboard, you set DEVICE to Keyboard and the BUTTONS / AXIS switch to BUTTONS. If you want to alter the response curve of your joystick, you would set the DEVICE your Joystick and the BUTTONS / AXIS switch to AXIS. Finally, if you wanted to reassign the function of a button on your joystick, you would set the DEVICE to your joystick and the BUTTONS / AXIS switch to BUTTONS.

FLIGHT MODE

The FLIGHT MODE drop down menu allows you to assign keys to a particular mode. These modes include:

- Navigation
- BVR
- VS
- Bore
- Helmet
- FIO
- Ground
- Grid

For example, if in Navigation mode (1 key), the G may cycle the landing gear. When in BVR mode, you could assign the G key to a radar control function. Assigning a single key to multiple functions depending on the mode allows you great flexibility.

To view all modes, set the ALL MODES / FLIGHT MODE switch to FLIGHT MODE

To set key commands that apply to all flight modes, set the switch to ALL MODES.

KEY COMMANDS

To the right of the BUTTONS / AXIS switch are four grouped buttons. These are the Key Command groups. Lock On groups the large array of possible key commands into four groups

- **VIEWS**. All possible internal and external view functions
- **COMBAT**. Functions pertaining to weapon systems and combat avionics
- **FLIGHT**. Flight control and navigation systems
- **OTHER**. Functions not included above such as system commands

BUTTON EDITING

With the BUTTON / AXIS switch set to BUTTON and the DEVICE set input controller you wish customize, select the key command group that contains the desired key function. Select the key function with the mouse and press the CHANGE button below the KEY COMMANDS grouping. You will then be prompted to press the key or button you wish to map the function to.

If you wish to remove a key function from an input controller, select the DEVICE from the list, set the BUTTONS / AXIS switch to BUTTONS, select the key function from the KEY COMMANDS groupings, and press the CLEAR button.

To revert a key function back to its original input, follow the same procedure but press the DEFAULT button.

AXIS EDITING

To edit a joystick, throttle or rudder response axis, you will first need to select the appropriate input device from the DECICE drop down. Next you need to toggle the BUTTONS / AXIS switch to AXIS.

In the list of axis, you will see the axis function list on the left and the assigned axis on the right. To clear or change a function, such as pitch, roll, or thrust, select it. The selected function axis displays a response curve on the right portion of the screen if the ENABLE RESPONSES button is on. This box consists of:

- **AXIS**. The functional name of the axis selected
- **ENABLE RESPONSES** button. Allows you to edit the selected axis function

Below is the response curve visualizer that graphically displays the axis curve of the selected function and three sliders.

- **SHIFT**. Allows you to shift the extreme end of the response curve

- **D-ZONE**. Allows you to create a “dead zone” in the center of the curve.
- **CURV**. Controls the linearity of the curve

To assign an axis function to a different axis, select the function, press the CHANGE button and move the axis of the controller that you wish to map the function to.

To delete an axis function, select the axis function from and press the CLEAR button.

To revert an axis function back to its original axis, select the axis function and press the DEFAULT button.

In the bottom right of the screen is the AXIS / SLIDER toggle switch.

- When set to AXIS, the point of origin is in the center.
- When set to SLIDER, the point of origin is in the edge.

Trim and Control

Several of the aircraft, the MiG-29 in particular **MUST** be constantly trimmed or your control inputs will not be as effective. Consult the appropriate Tutorial Mission to learn how to trim the aircraft. **ALT-T** will neutralize your trim settings. NOTE: Airspeed changes affect trim settings. Be sure to adjust trim after coming out of Autopilot.

GRAPHICS

The Graphics pane allows adjusting of display detail. Note that higher resolutions, color depth and detail settings look better but require more CPU power and video RAM. Lower resolutions and color depth settings may not appear as sharp, but will provide smoother frame rates and more economical use of video RAM on slower machines.

Note: We only suggest setting Visibility Range (VIBIG RNG) to High WATER to very high unless you have a greater computer with 3 GHz process and a graphics card with 256 MB or greater RAM.

- **TEXTURES**: Allows you to specify the overall texture quality for cockpit, objects, and terrain.
- **SCENES**: Allows you to specify the quantity of land objects in the world. At low setting, only necessary airfield structures and bridges are present.
- **TERR PRLD:** During mission loading, this determines the amount of terrain loaded into RAM**.**
- **CIV TRAFF**: Turns on and off random civilian road and rail traffic.
- **WATER**: Selects the level of water detail including bump mapping, cloud reflections and land reflections.
- **HAZE**: Basic and Advanced haze selections.
- **LIGHTS**: Allows you to specify the use of lighting effects like point source lighting.
- **VISBIB RNG (Visibility Range)**: Allows you to specify the distance of visibility for objects. This includes mostly affects trees and buildings.
- **EFFECTS**: Allows you to specify the quality and number of particles for explosions, fire, reflections, smokes and similar effects.
- **HEAT BLR**
- **SHADOWS**: Allows you to specify the use of dynamic shadows. Setting this to Full allows volumetric shadowing.
- **COLOR**: Allows you to specify the color depth used by the game.
- **RESOLUT**: Allows you to specify the display resolution of game during flight

Below the list of graphic selections is the Full Screen toggle button. This button toggles the screen between full screen and a windowed view.

If you are unsure about adjusting each of these graphic options separately, Low,

Medium, and High default settings have been provided at the bottom of this pane. If you have a computer that is at or near the minimum hardware specification, we suggest you select Low.

AUDIO

As with the graphics settings, the volume of the various sounds in Lock On is an individual taste. You need to experiment with the settings to obtain the sound levels you desire.The audio options allow you to customize the sound levels of the various audio elements of Lock On: Modern Air Combat. Often the audio environment in the cockpit of a modern jet fighter is rather quiet and far different than some players may expect. Lock On allows you to tailor this audio environment and allow you to make it as real or as fantasy as you desire. Nine level sliders are available to adjust the following sound levels:

- **VOLUME**: Master game volume
- **MUSIC**: Sound level of the musical sound track
- **RADIO**: Volume level of radio messages. This includes wingmen, AWACS, tower, and refueling aircraft.
- **ENGINES**: Engine volume when heard from within the cockpit. This does not include afterburner.
- **MECH:** Sound level of mechanical systems like landing gear and flaps
- **EFFECTS**: Special effect sounds like explosions, cannon fire, and thunder.
- **WIND:** Sound level of wing passing around the canopy when in the cockpit view. As speed increases, this sound level will rise. This also includes aircraft buffeting due to stalls and high angle of attack flight.
- **WARNINGS**: In-cockpit audio warning system.

- **COCKPIT**: Hum and noise that is heard within the cockpit due to avionics systems and air circulation systems.

Below the sliders are a set of four toggle buttons that allow you to turn the following audio features on and off:

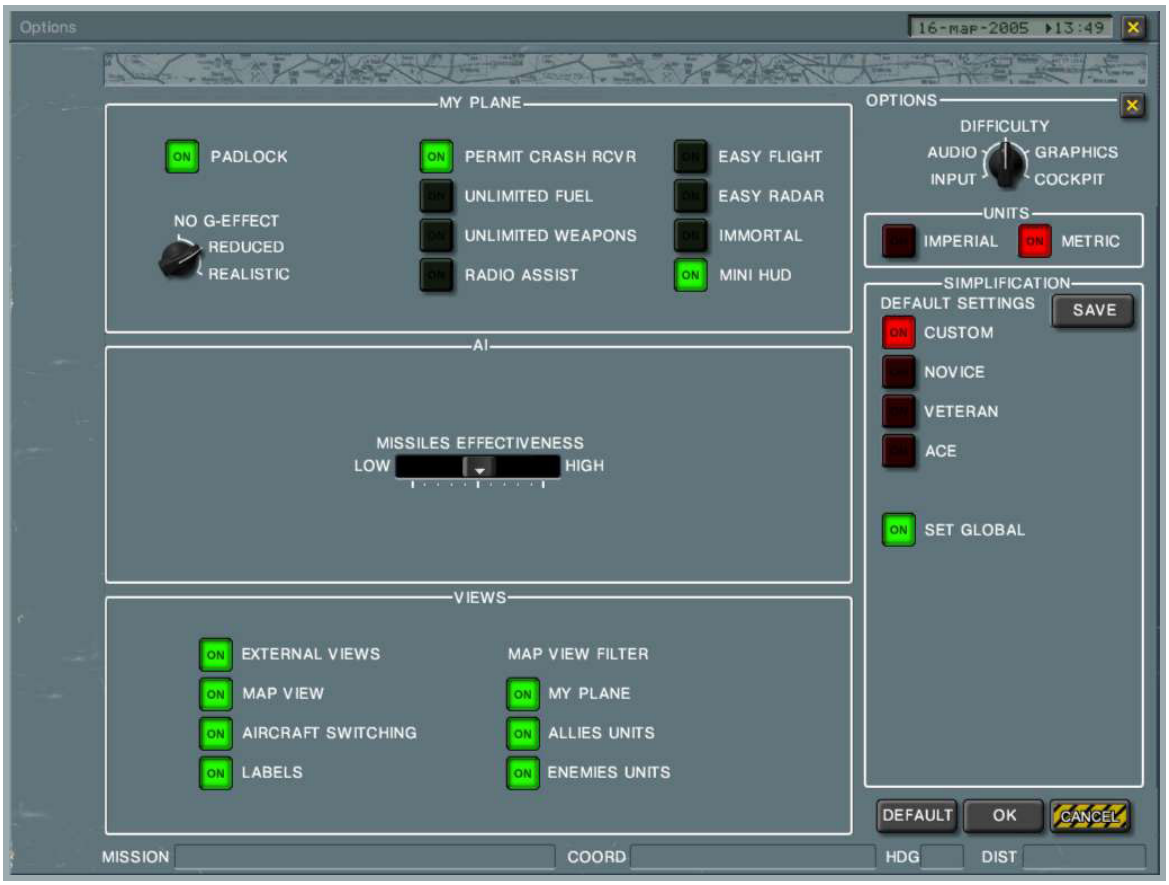
- **SOUND**: Turns all sound of and off
- **MUSIC**: Turns music on and off
- **RADIO SPEECH**: Turns radio speech on and off
- **SUBTITLES**: Turns radio message sub-titles on and off
- **NATIVE BETTY**: When flying a Russian aircraft, this allows the audio warning system to speak to you in Russian. If you are flying the German version of the MiG-29A, this will allow the warning system to speak in German.

If you are having choppy or distorted sound, turn Hardware Acceleration **OFF** in your DirectX Sound Settings. To do this, run the DirectX Diagnostics Tool (C:\WINDOWS\system32\dxdiag.exe), select the **SOUND** tab, and turn off Hardware Acceleration with the slider.

If you want more ambient sounds in the cockpit you will need to adjust your audio volume settings in the Options – Sound screen. Adjust the sliders for the various sound effects to the levels you prefer. If you like to hear the engines and gun fire from the cockpit then you should increase the **ENGINES** and **COCKPIT** sliders to higher. 100% for **COCKPIT** will give you both engines and gun sounds. Note that when your aircraft is supersonic, the sounds in the cockpit will be very quite.

DIFFICULTY

The Difficulty options allow you to tailor your experience to your game play liking. This is a powerful tool and provides the novice player several assists to make Lock On easier to master and enjoy. However, the advanced player can make Lock On a very complex, highly-realistic simulation. Using the options provided, you can play in one of these two modes or anywhere in between.



The Difficulty screen is divided into four boxes.

In the top right of the screen, ten difficulty options are provided that pertain to the player's aircraft. The more options you enable, the more assistance is provided.

- **PADLOCK**. Enables padlock option.
- **G EFFECTS**. This dial has three selections based on the level of fidelity you wish.
- **PERMIT CRASH RCVR**. Damage effects are realistic; however, if you crash, you will be returned to medium altitude with all damage repaired.
- **UNLIMITED FUEL**. Your fuel tanks will always remain full.
- **UNLIMITED WEAPONS**. Expended weapons will be immediately

replaced on your aircraft.

- **RADIO ASSIST**. The audio onboard warning system will provide you with additional warnings that would not be provided in the real aircraft. These include messages about the direction of approaching missiles and when your weapons are in range.
- **EAST FLIGHT**. Flight dynamics are relaxed and the following assistance is given:
    - Extra-powerful engines – the amount of thrust your engines generate have been doubled.
    - Automatic spin recovery – if your aircraft enters a spin, the aircraft will automatically recover from the spin if you release the control stick.
    - Easy landings – The allowable decent rate at which your aircraft is destroyed has been increased.
    - Easy Radar – This is a 360-degree, all-seeing radar that will how all friendly and enemy units and missiles. The easy radar will also give you navigation assistance.
- **EASY RADAR**. Provides a simplified radar display and functions.
- **IMMORTAL**. Your aircraft cannot be destroyed. If you fly into the ground, your aircraft will bounce away from it.
- **MINI HUD**. Enables the mini-HUD.

Below the player aircraft difficult setting is a box that contains the Missile Effectiveness slider. This slider determines the lethality of enemy missiles by adjusting their range, susceptibility to countermeasures, and maximum G and maximum angle of attack.

All other aspects of AI difficulty can be adjusted on a mission basis in the mission editor.

The bottom left box on the screen contains all the view options. These allow you to adjust how much of the world you can see outside of your cockpit and what you can see. These choices consist of seven toggles that allow the following:

- **EXTERNAL VIEWS**. Allows you to view external views of your aircraft.

- **MAP VIEW**. Pressing the F10 key will provide a map view of the scenario that shows friendly enemy units.
- **AIRCRAFT SWITCHING**. By selecting an AI controlled aircraft, you may press Alt+J to enter the cockpit of the selected aircraft.
- **LABLES**. Active friendly and enemy units will have text labels. The amount of information about the unit will vary according to range.

Map View Filters. This set of view options filter the amount of information displayed on the Map View.

- **MY PLANE.** Shows your aircraft.
- **ALLIED UNITS.** Shows friendly units.
- **ENEMY UNITS.** Shows enemy units.

The smaller box along the upper right portion of the screen allows you to display either Imperial or Metric units when using the Mission Editor. This setting does not apply to in-game action.

Default difficulty settings can be selecting along the right side of the screen. Rather than have to set each individual difficulty option, four default settings are available in this pane. By selecting a level, Lock On will automatically configure the difficulty to match your level. If you then modify and of your selections, the custom setting will automatically be set.

To the right of the default settings is the SAVE button. In order for custom difficult settings to take affect, you must press this button before pressing OK. If changes are made to the Scenes graphical section, this button must also be pressed.

When a mission is created, the mission designer's difficult and scenes setting are saved with the mission.

At the bottom of this box is the SET GLOBAL button. By selecting this button, your settings will be applied to any mission you fly. If set to off, the mission will default to those set when the mission was created.

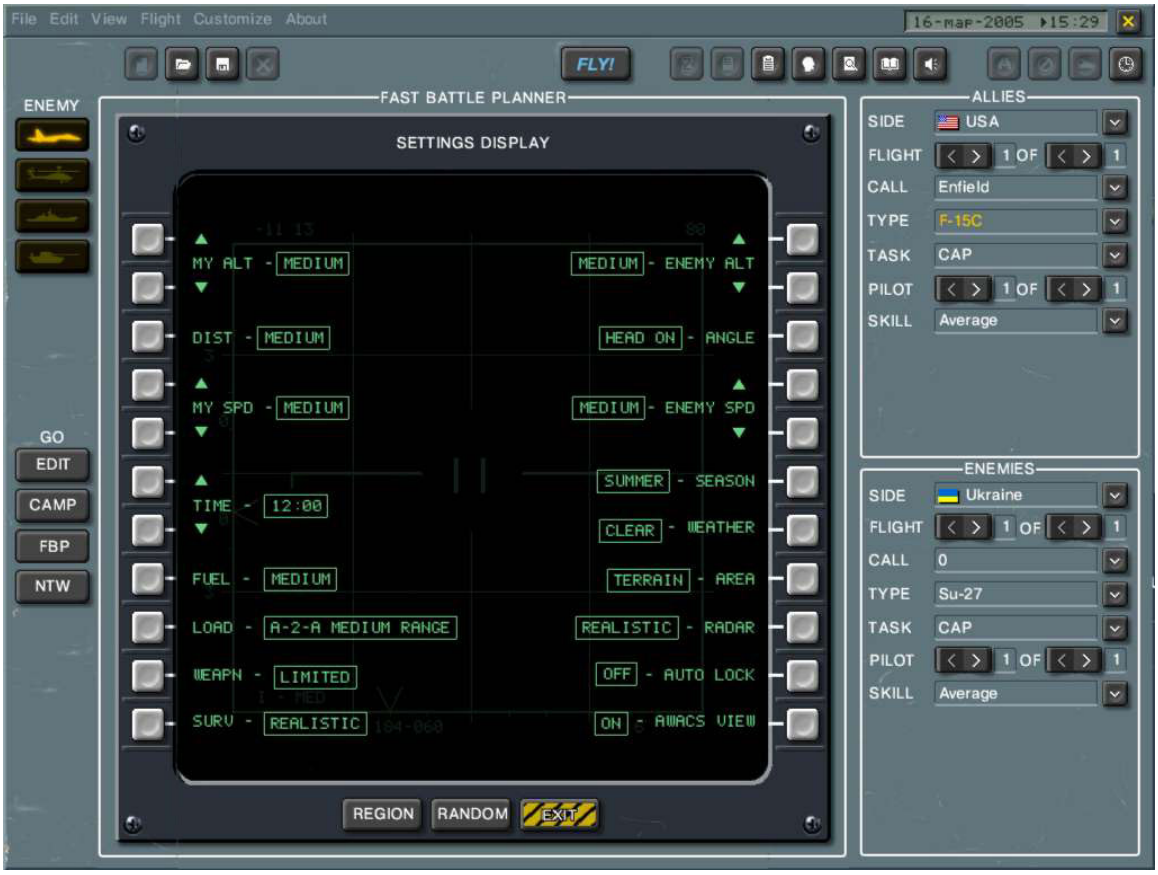
COCKPIT

The Cockpit options allow you the ability to customize how you interact with the cockpits of the various aircraft in Lock On: Modern Air Combat. These choices are designed to give you varying levels of difficulty and allow adjusting to meet the requirement for system resources. To enable a function, click on the button until it turns green.

- **HUD IN RUSSIAN**: When this option is selected, the Heads Up Display (HUD) will use Russian characters when the aircraft is of Russian manufacture.
- **MIRRORS**: Enabling this option places rear view mirrors in the cockpit.
- **REFLECTIONS**: Reflections from within your cockpit are visible inside the canopy.
- **Mirrors Resolution**: The Mirrors Resolution pull-down allows you to select one of three resolution levels for the cockpit mirrors. Please note that higher resolution mirror settings will impede game performance on slower systems.

FAST BATTLE PLANNER

The Fast Battle Planner (FBP) provides a quick and easy way to create a mission against a broad array of targets. All settings in the FBP override those set in the Options screen.



Settings Display

In the center of the FBP is the Settings Display. This allows you to set the environmental variables for the mission you are about to fly. By adjusting these variables, you can create a wide variety of mission conditions with an equally wide variety of difficulty.

- **MY ALT**: Your flight's airspeed.
- **DIST**: The average distance between your flight and the enemy.
- **MY SPD**: Your flight's airspeed.
- **TIME**: The time of day the mission will take place.
- **FUEL**: Your flight's fuel load.
- **LOAD**: Your flight's general loadout. These selections are based on your target type.
- **WEAPN**: This determines if you have limited or unlimited weapons.
- **SURV**: This determines if your aircraft takes realistic damage or if it is invulnerable.
- **ENEMY ALT**: Your target's average altitude.
- **ANGLE**: The intercept angle between your flight and the enemy.
- **ENEMY SPD**: The average air speed of the enemy.
- **SEASON**: Determines the season that the mission will take palce.
- **WEATHER**: The general weather condition
- **AREA**. Determines if the mission will take place over land or sea. This can be overwritten by the Region button.
- **RADAR**: Switches between realistic radar and Easy Radar.
- **AUTO LOCK:** Enables auto locking keys.
- **AWACS VIEW**: Allows Map view during mission.

Along the bottom of the Setting Display panel are three buttons:

- **REGION**: Pressing the region button changes the Settings Display panel to a map screen. Using the cross-hair cursor, click on map where you want the mission to take place. Click the Apply button once you have selected your start location.
- **RANDOM**: Clicking the Random button will arbitrarily set all the Settings Display selections.
- **EXIT**: Returns you to the Main Menu screen.

Enemy Types

The vertical row of buttons at the top left portion of the screen allows you to select the type of enemy your flight will encounter. ***By selecting your enemy type, you will also determine the types of aircraft you can fly and the possible weapon load out options***. As such, if you select ground forces as your enemy, the F-15C for instance will not be available to fly.

Allies and Enemy

Along the right side of the screen are two boxes; the top box allows you to determine the flight you will command and the bottom box determines the type and number of enemy units.

- **SIDE**: This specifies country.
- **FLIGHT**: Up to four aircraft can be in a flight. You always command the first aircraft.
- **CALL.** The callsign of the flight.
- **TYPE**: This selects the type of aircraft, ground vehicle or ship. Flyable aircraft will be listed in yellow, aircraft listed in white are AI-controlled only. If aircraft you wish to fly is not listed in yellow, you will not be able to fly it. Instead, the AI will pilot the aircraft.
- **TASK**: This specifies the type of task for the unit.
- **PILOT**: Select your number of wingmen who will accompany you using the forward and back toggles. Up to three wingmen can be specified.
- **SKILL**: The average skill level of the flights can be determined here. This can be set for both your flight and that of the enemy. ***To take part in the mission, you must set this to PLAYER.*** If not, the AI will fly the aircraft.

Fly

Once you have made your selection, press the Fly at the top of the screen to begin the mission.

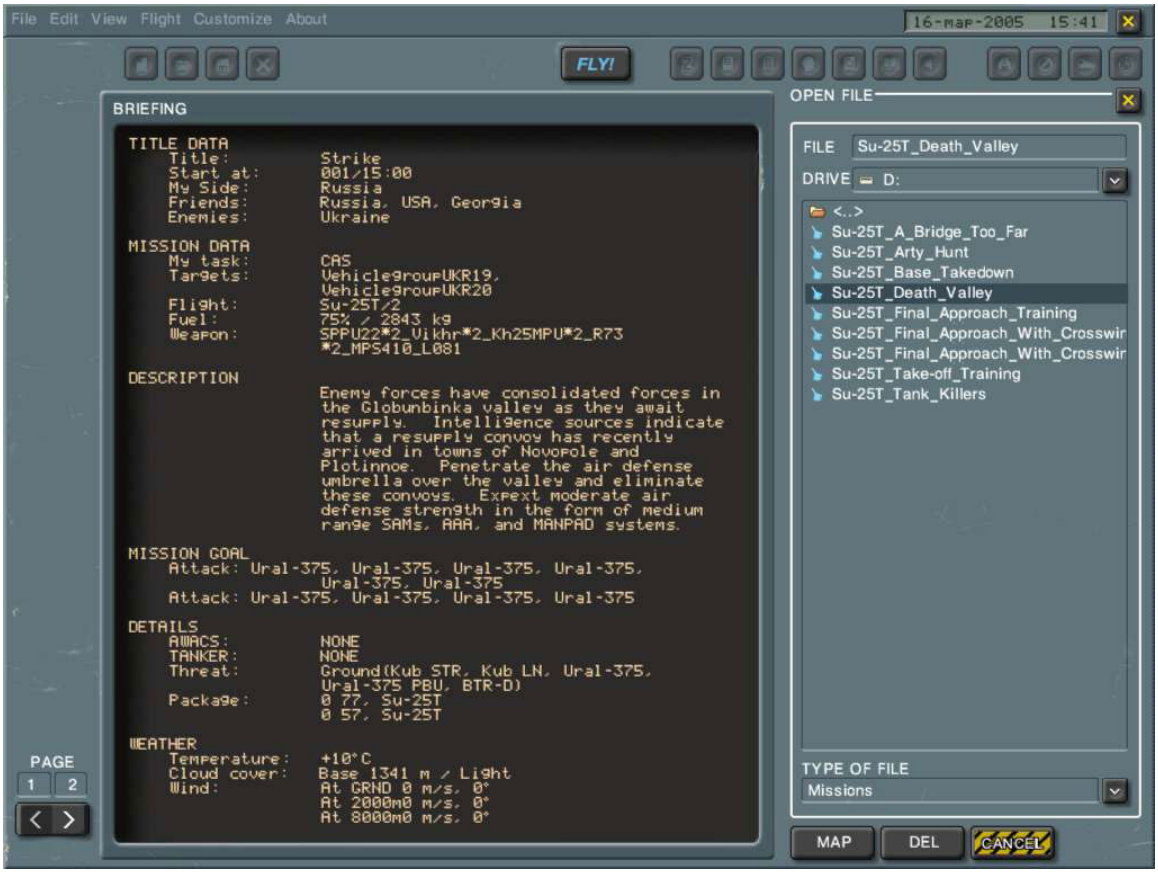
Walkthrough

These are the basic steps you need to take in order to get into a FBP mission.

1. *Press the FBP button in the Main Menu*
2. *Select the target type you wish to attack by clicking one of the Enemy buttons*
3. *Adjust the top units box to your preference and ensure that your aircraft is listed in yellow in the type field and that Skill is set to PLAYER.*
4. *Adjust the bottom unit box to create the targets you wish to attack*
5. *Choose the options you desire in the Settings Display*
6. *Press the Fly button to start the mission*

OPEN MISSION

Lock On: Modern Air Combat comes with a broad assortment of single and multiplayer missions. In addition to the missions that come with the game, you have the ability to create your own in the Mission Editor. Using the Open Mission screen, you can access all of these types of missions and more.



This screen consists of two parts, the mission Briefing box on the left and the Open File selections on the right.

Briefing

Once a mission has been selected, important information about the mission will be displayed in this area on the left of the screen. In order to cycle through

multiple pages of the briefing, you can use the page cycle buttons to the lower left of the briefing.

Open File

Along the right side of the screen is a Windows-standard file access system. Using this basic Windows filing convention, you can brows drives and folders for the desired mission.

- **File**: Displays the name of the selected file.
- **Drive**: Displays the currently selected drive. By clicking on the down-arrow, you can change the selected drive.
- **File Tree Display Window**: This large window allows you to brows your Windows directory structure. Clicking on a folder will let you examine the contents of that folder and clicking on the <..> will bring you up one level in the directory structure. This dialogue uses the standard windows interface style for browsing menus.
- **Type**: In addition to standard Mission files (with the .mis extension), Lock On: Modern Air Combat recognizes other types of game files. These include:
    - **Missions**: These are your standard missions that include the single missions included with Lock On and the missions you have built using the Mission Editor and Fast Battle Planner.
    - **Campaign files**: Lists all campaign files using the CMP extension.
    - **Saved state files**: During the course of a mission, you can save the save the state of the mission and continue it at a later time.
    - **Track files**: In addition to normally playing a mission by pressing the Fly button, you can also select Record Track from the Flight pull-down menu. After flying a mission normally, you will then be given the option to save a mission replay to the location of your choice.
    - **Video files**: After recording a Track files, you may covert it into an AVI video. Select this files type to see all saved videos.

IMPORTANT: TO VIEW A FILE, YOU MUST FIRST SELECT THE TYPE OF FILE YOU ARE LOOKING FOR.

Below the open file dialog are three buttons which perform actions on the currently selected file in the open file dialog:

- **MAP**: Opens the currently selected mission in the Mission Editor
- **DEL**: Deletes the currently selected mission.
- **CANCEL**: Returns you to your previous screen.

FLY!

Upon selection of a valid mission file, the Fly button at the top of the screen will be illuminated in blue. Click the Fly button to begin the mission.

MULTIPLAYER

Lock On: Modern Air Combat multiplayer allows both Internet and Local Area Network (LAN) play. Multiplayer has been designed to optimize smooth play with the maximum number players possible. Additionally, the system has been created such that you can create your own cooperative and head-to-head missions via the Mission Editor. Missions can be as simple or as complex as you wish and the interface is setup such that you can create countless multiplayer scenarios of endless variation. To access Multiplayer, select the NTW (Network) button from the Main Menu or the NTW button from the Go menu located within the Editor.

The step is to decide if you are hosting the game or if you are a client that will be joining an existing game.

Host Game Setup

Along the right side of the Network screen is a two-position dial and two vertically stacked boxes.

The dial has two positions:

- **PLAYER**. Allows you to enter the name that other players will see you as. Once entering your name you must press the ENTER key.
- **CONNECT**. Allows you to set your connections settings.

After entering your Player name, select Connect.

The top box allows you to determine if you will be the SERVER (host) or the CLIENT. As host, press the SERVER button.

As the host, you have for field in the top box that you may wish to modify:

- **ADDR** (address). As the host, you should generally leave this at the default. This field is

generally used for clients.

- **PORT**. The Port that the game session will be run through. If other than default, you should inform clients.
- **SPEED**. Select the option that best defines your connection.
- **PASS**. Enter a password to protect your game session from unwanted visitors.

In the bottom of this box are two buttons:

- **POOL**. Once you have created the game, you may view clients that have joined your game.
- **CHAT**. Once the game has been joined by clients, this function allows you to chat with each other.

The lower box has three options:

- **TITLE**. Enter the name of the game session here. This the game name that clients will see when joining.
- **MODE**. Select between cooperative play an furball mode.
- **MAX PLAYERS**. Select the maximum number of players that may join your game.

Having made these selections, either press the START button to select the mission to play or press the EXIT button to return to the Main Menu.

Host Mission Selection

Upon pressing the START button, you will be taken to the Open mission screen. Using the browser interface, select a mission of choice. Note that default multiplayer missions are located in the Multiplayer directory.

Press the MAP button to enter the Flight Assignment screen.

Client Joining

Upon entering Network play, there is a two-position dial at the top right of the screen:

- **PLAYER**. Allows you to enter the name that other players will see you as. Once entering your name you must press the ENTER key.
- **CONNECT**. Allows you to set your connections settings.

After entering your Player name, select Connect.

The top box allows you to determine if you will be the SERVER (host) or the CLIENT. As a Client, press the CLIENT button.

As a client there are only three fields in the upper box that you need to concern yourself with:

- **ADDR** (address). Enter the IP number of the host here. Be it over a LAN or the Internet, this number provides the link to the Host.
- **PORT**. The Port that the game session will be run through. If other than default, you should inform clients.
- **SPEED**. Select the option that best defines your connection.

Once the Host is ready, press the START button and you will be taken to the Flight Assignment screen.

Flight Assignment

When first entering the Flight Assignment screen, all players will be listed in the SPECTATORS list. To the left of the SPECTATORS list, there are two columns, one for RED COALITION and one for BLUE COALTIONS. These two coalitions form the sides of the mission.

To select a coalition, press the JOIN button over one of the coalitions. Upon doing so, your name will be listed in that coalition. To remove yourself from a

coalition, press the JOIN button of either the other coalition or spectators.

The next step is to choose your aircraft; press the SELECT button on the upper left side of the screen. In the field below the mission map will be listed flyable aircraft assigned to the mission and who they have been assigned to. If an aircraft has been assigned, a name will appear next to in under the Player column. To select an unassigned aircraft, click on it and your name will appear next to under the Player column.

To view the weapons payload of your chosen aircraft, click on the PAYLOAD button beneath the player information. You will be taken to the payload editor and you may alter the payload.

You may now either press the FLY! button to enter the mission or you my press the SELECT button to change your aircraft or side. One all players have pressed

the FLY! button, the mission will begin.

Your amassed points will not be added to the score board until you land or are destroyed.

TRAINING

Regardless of whether you are a novice or advanced pilot, the training missions provide something for all skill levels. Training begins with basic instruction and progress to focus on specific aircraft and features and concludes with advanced air combat training.

Training is divided into six sections:

- Undergraduate Pilot Training (UPT)
- A-10A lead-in
- F-15C lead-in

- Su-27 lead-in
- Su-25 lead-in
- Su-25T lead in
- TOP GUN

To select a training section, press one of the seven buttons along the left of the screen. Having done so, a list of individual training missions are listed in the upper window. Click on a mission will provide a description of the mission in the window below it.

To enter the selected mission, press the FLY! button. To return to the Main Menu, press the EXIT button.

Lock On training missions use the Track File system to play back a previously recorded mission with instructor narrative. While most of the missions are text-only instructions, the A-10A missions also include voice over instruction.

At any point during the mission, you may press Control+Q to take control of the aircraft.

WARNING: Adjusting your views during the mission may disrupt the training mission and will cause incorrect playback. Please do not press any keys during the training mission unless you want to end the mission and take control.

CAMPAIGN

Starting a Campaign

Upon clicking on the Campaign button on the Main Menu, you will be presented with the Campaign Control Center (CCC). From the CCC, you can choose to start a new campaign or continue an exiting one.

The CCC is divided into two parts.

On the right is a listing campaigns that you can select from to play. These will include campaigns that came with Lock On, saved campaigns, and new campaigns that you have created. To select a campaign, simply click on it. After

selecting a campaign, the initial briefing for the campaign will be presented in the lower box. This description will often give you a general background of the conflict and the objectives of your particular mission.

To the left of the listing and briefing is the mission map. The map will display friendly units and enemy units that have not been hidden. Each mission within the campaign will have a mission map.

Press the OK button after selecting a campaign to play.

Playing a Campaign

With a campaign loaded, the left side of the screen changes to reflect some new options.

Title: The name of the selected campaign

List of Stages

A campaign is composed of linked stages, and when you complete one you are given the option to fly the next. This list shows you your current stage and all previously completed stages. Once you complete a stage you may not re-fly it. A check mark will indicate completed stages.

Note that damage to static objects is carried over from one stage to the next. So the bridge you destroy in an early phase will remain destroyed in a later stage.

Stage

The area is composed of three areas:

- **Stage**: This consists of forward and back cycle buttons and allows you to cycle through current and completed stages.
- **Title**: This is the name of the current stage and will often be descriptive of your mission.
- **Description**: This is a narrative description of your mission that will often inform you of the war situation and of your mission objective. Your mission objective will provide you important information regarding what you must accomplish in order to win the stage.

Reset

At the bottom of the screen is the Reset button. If you wish to restart a campaign from stage one, press this button and all progress in the selected campaign will be removed.

Additional Data

In addition to the Description area, you can also find additional briefing information by pressing the Briefing button at the top of the screen. You can also use your map functions to better plan flight routes, examine threat areas,

and view target points. We highly suggest examining your targeting points for ground attack missions.

After the Mission

After pressing the ESC key to end the mission, you will be shown the debrief of the mission. Kill statistics and a chronological list of events will be shown. After viewing this, press the Close button to continue the campaign. At this time you can press the save button and save your campaign progress. You can also save your campaign under a different name if you want save it separately.

LOG BOOK

The Log Book allows you to create and track the progress of your pilot persona. Medals and promotions earned through successful missions will be recorded here. Mission records are kept when you land, achieve a mission goal, or are killed in combat.

Create or Delete a Pilot

Along the right side of the screen is the Pilot box. From here you can create and delete pilots from your pilot roster. When creating a mission in the Editor or selecting a single mission you can choose your desired pilot from this roster.

To have your selected pilot accumulate statistics, earn medals and be promoted,

you must check the DEFAULT box next to the pilot picture.

Additional functions of the pilot box include:

- **Name**: The name of your pilot. By clicking the down-arrow, you can view your entire roster and select any pilot.
- **Country**: The country your pilot is affiliated with.

To add pilots to the roster click the ADD button. After clicking the ADD button, enter the name of your pilot in the appropriate field and select their country affiliation.

To remove a pilot from the roster, select the pilot from the Name list and then click the REM (remove) button.

If you wish to edit a pilot's name or country, select the desired pilot and click the EDIT button.

The small envelope (POST) icon alerts you if you have incoming e-mail. These e-mails alert you if the pilot has been promoted or earned an award. Click on the Post icon to read the message.

Rank and Awards

As your pilots complete successful missions and gain experience, they will be promoted and receive awards appropriate to their country. Pilot status is also listed in this box, Pilots can be listed as either Alive or Dead.

The selected pilot's rank and awards are displayed in the respective Rank and Awards boxes.

General Statistics

Over the course of a career, a pilot will fly a variety of missions and compile various statistics. These statistics can be sorted and viewed in the General Statistics section of the Log Book.

There are two buttons on this area allow you to sort between your General Statistics and a listing of the missions that the pilot has flown, GENERAL and LOG FILTERS.

- **General**: Clicking on this button displays the Mission Types pull-down. The selections of this pull-down allow you sort the type if data you wish to

view. Below the pull-down field are list of General cumulative statistics.

- **MISSIONS**: The number of missions that have been flown.
- **FLIGHT HOURS**: Total flight hours.
- **DAYTIME**: Total daytime flight hours.
- **NIGHT TINME**: Total nighttime flight hours.
- **LANDINGS**: Number of successful runway landings.
- **CARRIER LDG**: Number of successful aircraft carrier landings.
- **AIR REFUELS**: Number of successful aerial refuelings
- **CRASHES**: Number of crash landings
- **EJECTIONS**: Number of ejections.

- **Log Filters**. The Log Filter button allows you to filter the type of missions listed in the Mission Log window. This feature enables you to view only the specific mission types that currently interest you.
  - **DATE**. Date that the mission took place.
  - **MSSN**. The type of mission assignment
  - **TASK**. Task of the assignment
  - **TAKEOFF** Take off time
  - **AIRFLD** Airfield taken off from
  - **RESULT** Debrief result

By setting the log filters, you may see missions that only apply to those filers. Press ALL to view all missions and press APPLY to view missions consistent with the set filters.

Target Statistics

To view the number of destroyed and damaged objects and vehicles attributed to a pilot, the left portion of the Log Book provides a powerful tool. Each vehicle and object type is represented by an icon along with a QTY (quantity) field next it. Using the TARGET TYPE filter pull downs, you may filter particular vehicle and objects with a class.

By using the ALL TARG TYPES and ALL FILTERS, you may view statistics based on all statistics or based on the filters you have set.

To filter between damaged, destroyed and both, three buttons are provided- DESTROYED, DAMAGED, and DEST/DAMAGED

ENCYCLOPEDIA

Lock On: Modern Air Combat includes an extensive encyclopedia containing data and images for all weapon systems, naval units, ground units and aircraft included in the game. The encyclopedia is an invaluable resource that serves two main purposes. First, the encyclopedia allows you to educate yourself on the capabilities of various weapons systems, ground units and aircraft. Secondly, the images accompanying each entry allow you to become familiar with the appearance of objects in the game world, making for much quicker visual identification in critical situations.

- **Categories**: The categories box contains three choices that allow you to sort the weapons systems by their national affiliation: NATO, Russia, or

All.

- **Type**: The Type icons represent the different categories of weapon systems represented in Lock On: Modern Air Combat. Select an icon to view information pertaining only to that type of system.
- **Name**: The name drop-down menu will list all the systems of the Type selected.
- **Description**: This text field displays the vital statistics of the selected weapon system.
- **Preview**: The preview window shows a 3D view of the selected weapon. You can pan and zoom the image using the controls located below the window.
- **Next/Prev**: A Next / Previous switch is located to the right of the Preview window and allows you to cycle through the specified systems

MISSION EDITOR

The mission editor is the heart and soul of Lock On: Modern Air Combat. You can build single missions, campaigns, and multi-player games here. You also have the option to edit mission and track files from the Editor. The different menus will be discussed first and then the general guidelines on how to build missions and campaigns will be discussed later in this section.

Mission Set Up

To enter the Mission Editor (ME), select EDIT from the Main Menu.

Before placing units and all the details that are involved in creating a mission, you first need to determine the time the mission will take place and the composition of county coalitions. The initial ME screen allows you to do this.

At the top right of the screen are the TIME fields. Enter the day, hour and minute you wish the mission to start.

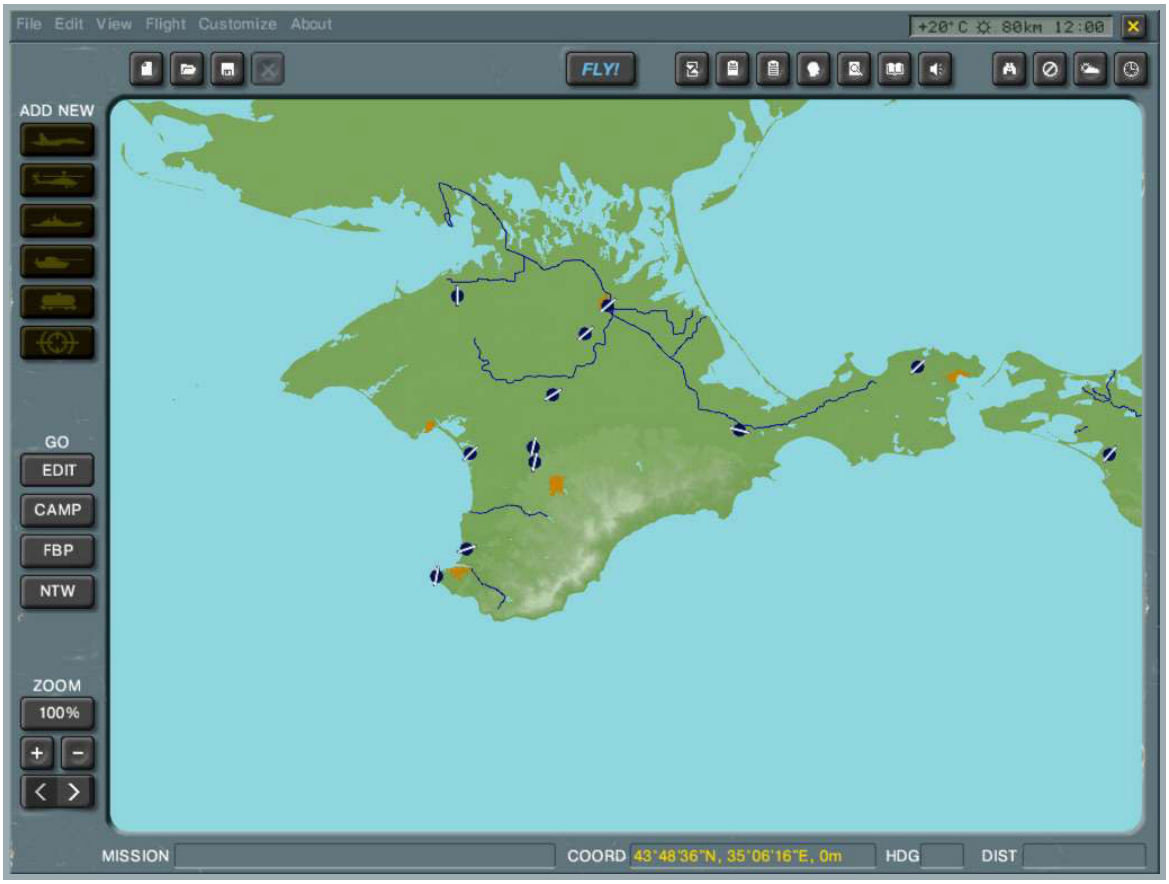
Below the TIME entry is the country and coalitions list. The larger LIST field lists all countries that have not been assigned to a coalition. The two smaller fields list the countries that have been assigned to the RED and BLUE coalitions. To move a country from the LIST to a coalition side, select the country with your mouse and click the right toggle arrow of the desired coalition. To move a country from one coalition to the other, you must first move it the LIST and then the other coalition.

After you have created the desired coalitions, you may press the SAVE button. By saving, the same coalitions will be used the next time you open the ME.

To enter the Mission Planner, press the OK

button.

To return to the Main Menu, press either the CANCEL button or X button in the top right corner of the screen.



Mission Planner Screen

The ME mission planner is a powerful tool that, while a bit intimidating at first, provides a great deal of flexibility. The screen itself is divided into functional sub-sections, some of which mirror functionality.

Menu Bar

At the very top left of the screen is a row of six pull down menus. This is the Menu Bar. Many of the Menu Bar functions have hot keys and several of them

have duplicate functionality in the Tool Bar. The pull down menus includes:

File

- **New**. Create a new mission.
- **Open**. Open an existing mission. This takes you to the OPEN screen.
- **Merge**. Merge the Player assigned aircraft on one mission into another mission.
- **Save**. Save the active mission to its default path.
- **Save As**. Save active mission to player-defined path.
- **Exit**. Exit the ME and return to the Main Menu.

Edit

- **Delete.** Remove the selected object from the map.
- **Classify.** Assign a protective password to the mission.
- **Declassify.** Remove password protection of a mission. To do so, you first must have the password.

View

- **Hide Object**. Hide the active object from view on the map. When playing the mission, such objects will not be displayed in the F10 Map view.
- **Actual Size View**. Zooms map out to 100%.
- **Zoom In**. Zoom in on current center point of map.
- **Zoom Out**. Zooms out from current center point of map.

Flight

- **Briefing**. View the mission briefing for the active mission.
- **Debriefing**. View the debriefing for the active mission.
- Start Mission. Begins the mission; same as pressing the FLY! button.
- **Record Track**. Begins the mission but records the events. At the conclusion of the mission, save the Track (TRK) file.

- **Play Track**. If a Track file is active, select this option of view the Track.
- **Video Edit**. If a Track file is active, this option plays the Track file back but allows you to alter views. At the end of the edit, you may save the altered track as a separate Track file.
- **Network Play**. Brings you to the Network screen interface.
- **Chat**. If joined in a multiplayer game, this activates the chat screen interface.
- **Record AVI**. With a Track file active, select this function to convert the Track file into an AVI file. Upon selection, a new menu appears with the following options:
    - **Start / End**. At the top of the menu are field to enter the time you wish the AVI to start and end recording. The field format is Day, Hour, Minute, Second
    - **Video Method**. Select the desired video compression method
    - **Quality**. Set the video play back quality of the AVI. Lower quality will equate to faster rendering times.
    - **Audio Method**. Select the desired audio compression method. This will mostly determine the quality of the audio and the size of the end AVI file.
    - Quality. Select the quality of the audio.
    - **Name**. Enter the name of the AVI to be recorded.
    - **Rate**. Use the slider to enter the frame per second that the AVI will be played back at. Higher FPS gives smoother play back at the cost of longer rendering times and larger file sizes.
    - **Resolution**. The resolution that the AVI will play back.
    - **Aspect**. Set the aspect ratio for the AVI playback.
- **Loop** Track. With a Track file selected, this allows the Track file to be played in looping format.

Customize

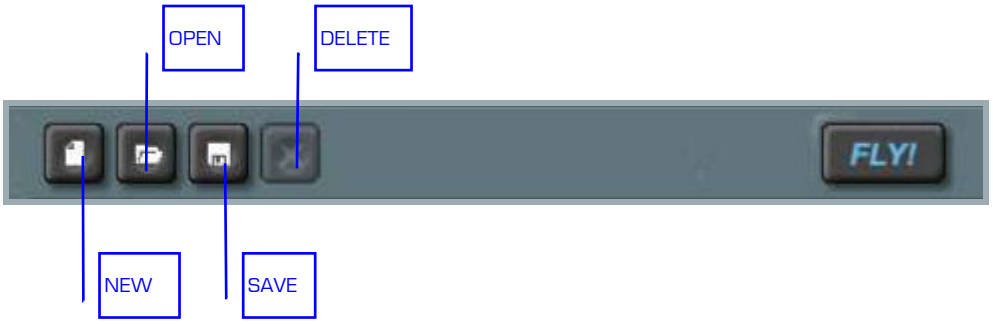
- **Failures**. Displays the failure page for the selected aircraft. This is duplicated on the Tool Bar and described in greater detail there.
- **Weather**. Create custom weather conditions. This is duplicated on the Tool Bar and described in greater detail there.
- **Encyclopedia**. View the encyclopedia. See ENCYCLOPEDIA for greater detail.
- **Options**. Enter the option screen. See OPTIONS screen for greater detail.

About

- **About LOCK-ON**. Development and publishing credits.

Tool Bar

The Tool Bar, underneath the Menu Bar, is composed of 15 iconic buttons. You can place your mouse over a button to see a tool tip of the icon's function.

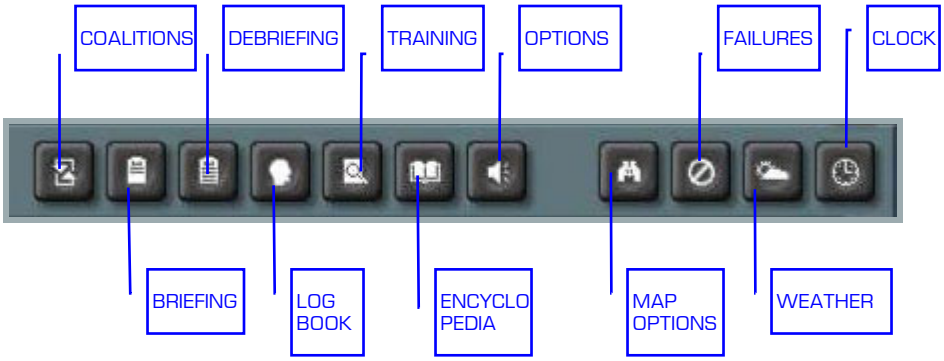


NEW. Clears the current mission and starts a new one.

OPEN. Activates the OPEN mission menu.

SAVE. Saves the active mission to its default path.

FLY**!** Begin the active mission.



COALITIONS. Returns you to the Mission Set Up screen and allows you to change the mission start time and coalition compositions.

BRIEFING. View and edit the briefing for the active mission. Most the data will be automatically entered as you create the mission. The exception to this is the EDIT DESCRIPTION field. Here you will write the briefing that players will read before flying the mission. You my also edit the START field to alter the time that the mission will begin.

DEBRIEFING. The debriefing screen is viewed at the conclusion of a mission. The debriefing displays events that transpired during the mission, unit kills, an overview the scenario and filter options. No information is entered by the mission designer on this screen.

LOG BOOK. Links you to the Pilot Log Book.

TRAINING. Link you to the Training screen.

ENCYCLOPEDIA. Link you to the Encyclopedia.

OPTIONS. Link you to the Option screen.

MAP OPTIONS. The Lock On world is large and composed of may types of structures and vehicles. To use the ME properly, you must be familiar with the man map options. These options allow a large degree of filtering and allow you to view the world as from a satellite or as a topographic map. With Map Options selected, the map functions bar is located along the right side of the screen.

At the top of the bar is a two-position dial name MAP MODE.

- **SATELLITE**. View the world from a satellite camera perspective
- **GEOPHYSICS**. View the world from as a topographic map with elevation and geographical information system (GIS) data such as structures, roads, power lines, etc.

When the MAP MODE dial is set to SATELLITE, we have a list of filters displayed in the box below. When the filter button is set to ON, the category of object will be displayed on the map.

These include:

- **AIRCRAFT**. All aircraft including helicopters
- **SAM**. Surface-to-Air Missile (SAM) units
- **SHIPS**. Navel vessels.
- **RADARS**. Early Warning Radar (EWR) systems
- **GROUND FORCES**. Active ground vehicles that have been placed in the mission.
- **STATIC OBJECTS**. Static ground objects that have been placed in the mission.
- **AIRFIELDS**. All airfields on the map.
- **DETECTION AREAS**. The area of detection circle around radar systems.
- **THREAT AREAS**. The weapon engagement area around air defense systems.

Above the list of DISPLAYED filters is the SIDE drop down list. This drop down allows you to filter the list

according to:

- ALL
- RED COALITION
- BLUE COALITION
- MY AIRCRAFT

At the bottom of the list is the LIST OF HIDDEN UNITS button. If units have been hidden on the map, pressing this button displays new window that lists of all hidden units. In the large list widow, the name of the object is listed as well as its side and condition (hidden or not). Above the list, is a tool bar that allows you to sort hidden objects.

- **CLASS**. This drop down allows you to filter a specific type of object, or it

can be set to All.

- **Page**. The page cycle button and fields allow you to view multiple pages of hidden objects.
- **SHOW**. If you wish to unhide an object, select the from the list and press the SHOW button.
- **HIDE**. If you wish to hide an object, selected the object from the list and press the HIDE button.

To remove the Hide list, press the LIST OF HIDDEN UNITS button a second time.

To the right of the filter list are three buttons, that when pressed, act on the entire filter list.

- **ALL**. Sets all filters to ON.
- **INVERT**. Sets all ON filters to OFF and all OFF filters to ON.
- **CLEAR**. Sets all filters to OFF.

When the MAP MODE dial is set to GEOPHYSICS, both the SETTINGS and FILTER buttons below the dial are selectable. If select FILTER, we have the same filter options as we did with the MAP MODE set to SATELLITE. However, when we press the SETTINGS button, we have four new filters that allow us to adjust the map data. These include: RIVERS, ROADS, RAILWAYS and TOWNS.

The ALTITUDE MAP button allows you toggle elevation lines over the terrain.

FAILURES. Your aircraft might be damaged in combat as the result of a missile or shell hit. To be ready for such a situation and to be able to fly the aircraft when onboard systems have failed, the program allows you to imitate failures. Select the Failures button from the Standard Toolbar and specify in the window the failures which the program should imitate. Specify the exact failure time for the particular failure you wish to practice or a time between failure (TBF) if you wish to simulate failures without exact failure times but which will occur for sure within that specified time. For example, if you specify 00:30 in the Within field for the radar this means that your radar will fail for sure within the next 30 minutes. If you were to specify 11:30 in the After field you can be sure that exactly 11 mins 30 sec after takeoff the failure will occur. If you specify an After failure time it will have priority over the Within setting. You also have the option to make the failures random by selecting the random button (Rand) at the

bottom of the System Failures window. Additionally, you can adjust the probability of the failures by adjusting the Probability slider. The Probability ranges between 0% (no chance) to 100% (certain failure).

ACS - A failure of the Automatic Control System (ACS) will cause the aircraft's flight control system to switch to "proportional control mode" in which a control signal from the stick delivers proportional movement of elevator. The AOA (Angle of Attack) and G limiters are disabled. However, in this situation the aircraft still benefits from a particular degree of stability augmentation unlike in direct link mode when doing a Cobra maneuver. If the ACS fails use very smooth stick movement to avoid large angles of attack and G-loads and don't rely on the Autopilot as it will also be inoperative.

Autopilot - A failure of the autopilot leads to the aircraft's inability to automatically follow the pre-set route or keep a given altitude in the Altitude Stabilization mode (Horizontal lock).

Radar - If the radar fails, this denies your aircraft the ability to actively search using the Zhuk-27/Miech-33 radar though you still have the EOS at your disposal.

EOS - A failure of the Electro-Optical System denies your aircraft the ability to passively search for enemies.

MLWS - If the Missile Launch Warning System fails, you will not be able to receive warnings about missiles launched in your direction.

RWS – If the Radar Warning System fails, you will not be able receive warnings when your aircraft is painted with radar.

Hydro - A failure of the hydraulic system degrades control of your aircraft and can make it uncontrollable. When hydraulics are out, don't fly above 30 degrees bank angle and +/- 20 pitch

L-Engine - If one engine fails, you can still continue flight. If both engines fail at a stone's throw away from a friendly airfield, you might try to land your aircraft,

otherwise, eject!

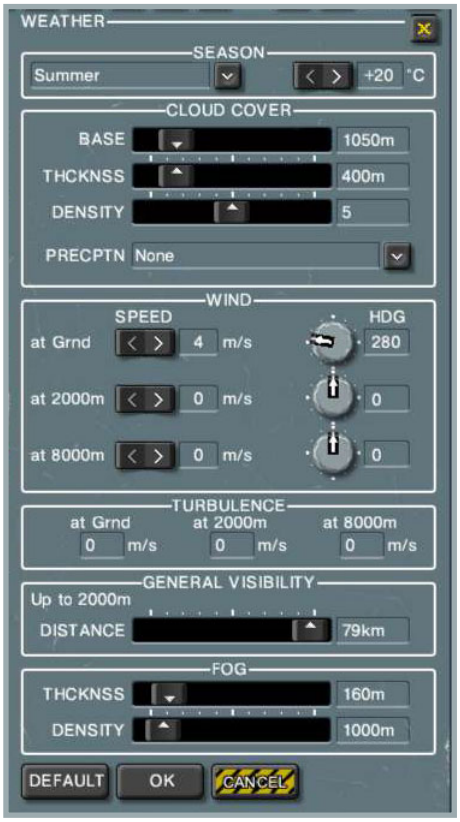
R-Engine - If one engine fails, you can still continue flight. If both engines fail at a stone's throw away from a friendly airfield, you might try to land your aircraft, otherwise, eject!

Helmet - When the Helmet Mounted Target Designator (HMTD) fails you cannot use Helmet mode.

HUD - If the Head Up Display fails, the HUD screen goes blank. You still have the option of flying on instruments.

MFD - When the Multi Function Display fails, the screen goes blank.

ECM - If the ECM system is damaged, you cannot employ active jamming using the onboard ECM system equipment and/or any external ECM system.



WEATHER**.** The weather screen allows you to create detailed weather and seasonal conditions. Located on the right of the screen, weather tool is divided into six sections, boxes.

The top section includes the season selection drop down and the air temperature.

Below is the wind speed and direction control. Three different altitude bands are provided and you may manually enter the speed and direction the wind comes from by clicking on the control toggles and dials.

Below the wind speed and direction settings are the air turbulence settings. Atmospheric turbulence is the movement of downward and upward traveling airstreams causing bumps. The main reasons for turbulence have to do with the friction of airstreams on the ground surface, non-uniform heating of ground, the collision of atmospheric fronts having different temperatures, speeds and directions of movement, and of course rising terrain. Turbulence may lead to reducing flight speed, inaccurate readings of flight

instruments, low-amplitude jolting and shaking of the aircraft at high airspeeds. As this takes place, the G-load may change chaotically with dispersion of values that may sometimes be as much as ±2 Gs during strong bumps. You can specify turbulence by entering the wind speed (m/s) for three characteristic areas - in the mountains and at altitudes from ground level up to 2000 and 8000 meters. Note that the strongest turbulence in mountains occurs on the lee slopes.

Second from the bottom, the visibility distance slider allows you to determine the distance at which the terrain is rendered.

The bottom section provides sliders to set cloud THCKNSS (thickness) and DENSITY.

- **THCKNSS**. The thickness of the cloud band from bottom to top.
- **DENSITY**. How densely the clouds are dispersed. Settings of 9 and 10 equate to full cloud cover.

CLOCK

Pressing the CLOCK button toggles the clock display in the upper right portion of the screen between mission time weather conditions and the day, time of your computer clock.

ADD NEW

Along the left side of the ME, are six icons. Each icon represents a category of object that can be placed in the world or a means to create mission goals.

- Aircraft
- Helicopters
- Ships
- Ground Vehicles
- Static Objects
- Mission Goals

After selecting an icon, the icon will be highlighted to indicate it is the active placement type.

Please review the later section on Unit Placement for greater detail.

GO Buttons

As with the Main Menu buttons, the EDIT, CAMP, FBP and NTW buttons allow you immediately jump to these portions of the game.

Zoom Controls

In the bottom left corner of the ME are the manual zoom controls. The large 100% button zooms the map out to its highest level, allowing you to view much of the Black Sea. The + amd – buttons are modal, meaning that, if they are depressed, the mouse cursor will be a + or – spy glass. Left mouse button clicking on the location under the spyglass with either zoom in or zoom out depending on the mode. To disable the mode, click on the appropriate + or – button again. The forward and back button toggle allows you to revert to previous zoom selections.

Status Bar

Along the bottom of the program window runs the Status Bar, which shows the name of the currently loaded mission, the current geographical coordinates of the mouse pointer along with some limited data regarding the currently selected unit; heading and distance.

MISSION. The title of the active mission.

COORD. The Lat Long coordinates of the cursor's position.

By holding down the right mouse button and dragging the mouse, you can create a line that measures the heading of the line and its distance. This can be a useful tool when measuring distances. The **HDG** and **DIST** values provide this data.

Exit

At the top right corner of the ME is a Windows standard 'X" exit button. Click this button to return to the Main Menu.

Navigating the Mission Editor Map

When working in the Mission Editor, you will be required to intensively use the maps for identifying targets, planning routes and placing objects. While using the map, you can:

- scroll the map in any direction
- zoom the map on the screen in or out
- grid coordinate.
- change between Satellite and Geophysical modes
- filter map data; roads, railways, units, etc.

Panning

If you are interested in a particular area, which is beyond what's on the screen, you can shift the map in the desired direction. You can do this by simply holding down your left mouse button which will change to the Pan state (hand icon) and

you can then move the map in the desired direction.

Zooming

Zooming can be done by clicking on the Zoom In or Zoom Out buttons on the Zoom Controls and then left clicking on the screen, or by using your wheel mouse if you have one available. To enlarge a given area to the size of the map window, first, make sure the zoom option is activated, and then left click and drag a box on the map. Release the mouse button to complete zooming. Note that Zoom In mode remains active until disabled, so you can apply zooming in repeatedly. To disable, “unpress” the Zoom In button by left clicking.

Adding an Aircraft and Helicopters

To place an air unit on the map, select either the aircraft or helicopter icons from the ADD NEW list and then left button click anywhere on the map. You will now have placed an icon at the mouse's location. By performing a left button click and hold on the unit, you may drag the unit elsewhere on the map

Along the right side of the screen, the air unit tool bar is displayed. This is your primary interface to determine the properties, targeting, and routing of air units. At the top of the tool are four modal buttons that determine what information is provides below them on the tool. The top of the tool bar remains constant between modes, but the bottom section will vary between ROUTE, TARGETING, PAYLOAD and SUMMARY modes.

Functions of the top portion of the tool bar include:

GROUP. A group is one or more flights that are assigned the same set of waypoints. Each flight of the group can be assigned a different Type and Task with separate targets. The Group pull down menu allows you to view all Groups active in the mission. Select a Group from the drop down list to make it your active group.

SIDE. During the Mission Setup process, you have assigned at least one country to the RED side and one to the BLUE side. The countries that you have placed on a side are listed on this drop down menu. By selecting a country, you assign the active Group to the selected side.

FLIGHT. A flight consists of one to four aircraft of the same Type. Members of a flight will all have the same Task and use the same set of waypoints. However, individual flight members can be separately targeted. The two sets of toggle buttons allow you to increase or decrease the number of Flights assigned to the Group.

NAME. Each flight may be assigned a call sign from the pull down list. Call signs are used to distinguish flights during radio messages.

TASK. Tasks defines the type of mission that the Flight will carry out. A Task will determine the Types of aircraft available to you, the payloads available to the Flight, and how AI will perform to carry out the mission. From the pull down menu, the follow Tasks are available to the appropriate aircraft. Only Tasks that the selected aircraft Type are displayed. If no Type is selected, all Tasks are displayed.

- **Observation**

  By default, each new aircraft added to a mission is devoid of any specific task. Correspondingly, it will not have any weapons loaded except perhaps the cannon. Such a plane does not take part in any active actions against enemy aircraft or ground installations and just follows its route. Under the threat of an enemy attack the aircraft will try to evade it.

- **Intercept**

  This is a defensive tactic whereby the aircraft must carry out an active search of incoming enemy aircraft and/or receive targeting data from ground based or airborne radar. This type of combat task is reserved for

large scale defense and active patrolling and you should not use it while defending a small area or a local installation. The interceptor while chasing the enemy may deviate far from his planned route and the area he is supposed to defend will be left undefended.

- **Fighter Sweep**

  The fighter sweep mission is a combat task that involves penetrating enemy air space to attack enemy fighters or other types of aircraft. The main objective of a fighter sweep is winning air superiority and to ensure unimpeded use of the air space by friendly aircraft. Since the aircraft taking part in a fighter sweep may find themselves at a considerable distance from their airfields and take part in prolonged dogfights, their fuel load will be a crucial factor. Certain aircraft can carry additional external fuel tanks.

- **Combat Air Patrol (CAP)**

  The CAP mission implies flying a large rectangular pattern around a defined route to defend an area from enemy aircraft. This type of task does not involve spotting and destroying enemy ground targets or a significant deviation from the planned route to intercept aircraft. Be aware that high altitude CAP will make life for low level interdiction easier for your aircraft. A combination high/low CAP sandwich is the most balanced deployment. The crucial factor while patrolling will be the fuel load limiting the distance and duration of CAP. All AI aircraft in Lock On: Modern Air Combat stop patrolling and return to base in a straight route as soon as their fuel falls to the guaranteed minimum required for the return flight.

- **Ground Alert Intercept**

  When taking part in a GAI mission, the aircraft is on alert duty on the runway with warmed-up engines. On receiving AWACS or other targeting data, the aircraft takes off and attempts an assisted intercept. In Lock On: Modern Air Combat, the GAI task can be allocated only to AI aircraft. If the enemy attacks with several aircraft, the aircraft on GAI duty will take-off one after another to intercept enemy aircraft. When planning this type of mission you don't need to create waypoints and action points. All you have to do is just set the takeoff point on an airfield and declare it as a GAI Task. Note that when planning GAI the aircraft on hot alert don't

appear on the runway until the target data becomes available. For best results, place radars such as 1L13 and 55G6 early warning radars at the airbase.

- **Escort**

  This task is allocated to fighters and involves escorting allied aircraft (transport aircraft, bombers, or attack aircraft) and defending them in some air corridor along the route from possible attacks of enemy aircraft. In doing so the escorting fighters should not engage in fights with the enemy aircraft if the latter do not close in on them and do not display aggressiveness. Escort flights must be part of the Group they are to escort.

- **SEAD**

  Suppression of Enemy Air Defenses (SEAD) involves searching for enemy EWR stations, anti-aircraft artillery, and surface-to-air missile (SAM) sites in a given area, and attacking and destroying them with antiradar missiles. Note that you cannot use antiradar ASMs (Air to Surface Missiles) against airborne targets (for example, AWACS aircraft), as antiradar missiles are not designed to track fast moving maneuvering targets.

- **Antiship Strike**

  This task consists in actively searching for enemy surface ships in a given area then attacking and destroying them. In doing so you should use antiship missiles.

- **Pinpoint Strike**

  The Pinpoint strike mission involves active search for ground and surface targets in a given area and attacking and destroying them using precision or cruise missiles. In addition to the above weapons, to deliver a pinpoint strike, the aircraft can carry a wide range of laser and GPS guided bombs.

- **Ground Attack**

  This task consists in purposely searching for enemy ground targets (plants, railroad stations, airfields) in a given area then attacking and destroying them with general purpose bombs. This type of mission usually involves using unguided bombs weighing from 250 to 1500 kg. In

addition, the aircraft can destroy targets with the aid of unguided rockets.

- **Close Air Support (CAS)**

  CAS involves actively searching for enemy ground targets on the battlefield and destroying them. Here absolute precision in delivering strikes is not of crucial importance. This type of mission usually involves using unguided rockets and unguided bombs. The Su-25T and A-10 ground attack aircraft are best suited to CAS, though such planes as the Su-25, Su-27, MiG-29, MiG-27 and F/A-18 can successfully handle this task.

- **AWACS (Airborne Warning And Control System)**

  The AWACS aircraft flies according to a planned straight or circular route and alerts allied aircraft, SAM sites, and ships when it detects enemy aircraft. Certain SAM systems can receive targeting data directly from the AWACS even when their own acquisition radar systems have been destroyed. In order for ships to conduct shore bombardment and artillery to engage targets outside beyond their line of sight, a friendly AWACS must be present in the mission.

TYPE. This pull down lists all the available aircraft or helicopter units available to the Side you have selected. Depending on the Task selected, only those Types that are capable of carrying out the Task are listed. If no Task is selected, then all Types for the selected Side are listed. Aircraft that the player may fly are listed in gold lettering.

PILOT. The two toggle buttons allow you to determine how many aircraft or helicopters comprise the Flight. This can range between one and four.

NAME. Depending on the Side selected, a list of pilots from the Log Book are listed here.

SKILL. Skill determines the AI level of the Pilot and if the unit is controlled by the AI or a human. If the unit is a non-flyable aircraft, you map choose between five levels of AI skill level. Average being the least skilled and Excellent being the most. However, the unit is a flyable aircraft, you may also select Player and Client***. If you wish the aircraft to be flown by the player during the mission, you must set the Skill to Player***. Player will be highlighted in gold. To set a pilot to be flown by a client in a multiplayer game, set the Skill to Client.

HIDE button. Pressing this button hides the active Group.

CLIENT button. Below the air unit property unit selections is the Client button. If a pilot has been assigned a Skill of client, this button will flight when this pilot is selected.

ROUTE

Waypoints are navigation points on the map that guide the player and AI to reach specified locations and attack targets. Each waypoint can be assigned multiple properties that allow the unit to reach the waypoint at a defined time, speed and altitude.

To create a waypoint for a unit, you must first select the unit by clicking on it or selecting it from the GROUP drop down list. An active unit's icon is shown in yellow along with its flight route and selected waypoint. If the ADD button is depressed in the bottom of the waypoints properties box, simply left click on the map to create a waypoint. The new, selected waypoint will have a number inside it that indicates order of placement; the initial unit placement is considered waypoint 0 and the first waypoint you place is considered waypoint 1.

Having placed a waypoint, you have several options to alter its properties.

WPNT (Waypoint). These two toggle buttons allow you to cycle through all placed waypoints of the selected unit.

TYPE. This determines the general type of action that the air unit will perform upon reaching the selected waypoint.

- **Turning Point**. If set as the 0 waypoint, this will start the air unit already in the air and flying. If other than the 0 waypoint, it acts as a standard navigation waypoint.
- **Takeoff**. If the selected waypoint is the 0 waypoint, this places the air unit on the ground.
- **Attack**. When in Attack mode, the TARGETING mode is active and you may designate targets for the air unit.

ACTION. Below the TYPE drop down list are the lists of Actions that you can assign according to the selected Type. Note that Actions and dependant upon

the selected Type.

When in TakeOff Type, Actions include:

- **From Runway**. The first flight of the group starts on the mission on the runway threshold. Other flights of the group appear at the same location after the first flight has departed the runway.
- **From Parking Area**. All flights originate on parking areas and hardened aircraft bunkers around the airfield. Player aircraft will never start inside an aircraft bunker.

When in Turning Point Type, Actions include:

- **Turning Point**. The flight will navigate normally through the waypoint.
- Fly Over Point.. The flight will attempt to fly directly over the waypoint before proceeding to the next.
- **Lock Altitude**. The flight will attempt to maintain its assigned altitude until directed to unlock or landing.
- Unlock Altitude Flight will fly according to set waypoints and in response to threats.
- **Begin Loop**. This can be used to create combat air patrols and patters for support aircraft. Being Loop must be in conjunction with an End Loop waypoint. By creating a consecutive Begin and End waypoints, the air unit will fly back and fourth between the two until low of fuel.
- **End Loop**. Defines the End point of the loop.

When in Attack Type, Actions include:

- **Attack Target**. When Attack Target is selected, the TARGETING mode button is available. This allows you to designate specific targets to be attacked by the active flight. Once the flight reaches an Attack waypoint and it has been provided a target, it fly to and attack the target and then return to the following waypoint. No not place an Attack waypoint on the actual target. Rather, think of it as an Initial Point (IP) from which the flight will begin its attack run. Generally, place the Attack point 8 km from the target.

ALT (Altitude). The altitude the Group will be when it reaches the waypoint.

SPEED. The speed the Group will be traveling when it reaches the waypoint.

ETA. This indicates the estimated time of arrival at the waypoint. When the

selected waypoint is 0, you may adjust this time to indicate the Groups entry time into the mission.

At the bottom of the waypoint properties box are three buttons:

ADD. To add a new waypoint for the selected Group, this button must be depressed. To use the mouse to selected other units, select the ADD button again to unselect it. It is a modal function.

DEL (Delete). To delete a waypoint, select the waypoint and press the DEL key. If the selected waypoint is the 0 waypoint, the entire flight will be deleted.

EDIT. To change values in the waypoint properties box, the EDIT button must be depressed.

TARGETING

When you have set a waypoint to Attack Target, the TARGETING button becomes available at the top of the air units tool bar. After selecting this button, the waypoints properties window is replaced by the targeting properties window at the bottom of the too bar.

To designate a target, left click on the location or object you with the unit to destroy. Upon doing so, a red triangle with a yellow circle in the center will appear over the target. In the center of the yellow circle will be a number that indicates its sequence if you have placed multiple targets for a waypoint.

The Targeting properties box consists of the following options:

TARGET. If you place designated multiple targets to be attacked when the air unit reaches the waypoint, you may use the toggle button to cycle through the designated targets.

OBJECT. This field displays the name of the Target and its assigned country.

COORD. This field displays the latitude and longitudinal coordinates of the Target.

PRIMARY button. When selected a Target and setting the Primary button to

on, this will set a priority for the AI to destroy such a target.

OBJ and **COORD** buttons. Two types of general Targets may be assigned. OBJ, object, targets are vehicle and static objects. COORD, coordinates, allow the AI to attack a specific location.

At the bottom of the waypoint properties box are three buttons:

ADD. To add a new target for the flight, this button must be depressed. It is a modal function.

DEL (Delete). To delete a Target, select the waypoint and press the DEL key.

EDIT. To change Targeting values, the EDIT button must be depressed.

PAYLOAD

The Payload screen allows you to customize the payloads for all aircraft. This is a powerful tool that allows broad customization, the creation and saving of player-created payloads and allows you to visualize your efforts.

From the top tool bar, Task and Type selection are very important. By selecting Task of the Type of aircraft you select, you will determine the range of payload options available. Additionally, if you first select the Task you wish, the list of air unit Types will be limited to just those that can perform the mission.

The unique Payload screen is divided into two parts, weapon loading on the left and fuel loading on the right.

Weapons Loading. This group of option allows you to select pre-made payloads for the selected Task and also allows you to edit and create your own.

NAME. This drop down lists all pre-made and saved payloads for the selected Task. Simply click of the desired list item to load the Payload.

LIST. Once a payload has been selected, a list of all items loaded on the air unit are listed. By clicking on an item, red triangles will surround the item on the 3D view of the air unit. Additionally, the item will be the focus of the weapon viewer.

To edit or create new Payload, select a pre-made Payload from the NAME list and press the NEW button to the right. Above the weapon viewer are two drop down lists:

TYPE. This lists the general types of systems that can be mounted on an air

unit.

WPN. This lists the specific weapons and other systems that apply to each Type.

By toggling the PYLON button next to weapon viewer you can select the weapon station you want to arm or modify. The four red arrows on the 3D view of the air unit indicate the selected weapon station. Press the ADD button to the left of the weapon viewer to place the selected weapon on the selected weapon station, When you have made all your changes, enter a name for the new Payload and press the SAVE button. To delete a custom Payload, selected it and press the DEL button.

COLOUR SCHEME. To selected multiple camouflage patterns for the selected aircraft, select the item from the drop down list.

ON-BOARD #. To enter number displayed on the air unit, you may either enter it directly in the field or use the toggle button to select it. After entering the number, you must press the Enter key to save it.

Fuel Loading. Except for altering the fuel load of the air unit, all field of the fuel loading box are generated automatically.

BALANCE. This scale indicates weigh distribution of the air unit. If balance is uneven, adjust your weapons payload.

FUEL. To adjust the air units fuel level, you may either left click and drag the slider button or enter the fuel percentage in the % field. Note that fuel percentage can have a significant impact on aircraft performance.

FUEL WEIGHT. Weight of loaded fuel

EMPTY. Weight of aircraft when unloaded of weapons and fuel

WEAPONS. Weight of all stores

TOTAL. Total weight of fuel and stores

Along the bottom of the fuel loading box is a slider that indicates total weight loading. Above the slider is the maximum allowable takeoff weight. To the right of the slider is the percentage of maximum takeoff weight loaded. If the slider is into the red zone, take off will be hazardous.

SUMMARY

The Summary box provides data regarding the overall flight plan of the selected air unit. These items include:

FLIGHT TIME. The total flight time of the unit's mission assuming no changes in flight plan

DISTANCE. The total distance that the flight plan covers.

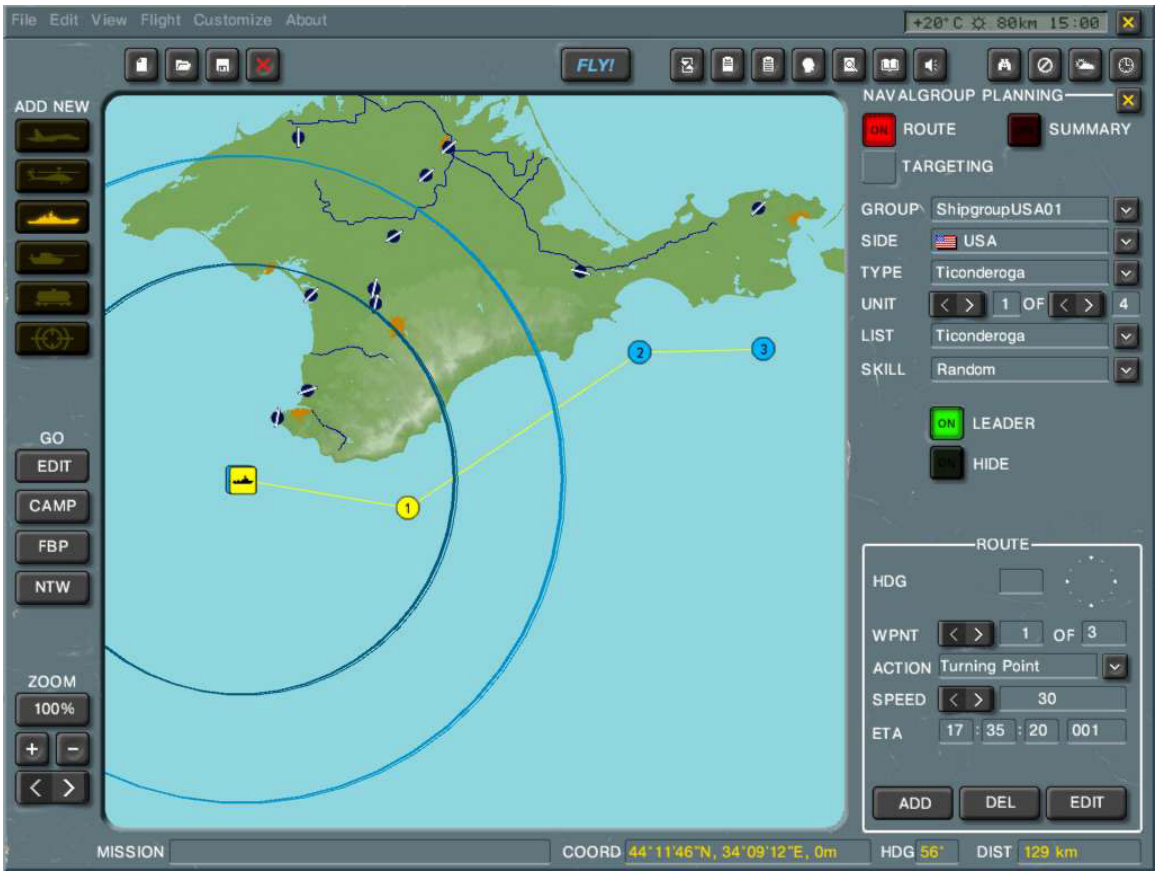
AVRG SPD (Average Speed). The average speed of the unit over the course of the mission.

RANGE. This distance between the starting waypoint and the end waypoint.

Adding Ships

To place a naval unit on the map, select the ship icon from the ADD NEW list and then left button click anywhere on the map.

Along the right side of the screen, the ship unit tool bar is displayed. This is your primary interface to determine the properties, targeting, and routing of air units. At the top of the tool are three modal buttons that determine what information is provides below them on the tool. The top of the tool bar remains constant between modes, but the bottom section will vary between ROUTE, TARGETING, and SUMMARY modes.



Functions of the top portion of the tool bar include:

GROUP. A group is one or more ships that are assigned the same set of

waypoints. Each ship of the group can be assigned a different Type with separate targets. The Group pull down menu allows you to view all ship Groups active in the mission. Select a Group from the drop down list to make it your active group.

SIDE. During the Mission Setup process, you have assigned at least one country to the RED side and one to the BLUE side. The countries that you have placed on a side are listed on this drop down menu. By selecting a country, you assign the active Group to the selected side.

TYPE. This pull down lists all the available ships available to the Side you have selected.

UNIT. The two sets of toggle buttons allow you to increase or decrease the number of ships assigned to the Group.

LIST. This drop down lists off ships assigned to the Group.

SKILL. Skill determines the AI level of the unit. Choices range from average being the least skilled and Excellent being the most. Skill level will determine the range at which the unit will engage the enemy and its accuracy of fire.

HIDE button. Pressing this button hides the active Group.

ROUTE

Having placed a waypoint, you have several options to alter its properties.

WPNT (Waypoint). These two toggle buttons allow you to cycle through all placed waypoints of the selected unit.

ACTION. These are the actions that the Group may perform after reaching its waypoint.

- **Turning Point**. The Group will navigate normally through the waypoint.
- **Attack Target**. When Attack Target is selected, the TARGETING mode button is available. This allows you to designate specific targets to be attacked by the active Group. When the Group reaches the Attack waypoint, it will attack the assigned target(s).

SPEED. The speed the Group will be traveling after it reaches the waypoint.

ETA. This indicates the estimated time of arrival at the waypoint. When the selected waypoint is 0, you may adjust this time to indicate the Groups entry

time into the mission.

At the bottom of the waypoint properties box are three buttons:

ADD. To add a new waypoint for the selected Group, this button must be depressed. To use the mouse to selected other units, select the ADD button again to unselect it. It is a modal function.

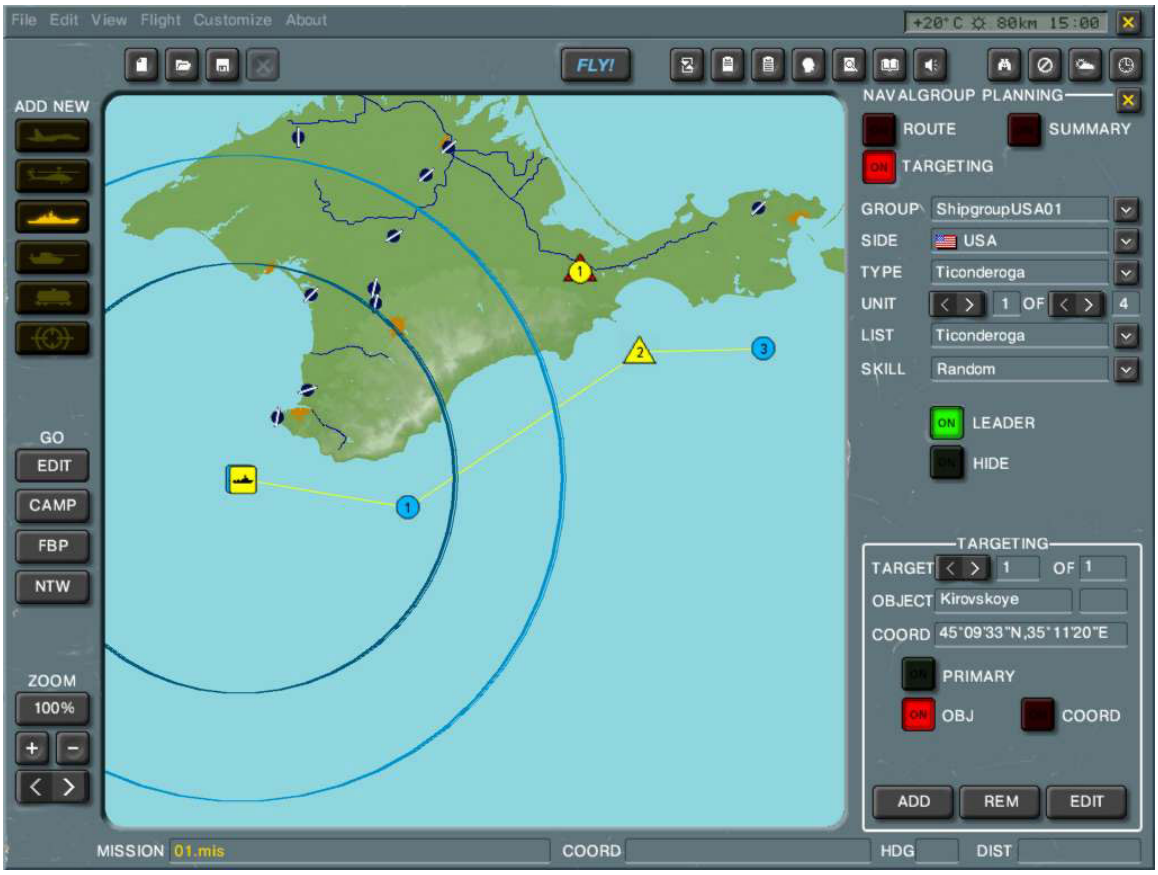
DEL (Delete). To delete a waypoint, select the waypoint and press the DEL key. If the selected waypoint is the 0 waypoint, the entire flight will be deleted.

EDIT. To change values in the waypoint properties box, the EDIT button must be depressed.

TARGETING

When you have set a waypoint to Attack Target, the TARGETING button becomes available at the top of the air units tool bar. After selecting this button, the waypoints properties window is replaced by the Targeting properties window at the bottom of the tool bar.

To designate a target, left click on the location or object you with the unit to destroy. Upon doing so, a red triangle with a yellow circle in the center will appear over the target. In the center of the yellow circle will be a number that indicates its sequence if you have placed multiple targets for a waypoint.



The Targeting properties box consists of the following options:

TARGET. If you have designated multiple targets to be attacked when the Group reaches the waypoint, you may use the toggle button to cycle through the designated targets.

OBJECT. This field displays the name of the Target and its assigned country.

COORD. This field displays the latitude and longitudinal coordinates of the Target.

PRIMARY button. After selecting a Target and setting the Primary button to on, this will set a priority for the AI to destroy such a target.

OBJ and **COORD** buttons. There are two general types of Targeting. OBJ, object, targets are vehicle and static objects and COORD, coordinates, allow the AI to attack a specific location.

At the bottom of the Targeting properties box are three buttons:

ADD. To add a new target for the Group, this button must be depressed. It is a modal function.

DEL (Delete). To delete a Target, select the waypoint and press the DEL key.

EDIT. To change Targeting values, the EDIT button must be depressed.

SUMMARY

The Summary box provides data regarding the overall navigation plan of the selected Group. These items include:

FLIGHT TIME. The total travel time of the unit's mission assuming no changes in navigation plan

DISTANCE. The total distance that the Group plan covers.

AVRG SPD (Average Speed). The average speed of the unit over the course of the mission.

RANGE. This distance between the starting waypoint and the end waypoint.

Adding Ground Force Units

To place a ground force unit on the map, select the ship icon from the ADD NEW list and then left button click anywhere on the map. Ground forces include all combat and non-combat related ground vehicles that include armor, air defense vehicles, infantry, etc.

Along the right side of the screen, the ground forces tool bar is displayed. This is your primary interface to determine the properties, targeting, and routing of ground units. At the top of the tool are three modal buttons that determine what information is provides below them on the tool. As with aircraft and ships, the top of the tool bar remains constant between modes, but the bottom section will vary between ROUTE, TARGETING, and SUMMARY modes.

Functions of the top portion of the tool bar include:

GROUP. A group is one or more ground vehicles that are assigned the same set of waypoints. For indirect fire weapons such as artillery and multiple rocket launchers, each vehicle of the group can be assigned a separate target. The Group drop down list allows you to view all ground force Groups active in the mission. Select a Group from the drop down list to make it your active group.

SIDE. During the Mission Setup process, you have assigned at least one country to the RED side and one to the BLUE side. The countries that you have placed on a side are listed on this drop down. By selecting a country, you assign the active Group to the selected side.

TYPE. This pull down lists all the available ground units available to the Side you have selected. Some Types, such as surface-to-air missile systems, can be placed as an entire collection of the necessary vehicles. These are referred to as a "site."

UNIT. The two sets of toggle buttons allow you to increase or decrease the number of ships assigned to the Group. Using this function along with the Types, you may place multiple ground unit Types within a single Group.

LIST. This drop down lists of ground units assigned to the Group.

SKILL. Skill determines the AI level of the unit. Choices range from average being the least skilled and Excellent being the most. Skill level will determine the range at which the unit will engage the enemy and its accuracy of fire.

HIDE button. Pressing this button hides the active Group.

ROUTE

Having placed a waypoint, you have several options to alter its properties.

WPNT (Waypoint). These two toggle buttons allow you to cycle through all placed waypoints of the selected Group.

ACTION. These are the actions that the Group may perform after reaching its waypoint.

- **Turning Point**. The Group will navigate normally through the waypoint.
- **Attack Target**. When Attack Target is selected, the TARGETING mode button is available. This allows you to designate specific targets to be attacked by the active Group. When the Group reaches the Attack

waypoint, it will attack the assigned target(s).

FORM. Once the Group has reached a waypoint, the Form selection determines its mode of travel to the next waypoint. These choices are the same regardless of the selected Action.

- **On Road**. When set to On Road, the waypoint will automatically "snap" to the nearest road. If the following waypoint is also set to On Road, the ME will automatically create a road-following plan that will allow the Group to use the road ways to drive between the two waypoints.
- **Off Road**. To disable road following, set the Action to Off Road and the unit will be able to drive off-road upon reaching the waypoint.
- **Rank**. This is a formation command and instructs the Group to travel in a nose to tail line formation.
- **Cone**. This formation places the group in either a cone or diamond formation depending on the number of vehicles in the Group.

SPEED. The speed the Group will be traveling after it reaches the waypoint.

ETA. This indicates the estimated time of arrival at the waypoint. When the selected waypoint is 0, you may adjust this time to indicate the Groups entry time into the mission.

At the bottom of the waypoint properties box are three buttons:

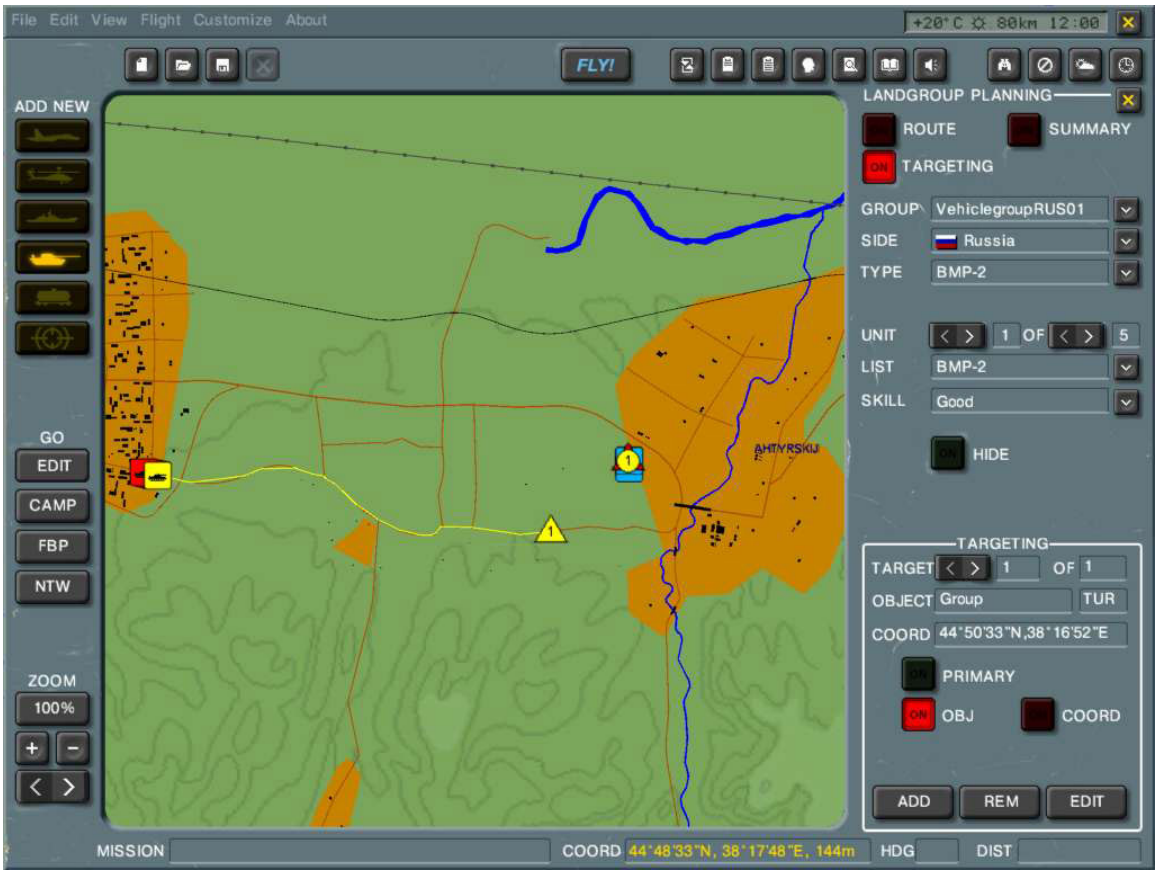
ADD. To add a new waypoint for the selected Group, this button must be depressed. To use the mouse to select other units, select the ADD button again to unselect it. It is a modal function.

DEL (Delete). To delete a waypoint, select the waypoint and press the DEL key. If the selected waypoint is the 0 waypoint, the entire flight will be deleted.

EDIT. To change values in the waypoint properties box, the EDIT button must be depressed.

TARGETING

Ground force Targeting works the same as it does with Ships. To review, when you have set a waypoint to Attack Target, the TARGETING button becomes available at the top of the air units tool bar. After selecting this button, the waypoints properties window is replaced by the targeting properties window at the bottom of the tool bar.



To designate a target, left click on the location or object you with the unit to destroy. Upon doing so, a red triangle with a yellow circle in the center will appear over the target. In the center of the yellow circle will be a number that indicates its sequence if you have placed multiple targets for a waypoint.

The Targeting properties box consists of the following options:

TARGET. If you designated multiple targets to be attacked when the Group reaches the waypoint, you may use the toggle button to cycle through the designated targets.

OBJECT. This field displays the name of the Target and its assigned country.

COORD. This field displays the latitude and longitudinal coordinates of the Target.

PRIMARY button. When selecting a Target and setting the Primary button to

on, this will set a priority for the AI to destroy such a target.

OBJ and **COORD** buttons. There are two general types of Targeting. OBJ, object, targets vehicle and static objects and COORD, coordinates, that allow the AI to attack a specific geographic location.

At the bottom of the Targeting properties box are three buttons:

ADD. To add a new target for the group, this button must be depressed. It is a modal function.

DEL (Delete). To delete a Target, select the waypoint and press the DEL key.

EDIT. To change Targeting values, the EDIT button must be depressed.

SUMMARY

The Summary box provides data regarding the overall navigation plan of the selected Group. These items include:

FLIGHT TIME. The total travel time of the unit's mission assuming no changes in navigation plan

DISTANCE. The total distance that the Group plan covers.

AVRG SPD (Average Speed). The average speed of the unit over the course of the mission.

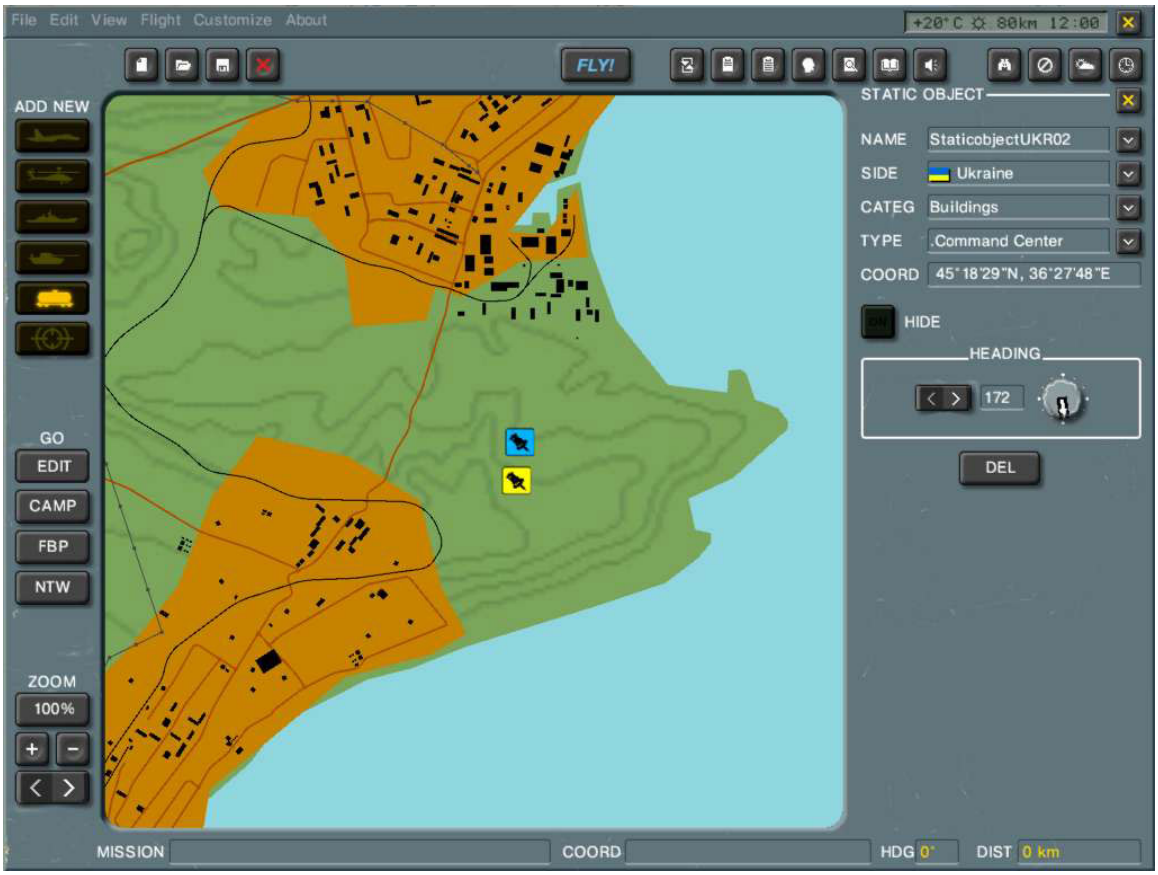
RANGE. This distance between the starting waypoint and the end waypoint.

Adding Static Objects

Unlike Aircraft, Ships and Ground vehicles, Static objects are 3D representations of most units but have no AI and are always stationary. Static objects are useful in creating mission objectives and populating the map. In addition to units, you have the ability to place buildings and installations such as bunkers, control buildings and check points; to just name a few.

To place a Static object, select the Static object icon from the ADD NEW list. As with units, you may left click on the map to place the objects and left button hold and drag to move it.

On the right of the screen is the Static object tool far. Like the unit tool bars, this tool bar allows you to choose the Static objects and its properties.



NAME. Each time you place a Static object on the map, a Name will automatically be generated for it and displayed in the Name field. However, you may select this name and overwrite it to create a custom Name. This can be helpful when trying to keep track of targeting lists.

SIDE. As with the aircraft, ship and ground forces tool bars; you will select the country that the Static object belongs too. This will filter the Types of objects listed.

CATEG. All Static objects are divided into five categories: Aircraft, Helicopters, Ships, Ground vehicles, and Buildings. Select the category of object you wish to place and all objects of that Type will be listed in the TYPE drop down list.

TYPE. Having set the desired CATEG (category), all objects of that category and belonging the selected SIDE are listed. To select a object left click on it and place it on the map by left clicking on the desired map location.

COORD. This field displays the latitude and longitude coordinates of the object.

HIDE button. Pressing this button hides the active Group.

Along the bottom of the Static object tool far is the orientation box. This allows you to orient the direction that the object is facing in the game world. Because Static objects never move, this will be the orientation of the object during the entire course of the mission. To alter the orientation, you may either use the toggle button to select the desired compass heading as indicated in the field; manually type in the heading; or left click and hold on the dial and drag the dial to the desired heading.

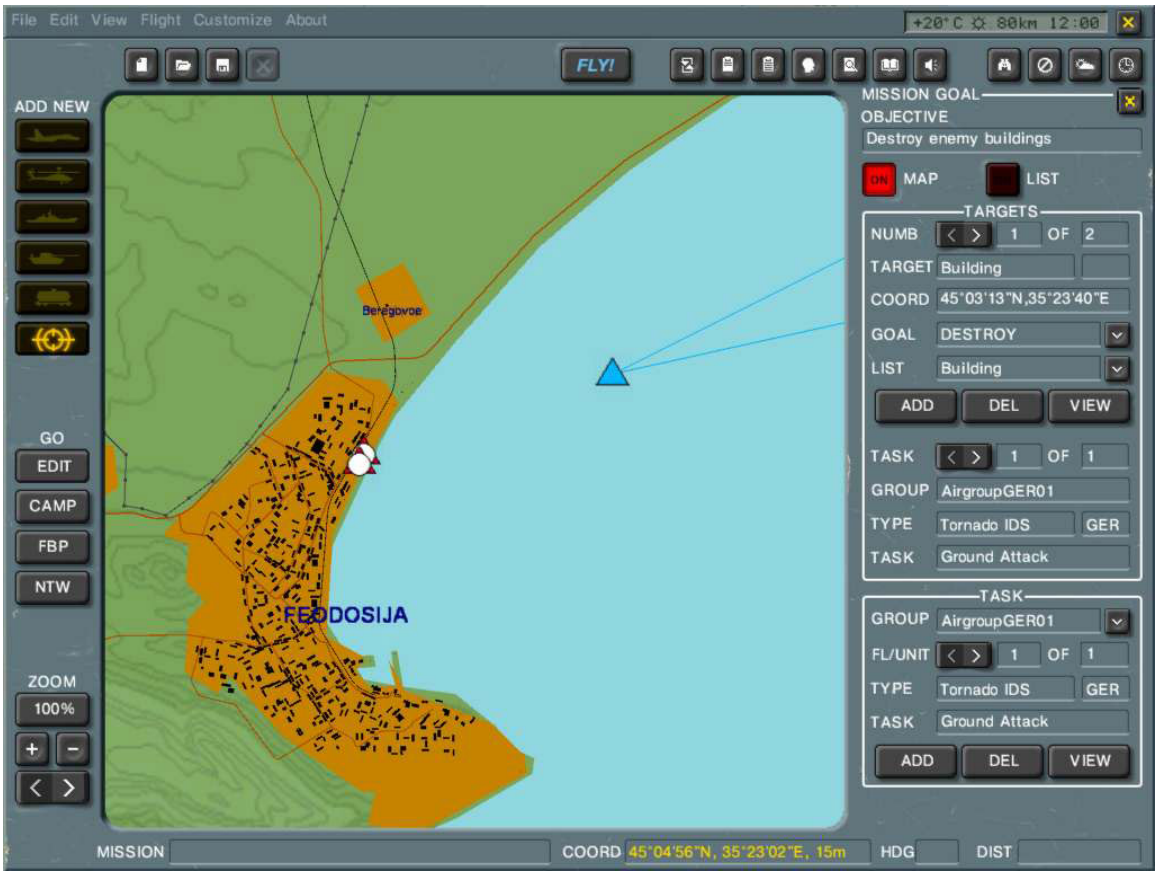
Below the orientation box is the DEL button. Press this button to remove the selected Static object from the mission.

Creating Mission Goals

In order to define a mission as a success, partial success or failure, the ME includes the Mission Goals tool that allows you to define these conditions based on the destruction or protection of designated units and objects.

To create Mission Goals, first select the Mission Goals icon from the ADD NEW bar. Upon selection, the Mission Goals too bar is displayed along the right side of the screen. The tool bar contains the following functions:

At the top of the tool bar is the OBJECTIVE field. The objective is a statement of the primary condition(s) that must be met for a successful mission. This Objective is then displayed in the Mission Briefing. To enter the Objective statement, click in the field and type the statement.



Below the Objective statement are two buttons, MAP and LIST. Regardless of the MAP button be turned off or on, you may always enter and view data in the tool bar. However, to view the Goals list, the LIST button must be on. To exit the LIST view, press the MAP button.

To create a goal, select the ADD button from the top box. This changes the mouse cursor to a cross-hair, indicating that your are in goal designation mode. You may now click on any unit, static object, or map structure to designate it as a goal. After selecting a goal, you may view the following information:

NUMB (Number). Using the forward / back button, you may cycle between created goals. When a goal is selected, data on the tool bar pertains to that goal.

TARGET. This is the name of the unit or object that you have designated as a goal.

COORD. This field lists displays the latitude and longitude coordinates of the goal.

GOAL. A goal can be set to one of two states with the drop down list:

- **DESTROY**. The goal must be destroyed to achieve success condition.
- **SURVIVE**. The goal must not be destroyed at the time the player exits the mission

LIST. The drop down list allows you to view all TARGETS that have been set as Goals. Upon selecting a Target, the tool data will reflect the chosen Target.

In the center of the top box, are three buttons.

ADD. To designate a unit or object as a Target associated with a Goal, the ADD button must be depressed. This is a modal button.

DEL. To delete a Goal, select the desired Goal and press the DEL button.

VIEW. If the selected Goal is an air, ship, or ground unit, pressing the View button will display the unit's tool bar in place of the Goal tool bar.

If a unit has been assigned to destroy a Target to achieve a Goal, information about that unit is displayed in the lower box.

GROUP. The name of the Group that is assigned to destroy the Target

FL/UNIT. If multiple flights or units of a Group are assigned to destroy the

target, the forward / back button allows you to cycle through these flights or units.

TYPE. The Type field indicates the type of unit that is assigned to destroy the Target.

TASK. This field indicates the type of Task that the unit will use to carry out its mission.

Mission Building Tips

- To set an airfield as friendly or enemy during a mission, place a non-descript vehicle at the airbase that corresponds to its side. You may then hide the vehicle as well. This will prevent air traffic control and AWACS from vectoring your flight to land at enemy airfields.
- The Scenes setting you select when creating a mission will be the same Scene setting the player will be forced to use. Because High scenes can have a significant impact on frame rate, bear this in mind when creating missions for low-end computers.
- When you wish to attack the same target with multiple flights, create individual groups with one flight each rather than combine multiple flights within the group.
- Do not place a targeting waypoint on or very near the assigned target. The target waypoint is the initial point (IP) that the flight will begin their attack run. Rather, set the targeting waypoint at least 8 km from the intended target.
- If you select attack, but do not assign a target to an aircraft, then it will try and find any enemy target to engage, based on the combat task it has been given.
- If you select a specific target for the AI aircraft to attack and you choose the “any weapons” option, then the aircraft will continue to attack the target will all weapons (including cannon) until that target is destroyed. This may not be a wise choice against certain targets (like the Moscow).
- Ensure that you are not selecting the same side/country for 2 objects that you wish to fight against each other. We have found this to be a common mistake.
- If an AI aircraft runs low on fuel, it will divert to the nearest friendly airbase.

- Remember to look at the different pilots in a Wing by using the Pilot box and not the Of # box on the Airgroup Planning menu. Using the Of # box will add or delete aircraft.
- An AI aircraft will use only enough ordnance to destroy the assigned target. If, for example, the aircraft is assigned to hit a specific location (coordinates) at an airbase, then it will drop 1 bomb salvo (2 bombs), which is all that is necessary to destroy the target. If you assign it to take attack 5 points on the runway, it will drop 5 bomb salvos.

Icons

When planning existing missions or building new ones, you will be placing aircraft, ships, SAM systems, possibly static objects and designing unit routes. In our terminology, all the above are objects. Some of them are active objects whereas other objects are static. Active objects have particular levels of artificial intelligence and behavior; they are marked by an individual symbol irrespective of the current map scale.

The table below contains a list of all Icons used on the map:

	Aircraft
	Helicopter
	Ground Unit
	Airfield
	Take-off waypoint
	Landing waypoint
	Ground Alert Intercept station. This is the only waypoint of the GAI sortie.

 Turning point of an unselected route. Such a waypoint is always displayed in the color of the country owning the aircraft.

 Turning point of the selected route. The number indicates the waypoint's ordinal number.

 Action point of an unselected route. An action point implies a particular action associated with this waypoint (rocket attack point, start of a CAP station) action point of the selected route. The number indicates the waypoint order number.

 Ship

 Early Warning Radar station

 Tracking radar of a SAM system

 Search radar of a SAM system

 SAM launcher

 AAA or SAM system housing both radar and launcher/guns

 Portable SAM launcher (Igla, Stinger, etc)

 Static object

 Primary target

EASY RADAR

Realizing that the suite of accurately modeled radar and weapon systems contained in Lock On: Modern Air Combat can be challenging to even seasoned players, Lock On includes a less complex 'Easy Radar' system that allows you to focus on the truly exciting element of the game, engaging the enemy in combat. The Easy Radar system provides you with 360-degree situational awareness showing all friendly and hostile units. Using the Easy Radar feature in conjunction with the Auto On features will enable you easily identify, target, and attack a broad-range of targets without requiring intimate knowledge of modern combat aircraft systems.

The Easy Radar Display

The Easy Radar display replaces the normal radar display in all aircraft except for the Su-25. To activate the Easy Radar, select Options from the Main Menu and select Difficulty and press the Easy Radar button. During a mission, you may toggle Easy Radar off and on by pressing the ALT-I.

The circular Easy Radar display displays your aircraft in the bottom center of the circle with the aircraft symbol. The Easy Radar display is from a top-down

perspective, targets on the display above your symbol are in front of you and targets below your symbol are behind you. Altitude is not indicated on the Easy Radar display.

A set of four numbers surrounds the circular display. These include:

- **Display Mode**. In the top left on the display, the current mode is displayed. Mode selection allows you to filter the types of targets that are visible on the display. There are three choices.
  - **NAV**: Selecting the Navigation mode shows your flight route with each waypoint represented by a triangle. A triangles surrounded by a circle represents the currently selected waypoint. Additionally, all airfields will be displayed with airfield icons.
  - **AIR**: Selecting the Air mode shows all enemy and friendly aircraft. Hostile aircraft are displayed as red and friendly aircraft are displayed as blue. Aircraft are displayed as triangles with a stem denoting the direction of travel. A solid triangle indicates your currently locked target. . Unlocked aircraft will be hollow. To lock a target, you can use the TAB key. In addition to aircraft, enemy and friendly missiles are also shown. An enemy missile targeting you is indicated as a dot surrounded by a circle. Missiles not targeting your aircraft will be a red or blue dot.
  - **SUR**: Selecting Surface mode shows you all enemy and friendly units including ground and naval forces. Hostile forces are indicated with red squares and friendly forces are indicated with blue squares. The locked target is a solid red square, and unlocked targets are hollow squares. In addition to aircraft, enemy and friendly missiles are also shown. An enemy missile targeting you is indicates as a dot surrounded by a circle. Missiles not targeting your aircraft will be a red or blue dot.

Auto Lock On Keys

Using the Easy Radar in conjunction with the following set of Auto Lock On keys, you can automatically lock onto any enemy unit displayed on your radar. Using the TAB key, you can lock on to the nearest enemy unit. Each successive press of the TAB key will select the next enemy target according to range. In addition to the TAB key, the following keys may also be used:

Nearest air target	Scroll Lock
Center of view air target	Alt Scroll Lock
Next air target	Shft Insert
Previous air target	Shft Home
Nearest ground target	Shft Scroll Lock
Center of view surface target	Ctrl Num Lock
Next surface target	Shft End
Previous surface target	Shft Delete

Target Box

When you have Auto Locked onto a target, a red box is drawn around the unit in the game world (not the Easy Radar). This box is very useful for visually locating the currently locked target.